

MOISTURE ACCUMULATION AND MOULD GROWTH FOR 6 STAR HOUSING IN VICTORIA

Research Report 1

Appendices

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Appendix 01: Detailed hygrothermal input data Revision 05 (19/12/2023)

1. Hygrothermal simulation software variables

The hygrothermal and bio-hygrothermal software used in this research has been developed in Germany and is in common use through Europe, Canada, the United States, United Kingdom, New Zealand and Japan. Due to this field of research being in its infancy in Australia, there is no Australian construction materials database and some physical properties differ from what is known about Australian construction materials. Additionally, some of the interior conditions in Australian homes are different to the expectations in other developed nations. This section describes the informed choices made in this research.

1.2 Pliable building membranes

The 2019 edition of the National Construction Code (NCC) required new Class 1 and Class 2 buildings in NCC climate zones 6, 7 and 8 to use a vapour permeable pliable building membrane outside the insulation layer on external walls [1]. The Australian Standard for Pliable membranes, AS4200.1 [2], shows vapour permeance classifications in $1429 \mu\text{g}/\text{N}/\text{s}$ (micrograms/newton/second), as shown in Table 1. In this research:

- a Class 1 vapour impermeable sarking product was used to represent impermeable membranes, and
- a Class 3 vapour permeable product was modified, such that its vapour permeance value was $0.1429 \mu\text{g}/\text{N}/\text{s}$. [2]

Table 1: Pliable membrane vapour permeance classifications

CLASS	VCM category	Min ($\geq$)	Max ($<$)
Class 1	Vapour barrier	0.0000	0.0022
Class 2	Vapour barrier	0.0022	0.1429
Class 3	Vapour permeable	0.1429	1.1403
Class 4	Vapour permeable	1.1403	no maximum

Within the hygrothermal simulation software, the physical property attributed to water vapour diffusion resistance was “*water vapour diffusion resistance factor*”. To convert the vapour permeance value to a water vapour diffusion resistance factor, the following mathematical method was used [3].

Step 1: Vapour permeance (P) $\mu\text{g}/\text{N}/\text{s}$ (Micro gram per Newton seconds) = $1/\text{Vapour resistance (MN.s/g)}$ (MegaNewton seconds per gram)

Step 2: Water vapour diffusion resistance factor (μ -value) = Vapour resistance (MN.s/g) x vapour permeability of still air ($0.2 \text{ g.m}/\text{MN.s}$) (grams meters per Mega Newton seconds / material thickness (meters))

$0.2 \text{ g.m}/\text{MN.s}$ is a typical value in the UK for the vapour permeability of still air, and converts the vapour resistance to the “equivalent air layer thickness” [4]

1.3 Other physical properties

All construction materials have physical properties for conductivity, density and thermal capacitance. To establish values for each element selected in the hygrothermal simulation software, a staged approach was taken, as discussed below.

Thermal conductivity

1. Establish a materials thermal resistance value from the NatHERS database [5].
2. Convert the thermal resistance value to a conductivity value.
3. Within the hygrothermal simulation software materials database, select a similar material with a similar conductivity value.
4. Un-lock the material within the software database.
5. Modify the materials conductivity to that which came from the NatHERS database.
6. This material was then modified further as per below.

Density

The material that had been identified above, then has the density modified to match that of the NatHERS database and/or an Australian manufacturer's material data.

Thermal capacitance

The material that had been identified above, then had the thermal capacitance modified to match that of the NatHERS database and/or an Australian manufacturer's material data.

1.4 Hygrothermal simulation software input variables

Exterior surface conditions

Orientation: each wall system was simulated in the four cardinal orientations – North, South, East, West.

Wall inclination: 90 degrees.

Rain load calculation: Included (this method considers the wind driven rain effect on the façade system as described in ASHRAE Standard 160P [6]). As the climate data used in this stage of the research does not include rain data, this aspect is not calculated.

Rain exposure: 1.0, Building height <10m, Medium (referring to a low rise building in a semi-urban environment).

Rain depositing factor: Walls below a low slope roof (wall with eaves). This method was selected as many new homes have an eave which provides some rain protection.

Exterior surface air film resistance: External wall 0.0588 [7].

Exterior surface Sd value: material dependent as per Table 2 below.

Short-wave radiation value: material dependent as per Table 2 below.

Ground reflectivity: Green grass (0.26).

Rain adhering factor: for painted surfaces = No absorption, for unpainted surfaces = 0.7 absorption.

Table 2: Wall Sd and short-wave radiation values

Wall system	Sd Value exterior	Short wave radiation
Weatherboard	0.3 acrylic façade paint	DIN4108 medium (0.6)
Compressed fibre cement sheet	0.3 acrylic façade paint	DIN4108 medium (0.6)
Brick veneer	No coating	Brick red
Concrete block	0.3 acrylic façade paint	DIN4108 medium (0.6)
Cavity clay masonry	No coating	Brick red
Externally insulated clay masonry	0.3 acrylic façade paint	DIN4108 medium (0.6)
Precast concrete	0.3 acrylic façade paint	DIN4108 medium (0.6)
XPS	No Coat (acrylic render)	DIN4108 medium (0.6)
EPS	No Coat (acrylic render)	DIN4108 medium (0.6)
Hebel	No Coat (acrylic render)	DIN4108 medium (0.6)
Sheet-metal	No coating	DIN4108 medium (0.6)
Aluminium	No coating	DIN4108 medium (0.6)

Interior surface conditions

Interior surface air film resistance: Interior wall 0.125 [7].

Interior surface Sd value: No Coating (due to air leakage around lining system).

Initial material condition

Initial moisture: Constant across component.

Initial temperature: Constant across component.

Initial RH: 0.8 (80%).

Initial temp: 20.0 (NatHERS min).

Calculation period

Calculation period: ten years (01/04/2020 to 01/04/2030).

Calculation time steps: 1 hour.

Exterior climate

NatHERS climate files as per Table 3 below. This is discussed further in the main report document.

Table 3: NatHERS climates

NatHERS climate number	Number of Victorian postcodes	NCC pliable membrane classification
21	94	Permeable
22	211	Permeable
27	149	Permeable and impermeable
60	199	Permeable
61	30	Permeable
63	68	Permeable
64 (& 62)	419	Permeable
66	512	Permeable and impermeable

Interior climate

Heating and cooling: Heating only – as per National Construction Code expectation for climate 6, 7 and 8 [1].

Floating temperature: Based on difference between Heating min (20°C) and cooling thermostat setting within NatHERS (24°C) [5].

Building data

Bedrooms/ Water vapour load: 4 bedrooms (as per house plan).

Air Exchange rate: The software uses the Air Exchange Rate (1h) value. However, the building sealing verification method within the NCC refers to a maximum ACR@n50 of 10. This method refers to a 50 Pascal air pressure difference created between the interior and exterior of the building. This method normally uses a blower door test system. Persily and Kronwall [8, 9] established that if the ACR@n50 value was divided by 20, it provided a very similar value to ACH or AER (1h). Within this context the maximum allowable building leakage for a 'code' compliant 6 Star home would be $10 \text{ ACR@n50} / 20 = 0.5 \text{ AER (1h)}$. Hence, the baseline simulations adopt an ACR of 10 and an AER(1h) of 0.5. Additionally, AS 1668 [10] requires a minimum building leakage rate of AER(1h) of 5.0 unless mechanical ventilation is installed. This provides the second tier of simulation results – ACR 5.0 / AER(1h) 0.25.

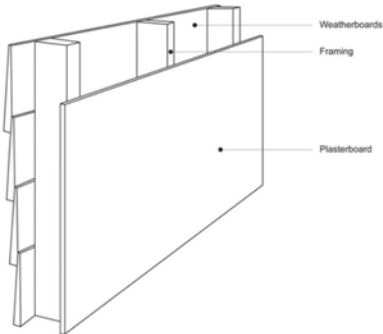
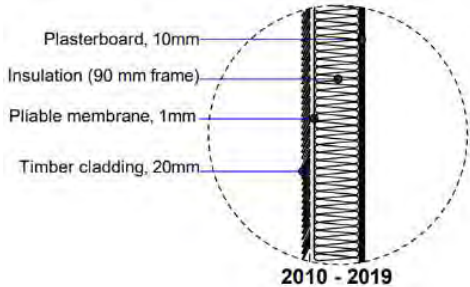
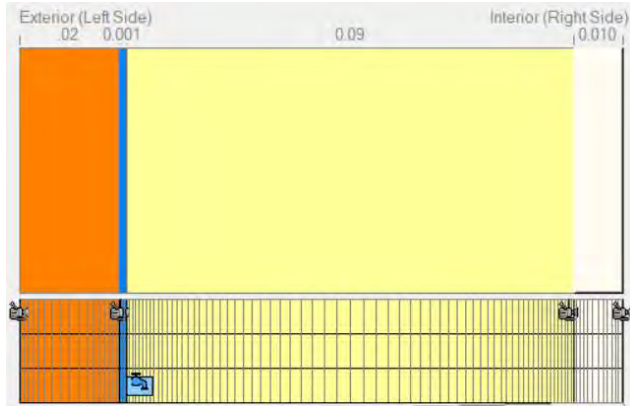
Building volume: 366m³ (as per house plan).

1.5 Air Spaces

Within the wall system data in the following pages, there is an occasional note of #1. The NCC allows for an air space to have an R-value subject to the reflectance properties of pliable membranes. These values depend on the size of the air space and the stillness of air. However, many construction scenarios have a wall frame filled with insulation, which does not allow for a reflective still air space. The foil product is hard against an R 2.0 batt (86mm). This results in a reflective face to the cavity and a reflective face that is in direct contact with the insulation, discounting any reflective benefit. This is an area of regulatory discussion.

2. Wall 1 – Weatherboard

2.1 Weatherboard wall data

Wall system – NCC		Wall system – sectional details		WUFI® – wall sectional details			Usage	
3.12.1.3(a) Weatherboard external wall construction — Total R-Value of 0.48 							19.9% of 6 Star housing recorded on NatHERS portal.	
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8							
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system	
	6 star - impermeable CZ-20 R2.32 CZ-21 R2.32 CZ-22 R2.41 CZ-27 R2.37 CZ-60 R2.36	CZ4	2.8 (the total R-value of typical wall construction = 0.48)	2.32	0.6 (NCC CZ4)	1.72	20 timber / 1 membrane / 90 R2.0 insulation/ 10 plasterboard	
		6 star - permeable CZ-62 R2.38 CZ-63 R2.43 CZ-64 R2.42	CZ6, CZ7		2.32	0 (NCC CZ6, CZ7)	2.32	20 timber / 1 membrane / 90 R2.5 insulation/ 10 plasterboard
		6 star - permeable CZ-66 R2.40	CZ8	3.8 (the total R-value of typical wall construction = 0.48)	3.32	0 (NCC CZ8)	3.32	20 timber / 1 membrane / 90 R3.5 insulation/ 10 plasterboard

2.2 Weatherboard Hygrothermal input data NCC CZ4 wall vapour impermeable (Note: this is a non-compliant wall system, as there is no reflective air-space)

	Layer	Thick ness (m)	NatHERS or Manufacturer						WUFI				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistanc e factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588						0.0588				
2.	Weatherboard (Hardwood)	0.019	0.119	677	2090			Generic hardwood [11]	0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour impermeable)	0.001	0.002	Sislation ~260		Class 1 – 0.0000 to 0.0022	Class 1 90909 to undefine d	Class 1 product [12]	0.001/0 .5 = 0.002	260	1000	200000	Class 1 - Fraunhofer Roof Membrane V13 unlocked
4.	Insulated timber frame	0.090	2.000	Bradford batt				Bradford R2.0 Gold batt	2.0	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5	Reflective air space												
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plasterboa rd (Gypsum board) [11]	0.01/0. 163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125						0.125				
	Total		2.366										

2.3 Weatherboard Hygrothermal input data NCC CZ6-7 wall vapour permeable

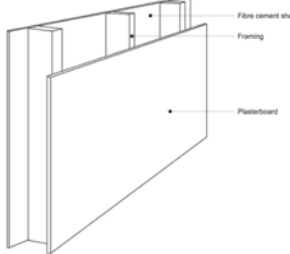
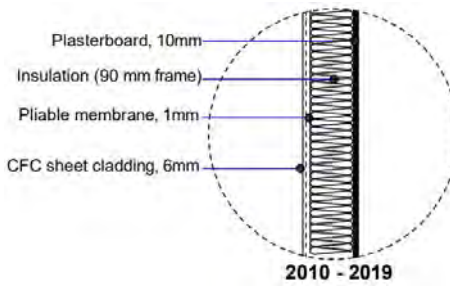
	Layer	Thick ness (m)	NatHERS or Manufacturer						WUFI				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e $\mu\text{g/N.s}$	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588						0.0588				
2.	Weatherboard (Hardwood)	0.019	0.119	677	2090			Generic hardwoo d [11]	0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 (min) – 1.1403 (max) [2]	Class 3 – 1399.580 (min) – 175.392 (max)	Class 3 product [12]	0.001/0 .5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.090	2.500 (K value 0.036)	Isover licensed batt				Bradford R2.5 HP batt	0.09/0. 036 = 2.57	26.2	840	1.2	Thermalin ISO glass fibre batt
5	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plasterb oard (Gypsum board) [11]	0.01/0. 163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.866										

2.4 Weatherboard Hygrothermal input data NCC CZ8 wall vapour permeable

	Layer	Thick ness (m)	NatHERS or Manufacturer						WUFI				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058						0.058				
2.	Weatherboard (Hardwood)	0.019	0.119	677	2090			Generic hardwood [11]	0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.075 + 0.090 = 0.165	3.500 (K value 0.036)	Isover licensed batt				R 1.5 + R2.5 Bradford wall batts [14]	0.126 /0.03 6 = 3.50	26.2	840	1.2	Thermalin ISO glass fibre batt
5	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plasterboa rd (Gypsum board) [11]	0.01/ 0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		3.866										

3 Wall 2 – Compressed fibre cement sheet

3.1 Compressed fibre cement sheet wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage	
3.12.1.3(b) Fibre-cement sheet external wall construction — Total R-Value of 0.42 						9.3% of 6 Star housing recorded on NatHERS portal.	
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
CZ-20 R2.54 CZ-21 R2.31 CZ-22 R2.38 CZ-27 R2.48 CZ-60 R2.39 CZ-62 R2.41 CZ-63 R2.26 CZ-64 R2.39 CZ-66 R2.34	6 star – impermeable	CZ4	2.8 (the total R-value of typical wall construction = 0.42)	2.38	0.6 (NCC CZ4)	1.78	6 cfcs / 1 membrane / 90 R2.0 insulation/ 10 plasterboard
	6 star – permeable	CZ6, CZ7		2.38	0 (NCC CZ6, CZ7)	2.38	6 cfcs / 1 membrane / 90 R2.5 insulation/ 10 plasterboard
	6 star – permeable	CZ8	3.8 (the total R-value of typical wall construction = 0.42)	3.38	0 (NCC CZ8)	3.38	6 cfcs / 1 membrane / 90 R3.5 insulation/ 10 plasterboard

3.2 Compressed Fibre Cement Sheet (CZ 4) vapour impermeable (Note: this is a non-compliant wall system, as there is no reflective air-space)

	Layer	Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Mater ial select ed	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Compressed fibre cement sheet	0.0045 – 0.012 (6mm)	0.006 / 0.5 = 0.012 [13]	1270 – 1560	840			CFCS [11]	0.006/0 .245 = 0.025	1380	840	990.9	Fibre cement sheathing board
3.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022	Class 1 – 90909 to undefined	Class 1 produ ct [12]	0.001/0 .5 = 0.002	130	1000	200000	Class 1 - Roof Membrane V13 unlocked
4.	Insulated timber frame	0.090	2.000 (K value 0.045)	Isover batt				R2.0 batt	0.09/0. 045 = 2.0	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5	Reflective air space												
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plaste rboar d [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		2.259										

3.3 Compressed Fibre Cement Sheet (CZ 6-7) vapour permeable

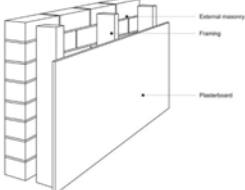
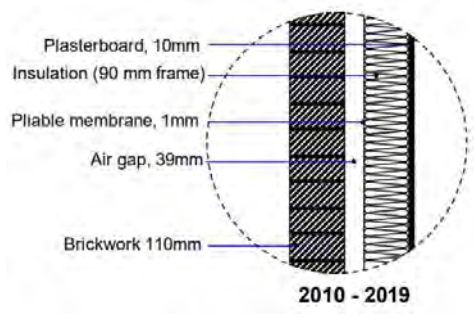
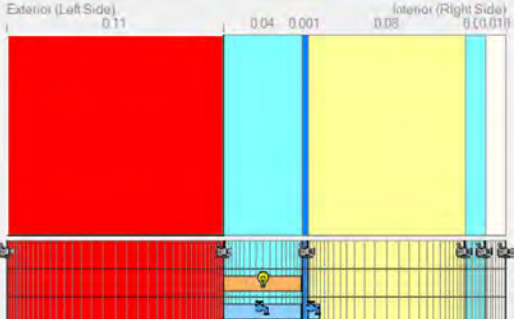
	Layer	Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Mater ial select ed	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588					[7]					
2.	Compressed fibre cement sheet	0.0045 – 0.012 (6mm)	0.006 / 0.5 = 0.012 [13]	1270 – 1560	840			CFCS [11]	0.006/0 .245 = 0.025	1380	840	990.9	Fibre cement sheathing board
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403	Class 3 – 175.392 to 1399.580 (max)	Class 3 [12]	0.001/0 .5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.090	2.500 (K value 0.036)					R2.5 batt	0.09/0. 036 = 2.57	26.2	840	1.2	Thermalin ISO glass fibre batt
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plaste rboar d [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		2.759										

3.4 Compressed Fibre Cement Sheet (CZ 8) vapour permeable

	Layer	Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Vapour permeanc e $\mu\text{g}/\text{N.s}$	Water vapour diffusion resistance factor	Mater ial select ed	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Compressed fibre cement sheet	0.0045 – 0.012 (6mm)	0.006 / 0.5 = 0.012 [13]	1270 – 1560	840			CFCS [11]	0.006/0 .245 = 0.025	1380	840	990.9	Fibre cement sheathing board
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580 (max)	Class 3 [12]	0.001/0 .5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.075 + 0.090 = 0.165	3.500 (K value 0.036)					R1.5 + R2.0 wall batts [14]	0.126/0 .036 = 3.50	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plaste rboar d [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		3.759										

4 Wall 3 – Clay masonry veneer

4.1 Clay masonry veneer wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage	
3.12.1.3(c) Clay masonry veneer external wall construction — Total R-Value of 0.56 						61.2% of 6 Star housing recorded on NatHERS portal	
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 (the total R-value of typical wall construction = 0.56)	2.24	0.6 (NCC CZ4)	1.64	110 brick / 40 cavity / 1 membrane / 90 R2.0 insulation/ 10 plasterboard
	6 star - permeable	CZ6, CZ7		2.24	0 (NCC CZ6, CZ7)	2.24	110 brick / 40 cavity / 1 membrane / 90 R2.5 insulation/ 10 plasterboard
	6 star - permeable	CZ8	3.8 (the total R-value of typical wall construction = 0.56)	3.24	0 (NCC CZ8)	3.24	110 brick / 40 cavity / 1 membrane / 90 R3.5 insulation/ 10 plasterboard

4.2 Clay masonry veneer (CZ 4) vapour impermeable (Note: this is a non-compliant wall system, as there is no reflective air-space)

		Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Brickwork: extruded brick (generic)	0.110	0.179 [13]	1820	959		[11]	Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	40 mm cavity	0.040	0.242 [15] #1				Non- reflective (0.9/0.9; E = 0.82))	Air gap vertical 40 mm ventilate	0.04/ 0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
4.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.001 /0.5 = 0.002	2400	1000	200000	Class 1 – Roof Membrane V13 unlocked
5.	Insulated timber frame	0.090	2.000	10				Bradford Gold wall batts [14]	0.09/ 0.045 = 2.0	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plasterb oard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		2.668										

4.3 Clay masonry veneer (CZ 6-7) vapour permeable

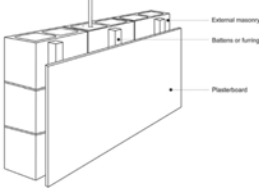
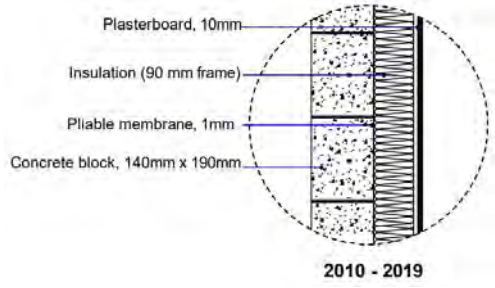
		Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Brickwork: extruded brick (generic)	0.110	0.179 [13]	1820 [11]	959 [11]			Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	40 mm cavity	0.040	0.242 #1				Non- reflective (0.9/0.9; E = 0.82)	Air gap vertical 40 mm ventilate	0.04/ 0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
4.	Pliable membrane (Vapour perm)	0.001	0.002			Class 3 – 0.1429 to 1.1403[2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder sd=1m) unlocked
5.	Insulated timber frame	0.090	2.500	12 + 9 = 21				R2.5 HP batt	2.57	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061 [13]	880	1050			Plasterb oard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		3.168										

4.4 Clay masonry veneer (CZ 8) vapour permeable

		Thickne ss (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Brickwork: extruded brick (generic)	0.110	0.179 [13]	1820 [11]	959 [11]			Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	40 mm cavity	0.040	0.242 #1				Non- reflective (0.9/0.9; E = 0.82)	Air gap vertical 40 mm ventilate	0.04/ 0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
4.	Pliable membrane (Vapour perm)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder sd=1m) unlocked
5.	Insulated timber frame	0.120	3.500	9 + 10 = 21				R1.5 + R2.0 wall batts	3.50	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061 [13]	880 [11]	1050 [11]			Plasterb oard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		4.168										

5 Wall 4 – Concrete block masonry

5.1 Concrete block masonry wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage	
3.12.1.3(d) — Concrete blockwork masonry external wall construction — Total R-Value of 0.54 						0.5% of 6 Star housing recorded on NatHERS portal Lower levels of Class 2 buildings	
CSIRO – NatHERS CZ - wall insulation CZ-20 R2.66 CZ-21 R1.79 CZ-22 R2.22 CZ-27 R2.30 CZ-60 R1.3 CZ-62 R1.48 CZ-63 R2.26 CZ-64 R1.99 CZ-66 R2.26	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 (the total R-value of typical wall construction = 0.54)	2.26	0.6 (NCC CZ4)	1.66	190 concrete block / 1 membrane / 90 R2.0 insulation/ 10 plasterboard
	6 star - permeable	CZ6, CZ7		2.26	0 (NCC CZ6, CZ7)	2.26	190 concrete block / 1 membrane / 90 R2.5 insulation/ 10 plasterboard
	6 star - permeable	CZ8	3.8 (the total R-value of typical wall construction = 0.54)	3.26	0 (NCC CZ8)	3.26	190 concrete block / 1 membrane / 120 R3.5 insulation/ 10 plasterboard
3.12.1.1 (C) (vi) in climate zones 4 and 6 (option c) - (A)incorporate insulation with an R-Value of greater than or equal to 1.0; and (B)on the lowest storey containing habitable rooms, have either (aa)a concrete slab-on-ground floor; or (bb)masonry internal walls; (ix) in climate zone 7 (option c), incorporate insulation with an R-Value of greater than or equal to 1.5; (x) in climate zone 8, achieve a minimum Total R-Value of 3.8							

5.2 Concrete block masonry (CZ 4) vapour impermeable (Note low wall R-value)

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Concrete block	0.190	0.151 [13]		880			Concrete block 190 dense (core-filled)	0.190/0.733 = 0.259	2315	800	86.7	Concrete brick unlocked
3.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	90909 to undefined	Class 1 product [12]	0.001/0.5 = 0.002	2400	1000	200000	Roof Membrane V13 unlocked
4.	Insulated timber frame	0.045	1.0	9				Bradford Gold wall batts [14]	0.045/0.045 = 2.0	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061 [13]	880 [11]	1050 [11]			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		2.40										

5.3 Concrete block masonry (CZ 6-7) vapour impermeable (note low R-value)

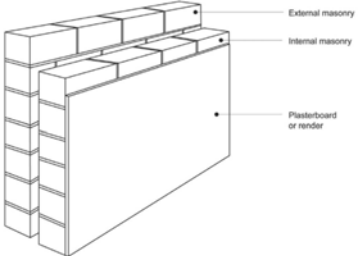
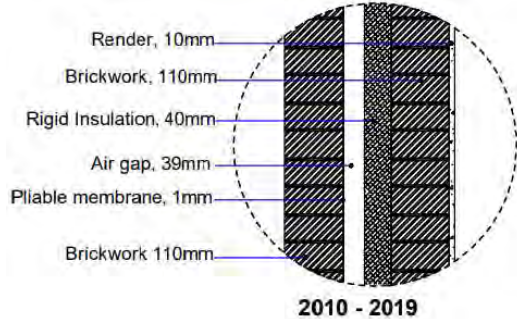
	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Concrete block	0.190	0.151 [13]		880			Concrete block 190 dense (core-filled)	0.190/0.733 = 0.259	2315	800	86.7	Concrete brick unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.000			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 173.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.070	1.50	9.0 [14]				Bradford R1.52 batt [14]	0.0675/0.045 = 1.5	9.0	880	1.2	thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061 [13]	880 [11]	1050 [11]			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		1.8958										

5.4 Concrete block masonry (CZ 8) vapour impermeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Concrete block	0.190	0.151 [13]		880			Concrete block 190 dense (core-filled)	0.190/0.733 = 0.259	2315	800	86.7	Concrete brick unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.001			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 173.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.080 + 0.040 = 0.120	3.500	9 + 10 = 21				R1.0 + R2.5 Bradford Gold wall batts [14]	0.126/0.036 = 3.50	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061 [13]	880 [11]	1050 [11]			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		3.896										

6 Wall 5 – Cavity clay masonry

6.1 Cavity clay masonry wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage		
3.12.1.3(e) Cavity clay masonry external wall construction — Total R-Value of 0.69 						0.3% of 6 Star housing recorded on NatHERS portal		
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8							
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system	
	CZ-20 R0.06 CZ-21 R1.74 CZ-22 R0.67	6 star - impermeable	CZ4	1.69 (the total R-value of typical wall construction = 0.69)	1.0	0.6 (NCC CZ4)	1.51	110 brick / 40 cavity / 1 membrane / R1.5 rigid insulation / 110 brick / 10 plasterboard
	CZ-27 CZ-60 R1.41 CZ-62 R1.61	6 star - permeable	CZ6, CZ7	1.5	0 (NCC CZ6, CZ7)	2.11	110 brick / 40 cavity / 1 membrane / R2.5 rigid insulation / 110 brick / 10 plasterboard	
	CZ-63 R1.79 CZ-64 R3.63 CZ-66 R1.26	6 star - permeable	CZ8	3.8 (the total R-value of typical wall construction = 0.69)	3.11	0 (NCC CZ8)	3.11	110 brick / 40 cavity / 1 membrane / R3.5 rigid insulation / 110 brick / 10 plasterboard
3.12.1.1 (C) (vi) in climate zones 4 and 6 (option c) - (A)incorporate insulation with an R-Value of greater than or equal to 1.0; and (B)on the lowest storey containing habitable rooms, have either (aa)a concrete slab-on-ground floor; or (bb)masonry internal walls; (ix) in climate zone 7 (option c), incorporate insulation with an R-Value of greater than or equal to 1.5; (x) in climate zone 8, achieve a minimum Total R-Value of 3.8								

6.2 Cavity clay masonry (CZ 4) vapour impermeable (Note low wall R-value)

	Layer	Thick ness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistanc e factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Brickwork:extr uded brick (generic)	0.110	0.179 [13]	1820 [11]	959 [11]			Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	50 mm cavity (Air gap 50 mm) Rigid insulation in cavity	0.040	0.204 [13]					15Air					15 Air vented
			0.0002			Class 1	200000	1 Foil	0.002	2400	1000	200000	Roof Membrane V13 unlocked
			0.517					15EPS	0.86	30	1500	50	EPS unlocked K- value from 0.0400- 0.029
			0.0002					1 Foil	0.002	2400	1000	200000	Roof Membrane V13 unlocked
			0.444					10 Air					10 Air still
5.	Brickwork:extr uded brick (generic)	0.110	0.179 [13]	1820 [11]	959				0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
7.	Render	0.010	0.009[13]						0.008	2000	850	25	
8.	Interior surface film coefficient		0.125										
9.	Total		1.716										

6.3 Cavity clay masonry (CZ 6-7) vapour permeable (Note low wall R-value)

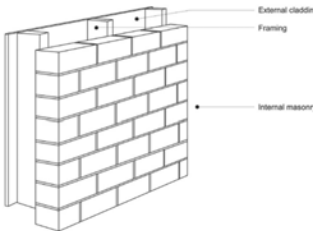
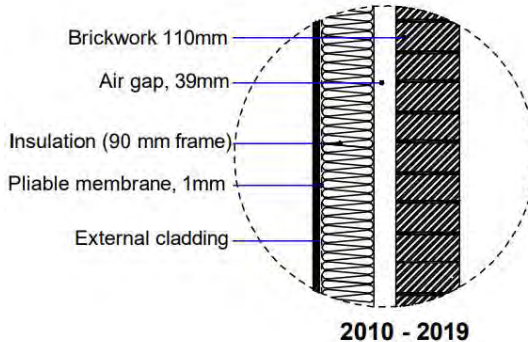
	Layer	Thick ness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistanc e factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Brickwork:extr uded brick (generic)	0.110	0.179 [13]	1820 [11]	959 [11]			Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	85 mm cavity (40 Air gap and 45 mm Rigid insulation)	0.040	0.204 [13]					15 vented air					15 Air vented
		0.045	1.552					45 EPS K 0.029	1.552	30	1500	50	EPS unlocked K- value from 0.040 to 0.029
5.	Brickwork:extr uded brick (generic)	0.110	0.179 [13]	1820 [11]	959				0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
7.	Render	0.010	0.009 [13]						0.008	2000	850	25	
8.	Interior surface film coefficient		0.125										
9.	Total		2.306										

6.4 Cavity clay masonry (CZ 8) vapour permeable

	Layer	Thick ness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeanc e µg/N.s	Water vapour diffusion resistanc e factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Brickwork:extr uded brick (generic)	0.110	0.179 [13]	1820 [11]	959 [11]			Generic extruded 110 mm	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
3.	120mm cavity (40 cavity and 80 Rigid insulation in cavity)	0.040	0.204 [13]					15 air vented					15 Air vented
		0.080	2.759					80 EPS K 0.029	2.759	30	1500	50	EPS unlocked K- value from 0.040 to 0.029
5.	Brickwork:extr uded brick (generic)	0.110	0.179	1820 [11]	959			[13]	0.11/ 0.6 = 0.183	1820	959	9.5	Solid brick, extruded unlocked
7.	Render	0.010	0.009					[13]	0.008	2000	850	25	
8.	Interior surface film coefficient		0.125										
9.	Total		3.514										

7 Wall 6 – Externally insulated clay masonry

7.1 Externally insulated clay masonry wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage	
3.12.1.3(f)Externally insulated clay masonry (reverse clay masonry veneer) external wall construction — Total R-Value of 0.53 						Not recorded on NatHERS portal	
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 (the total R-value of typical wall construction = 0.53)	2.27	0.6 (NCC CZ4)	1.67	20 timber clad / 1 membrane / R2 insulation / 40 mm air gap / 10 plasterboard
	6 star - permeable	CZ6, CZ7		2.27	0 (NCC CZ6, CZ7)	2.27	20 timber clad / 1 membrane / R2.5 insulation / 40 mm air gap / 10 plasterboard
	6 star - permeable	CZ8	3.8 (the total R-value of typical wall construction = 0.53)	3.27	0 (NCC CZ8)	3.27	20 timber clad / 1 membrane / R3.5 insulation / 40 mm air gap / 10 plasterboard

7.2 Externally insulated clay masonry (CZ 4) vapour impermeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Weatherboard (Hardwood)	0.019	0.119 [13]	677 [11]	2090 [11]			generic hardwood [11]	0.019/0.13 = 0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.002	2400	1000	200000	Class 1 - Roof Membrane V13 unlocked
4.	Insulated timber frame	0.090	2.000					Bradford Gold wall batts [14]	0.09/0.045 = 2.0	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5.	Air gap vertical 40 mm	0.040	0.133 [13]					ventilated non-reflective (0.9/0.9; E = 0.82)	0.04/0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
6.	Brickwork:extruded brick (generic)	0.110	0.179 [13]	1820 [11]	959				0.183	1650	850	9.5	Solid brick, extruded
7.	Interior surface film coefficient		0.125										
	Total		2.735										

7.3 Externally insulated clay masonry (CZ 6-7) vapour permeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588[11]										
2.	Weatherboard (Hardwood)	0.019	0.119 [13]	677 [11]	2090 [11]			generic hardwood [11]	0.019/0.13 = 0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.000			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.090	2.500					Bradford Gold wall batts [14]	0.09/0.036 = 2.0	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5.	Air gap vertical 40 mm	0.040	0.133 [13]					ventilated non-reflective (0.9/0.9; E = 0.82)	0.04/0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
6.	Brickwork: extruded brick (generic)	0.110	0.179 [13]	1820 [11]	959				0.183	1650	850	9.5	Solid brick, extruded
7.	Interior surface film coefficient		0.125										
	Total		3.171										

7.4 Externally insulated clay masonry (CZ 8) vapour permeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Weatherboard (Hardwood)	0.019	0.119 [13]	677 [11]	2090 [11]			generic hardwood [11]	0.019/0.13 = 0.146	650	1400	65	Fraunhofer hardwood unlocked
3.	Pliable membrane (Vapour permeable)	0.001	0.000			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.120	3.500					R1.5 + R2.0 wall batts [14]	0.126/0.036 = 3.5	26.2	840	1.2	Thermalin ISO glass fibre batt unlocked
5.	Air gap vertical 40 mm	0.040	0.133 [13]					ventilated non-reflective (0.9/0.9; E = 0.82)	0.04/0.23 = 0.174	1.3	1000	0.38	Air layer 40 mm
6.	Brickwork: extruded brick (generic)	0.110	0.179 [13]	1820 [11]	959				0.183	1650	850	9.5	Solid brick, extruded
7.	Interior surface film coefficient		0.125										
	Total		4.171										

8 Wall 7 – Internally insulated precast concrete

8.1 Internally insulated precast concrete wall data

Wall system - NCC		Wall system – sectional details		WUFI® – wall sectional details		Usage	
Insulated pre-cast concrete (Class 2) Performance based						0.5% of 6 Star housing recorded on NatHERS portal Lower levels of Class 2 Buildings	
CSIRO – NatHERS CZ - wall insulation CZ-20 CZ-21 R1.48 CZ-22 R2.25 CZ-27 R2.51 CZ-60 R1.47 CZ-62 R1.61 CZ-63 R4.29 CZ-64 R1.92 CZ-66 R1.91	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8	Wall = 0.43 2.8-0.43 = 2.37		2.5 batt	10 plasterboard/ 90mm frame with R2.5 batt/140 concrete
	6 star - permeable	CZ6, CZ7					
	6 star - permeable	CZ8	3.3	Wall = 0.43 3.3-0.43 = 2.87		R3.0 batt	10 plasterboard/ R3.0 batt/140 concrete
	3.12.1.1 (C) (vi) in climate zones 4 and 6 (option c) - (A)incorporate insulation with an R-Value of greater than or equal to 1.0; and (B)on the lowest storey containing habitable rooms, have either (aa)a concrete slab-on-ground floor; or (bb)masonry internal walls; (ix) in climate zone 7 (option c), incorporate insulation with an R-Value of greater than or equal to 1.5; (x) in climate zone 8, achieve a minimum Total R-Value of 3.8						

8.2 Internally insulated precast concrete (CZ 4) vapour impermeable (note low R value)

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588 [11]										
2.	Concrete	0.140	0.0966	2400	1584 (kJ/m3)		K 1.449	Concrete standard 2400kg/m3[13]	0.140/1.449 = 0.0966	2400	660	76	Concrete - unlocked - precast concrete VBA
3.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.001/0.5 = 0.002	2400	1000	200000	Roof Membrane V13 unlocked
4.	Insulated timber frame	0.045	1.000	9.0				Bradford Gold wall batts [14]	0.07/0.045 = 2.0	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		1.3434										

8.3 Internally insulated precast concrete (CZ 6-7) vapour permeable (note low R value)

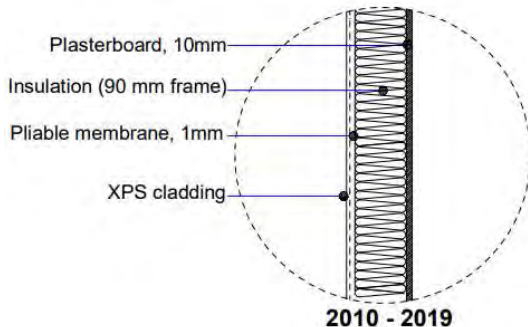
	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Concrete	0.140	0.0966	2400	1584 (kJ/m3)		K 1.449	Concrete standard 2400kg/m3[13]	0.140/1.449 = 0.0966	2400	660	76	Concrete - unlocked - precast concrete VBA
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame – R 1.5	0.070	1.5	9				Bradford R1.5 batt [14]	0.0675/0.045 = 1.5	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		1.8434										

8.4 Internally insulated precast concrete (CZ 8) vapour permeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.0588										
2.	Concrete	0.140	0.0966	2400	1584 (kJ/m3)		K 1.449	Concrete standard 2400kg/m3[13]	0.140/1.449 = 0.0966	2400	660	76	Concrete - unlocked - precast concrete VBA
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – 175.392 to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame – R 3.5	0.126	3.5	26.2				Bradford Dense batt [14]	0.126/0.036 = 3.5	26.2	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.01/0.163 = 0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
	Total		3.8434										

9 Wall 8 – Extruded polystyrene cladding (XPS)

9.1 Extruded polystyrene cladding wall data

Wall system - NCC		Wall system – sectional details			WUFI® – wall sectional details		Usage
XPS clad wall Performance based solution 							Not recorded on NatHERS portal but in common use.
CSIRO – NatHERS CZ - wall insulation CZ-20 R4.90 CZ-21 R4.40 CZ-22 R4.24 CZ-27 R4.21 CZ-60 R4.25 CZ-62 R4.34 CZ-63 R4.23 CZ-64 R4.24 CZ-66 R4.23	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 Wall = 1.46 2.8 - 1.46 = 1.34	1.34	0.6	0.74	10 pb/ R1.0 batt, foil membrane/ 50 XPS
	6 star - permeable	CZ6, CZ7		1.34	0	1.34	10 pb/ R1.5 batt, VP membrane/ 50 XPS
	6 star - permeable	CZ8	3.8	1.84	0	1.84	10 pb/ R2.0 batt, VP membrane/ 50 XPS

9.2 Extruded polystyrene cladding (CZ 4) vapour impermeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance $\mu\text{g/N.s}$	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		$\text{g/m}^2\text{d } 15 < V2 \leq 150$		K 0.67 Atlas acrylic [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked
3.	XPS clad K.041	0.050	1.219	19				unitex	1.219	19	1500	125	XPS clad
4.	Pliable membrane (Vapour impermeable)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.001/0.5 = 0.002	2400	1000	200000	Class 1 - Roof Membrane V13 unlocked
5.	Insulated timber frame	0.045	1.000	9.0				wall batts [14]	1.0	9.0	880	1.2	Thermalin ISO glass fibre
6.	Still air space unventilated reflective	0.045	0.280					(0.4/0.9; E = 0.38)	0.195	1.3	1000	0.38	40mm air layer K0.23
7.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
8.	Interior surface film coefficient		0.125										
	Total		2.747										

9.3 Extruded polystyrene cladding (CZ 6-7) vapour permeable

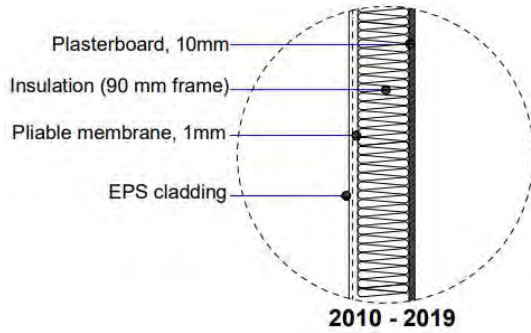
	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		g/m2d 15 < V2 ≤ 150		K 0.67 Atlas acrylic [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked
3.	XPS clad K.041	0.050	1.219	19				unitex	1.219	19	1500	125	XPS clad
4.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001/ 0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
5.	Insulated timber frame	0.045	1.000	9.0				wall batts [14]	1.0	9.0	880	1.2	Thermalin ISO glass fibre
6.	Still air space unventilated reflective	0.045	0.280					(0.4/0.9; E = 0.38)	0.195	1.3	1000	0.38	40mm air layer K0.23
7.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
8.	Interior surface film coefficient		0.125										
	Total		2.748										

9.4 Extruded polystyrene cladding (CZ 8) vapour permeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance $\mu\text{g/N.s}$	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		$\text{g/m}^2\text{d } 15 < V2 \leq 150$		K 0.67 Atlas acrylic [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked
3.	XPS clad K.041	0.050	1.219	19				unitex	1.219	19	1500	125	XPS clad
4.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
5.	Insulated timber frame	0.090	2.500	9.0				Bradford wall High Density batts [14]	0.090/0.036 = 2.50	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		3.969										

10 Expanded polystyrene cladding (EPS)

10.1 Expanded polystyrene cladding wall data

Wall system - NCC	Wall system – sectional details			WUFI® – wall sectional details			Usage
EPS clad wall Performance based wall system 							Not recorded on NatHERS portal but in common use
CSIRO – NatHERS CZ - wall insulation CZ-20 R4.90 CZ-21 R4.40 CZ-22 R4.24 CZ-27 R4.21 CZ-60 R4.25 CZ-62 R4.34 CZ-63 R4.23 CZ-64 R4.24 CZ-66 R4.23	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 Wall = 1.46 2.8 - 1.46 = 1.34	1.34	0.6	0.74	10 pb/ R1.0 batt, foil membrane/ 50 XPS
	6 star - permeable	CZ6, CZ7		1.34	0	1.34	10 pb/ R1.5 batt, VP membrane/ 50 XPS
	6 star - permeable	CZ8	3.8	1.84	0	1.84	10 pb/ R2.0 batt, VP membrane/ 50 XPS

10.2 Expanded polystyrene cladding (CZ 4) vapour impermeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		g/m2d 15 < V2 ≤ 150		K 0.67 Atlas [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked
3.	EPS clad K0.0385	0.050	1.299	20			520 ug/m2s- AS2498.5	Masterwall	1.299	19	1500	125	Polystyrene, exp unlocked 50mm
4.	Pliable membrane (Vapour imp)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.001/ 0.5 = 0.002	2400	1000	200000	Roof Memb. V13 unlocked
5.	Insulated timber frame	0.045	1.000	9.0				wall batts [14]	1.0	9.0	880	1.2	Thermalin ISO glass fibre
6.	Still air space unventilated reflective	0.045	0.280					(0.4/0.9; E = 0.38)	0.195	1.3	1000	0.38	40mm air layer K0.23
7.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
8.	Interior surface film coefficient		0.125										
	Total		2.828										

10.3 Expanded polystyrene cladding (CZ 6-7) vapour permeable

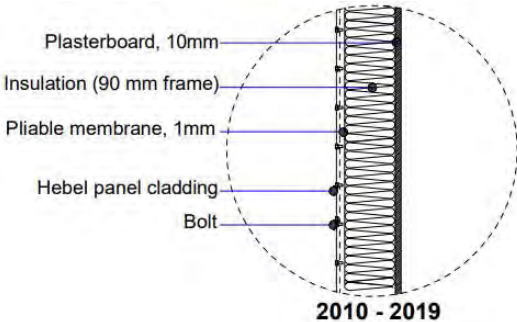
	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		g/m2d 15 < V2 ≤ 150		K 0.67 Atlas acrylic [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked VBA
3.	EPS clad K0.0385	0.050	1.299	20			520 ug/m2s- AS2498.5	Masterwall	1.299	19	1500	125	Polystyrene, exp unlocked VBA 50mm
4.	Pliable membrane (Vapour perm)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001/ 0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m)
5.	Insulated timber frame	0.045	1.000	9.0				wall batts [14]	1.0	9.0	880	1.2	Thermalin ISO glass fibre
6.	Still air space unventilated	0.045	0.280					(0.4/0.9; E = 0.38)	0.195	1.3	1000	0.38	40mm air layer K0.23
7.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
8.	Interior surface film coefficient		0.125										
	Total		2.828										

10.4 Expanded polystyrene cladding (CZ 8) vapour permeable

	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance $\mu\text{g/N.s}$	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.058										
2.	Acrylic Render K0.67	0.002	0.003	1900		$\text{g/m}^2\text{d } 15 < V2 \leq 150$		K 0.67 Atlas acrylic [17]	0.003	1900	840	67.3	Acrylic Stucco unlocked
3.	EPS clad K0.0385	0.050	1.299	20			520 $\mu\text{g/m}^2\text{s}$ - AS2498.5	Masterwall	1.299	19	1500	125	Polystyrene, exp unlocked VBA 50mm
4.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001/0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m) unlocked
5.	Insulated timber frame	0.090	2.500	9.0				Bradford wall High Density batts [14]	0.090/0.036 = 2.50	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
6.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
7.	Interior surface film coefficient		0.125										
	Total		4.049										

11 Wall 10 – Autoclaved aerated concrete (AAC) cladding

11.1 Autoclaved aerated concrete (AAC) cladding wall data

Wall system - NCC	Wall system – sectional details			WUFI® – wall sectional details		Usage	
Autoclaved aerated concrete - AAC and timber framing Performance based solution 						5.7% of 6 Star housing recorded on NatHERS portal	
CSIRO – NatHERS CZ - wall insulation CZ-20 R1.88 CZ-21 R2.47 CZ-22 R2.35 CZ-27 R2.38 CZ-60 R2.24 CZ-62 R2.29 CZ-63 R3.00 CZ-64 R2.21 CZ-66 R2.37	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8	2.22	0.6	1.62	10 pb/ R1.5 batt/still air/foil/vented air/50 AAC
	6 star - permeable	CZ6, CZ7	Wall system (0.059 + 0.009 + 0.387 + 0.125 = 0.58)	2.22		2.22	10 pb/ R2.0 batt/perm membrane/vented air/50 AAC
	6 star - permeable	CZ8	3.8	3.22		3.22	10 pb/ R3.0 batt/perm membrane/vented air/50 AAC

11.2 Autoclaved aerated concrete (AAC) cladding (CZ 4) vapour impermeable

	Layer	Thick (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Water vapour diffusion resistanc e factor	Material selected
1.	Exterior surface film coefficient		0.059										
2	Skim Render Acrylic	0.006	0.009	1900		g/m2d 15 < V2 ≤ 150		Atlas acrylic render [17]	0.009	1900	840	67.3	Acrylic Stucco - unlocked
2.	AAC panel	0.050	0.387 6	510	1104			AAC Hebel K 0.029 [18]	0.385	510	850	8	AAC unlocked
3	Vented air space reflective	0.024	0.236 [4]					(0.4/0.9; E = 0.38)	0.154	1.3	1000	0.51	25mm air layer (K 0.155)
4.	Vap Imp Pliable membrane	0.001	0.002			0.0000 to 0.0022 [2]	90909 to undefined	Class 1 product [12]	0.002	2400	1000	200000	Roof Memb. V13 unlocked
4.	Insulated timber frame	0.067	1.50	9				wall batts [14]	1.500	9.0	880	1.2	Thermalin glass fibre batt
	Still air space Reflective	0.020	0.596	K – 0.033				(0.05/0.9; E = 0.05) [4]	0.192				20mm air layer K 0.33
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gyp Bd (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.967										

11.3 Autoclaved aerated concrete (AAC) cladding (CZ 6-7) vapour permeable

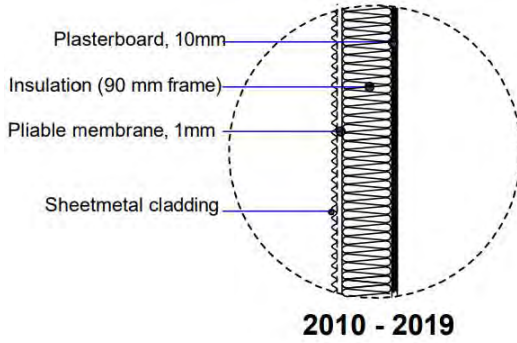
	Layer	Thick (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance μg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Water vapour diffusion resistanc e factor	Material selected
1.	Exterior surface film coefficient		0.059										
2	Skim Render Acrylic	0.006	0.009	1900		g/m2d 15 < V2 ≤ 150		Atlas acrylic render [17]	0.009	1900	840	67.3	Acrylic Stucco unlocked
2.	AAC panel	0.050	0.387	510	1104			AAC Hebel K 0.029 [18]	0.384 9	510	850	8	AAC unlocked
3	Vented air space reflective	0.024	0.236 [4]					(0.4/0.9; E = 0.38)	0.154	1.3	1000	0.51	25mm air layer (K 0.155)
4.	Pliable membrane (Vapour perm)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m)
4.	Insulated timber frame	0.090	2.000	9				Bradford Gold wall batts [14]	2.0	9.0	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gyp Bd (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.879										

11.4 Autoclaved aerated concrete (AAC) cladding (CZ 8) vapour permeable

	Layer	Thick (m)	NatHERS or Manufacturer						Wufi				
			R- value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance μg/N.s	Water vapour diffusion resistance factor	Material selected	R- value (K/W)	Bulk density (kg/m³)	Specific heat capacit y (J/kg.K)	Water vapour diffusion resistanc e factor	Material selected
1.	Exterior surface film coefficient		0.059										
2	Skim Render Acrylic	0.006	0.009	1900		g/m²d 15 < V2 ≤ 150		Atlas acrylic render [17]	0.009	1900	840	67.3	Acrylic Stucco unlocked
2.	AAC panel	0.050[11]	0.387	510	1104			AAC Hebel K 0.029 [18]	0.384 9	510	850	8	AAC unlocked
3	Vented air space reflective	0.024	0.236 [4]					(0.4/0.9; E = 0.38)	0.154	1.3	1000	0.51	25mm air layer (K 0.155)
4.	Pliable membrane (Vapour perm)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Vapour retarder (sd=1m)
4.	Insulated timber frame	0.090	3.000	26				Bradford dense wall batts [14]	0.110 /0.03 6 = 3.0	26	880	1.2	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard [11]	0.061	880	1050	6	Gyp Bd (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		3.879										

12 Wall 11 – Sheet-metal cladding

12.1 Sheet-metal cladding wall data

Wall system - NCC		Wall system – sectional details			WUFI® – wall sectional details		Usage	
Sheet metal clad Performance based solution 							1.9% of 6 Star housing recorded on NatHERS portal	
CSIRO – NatHERS CZ - wall insulation	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8							
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system	
	6 star - impermeable	CZ4	2.8	2.555	0.600	1.955	10 pb/ R2.0 batt/foil/1 sheet-metal	
	6 star - permeable	CZ6, CZ7	Wall system (0.059 + 0.000 + 0.061+ 0.125 = 0.245)	2.555		2.555	10 pb/ R2.5 batt/permeable membrane/1 sheet-metal	
	6 star - permeable	CZ8	3.8	3.555		3.555	10 pb/ R3.5 batt/permeable membrane/1 sheet-metal	
	CZ-20 R2.50							
CZ-21 R2.58								
CZ-22 R2.47								
CZ-27 R2.55								
CZ-60 R2.53								
CZ-62 R2.46								
CZ-63 R2.11								
CZ-64 R2.50								
CZ-66 R2.50								

12.2 Sheet-metal cladding (CZ 4) vapour impermeable (note low R-Value due to ineffective reflective space)

SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Sheet metal clad	0.0012	0.000	7830	500			Mild steel [11]					
4.	Pliable membrane (Vapour imp)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.002	2400	1000	200000	Roof Memb. V13 unlocked
4.	Insulated timber frame	0.090	2.000	10				Bradford Gold wall batts [14]	2.00	10	840	1	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.247										

12.3 Sheet-metal cladding (CZ 6-7) vapour permeable

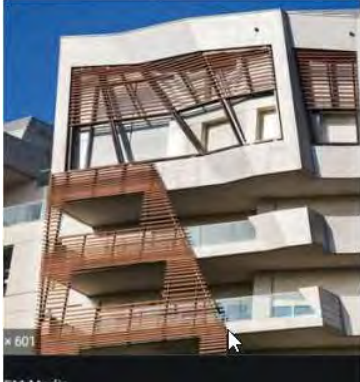
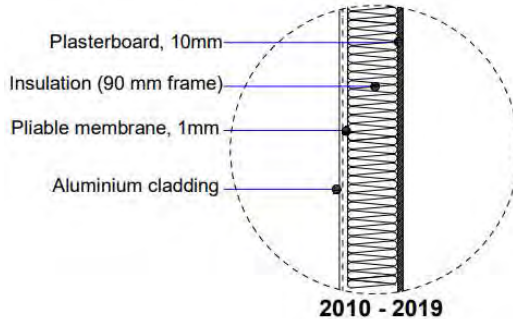
SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Sheet metal clad	0.0012	0.000	7830	500 [11]			Mild steel [11]					
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 / 0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.090	2.500	21				R 2.5 Bradford Gold wall batts [14]	0.09/ 0.035 = 2.571	21	840	1	ISOVER GW Integra ZKF - 035
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.747										

12.4 Sheet-metal cladding (CZ 8) vapour permeable

SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Sheet metal clad	0.0012	0.000	7830	500 [11]			Mild steel [11]					
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 / 0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.075 + 0.090 = 0.165	3.500	9 + 10 = 21				R 1.5 + R 2.0 Bradford Gold wall batts [14]	3.500	21	840	1	ISOVER GW Integra ZKF - 035
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		3.747										

13 Wall 12 – Flat sheet aluminium cladding

13.1 Flat sheet aluminium cladding wall data

Wall system - NCC		Wall system – sectional details			WUFI® – wall sectional details		Usage
Aluminium clad Performance based solution 							0.1% of 6 Star housing recorded on NatHERS portal
CSIRO – NatHERS CZ - wall insulation CZ-20 CZ-21 R2.14 CZ-22 CZ-27 CZ-60 R2.50 CZ-62 R1.65 CZ-63 R2.50 CZ-64 R2.50 CZ-66 R2.00	NCC – wall insulation details – NCC CZ4, CZ6, CZ7, CZ8						
	Star rating	NCC CZ	Minimum R-value	Minimum added R-value of insulation	Reflective insulation	Required insulation	Wall system
	6 star - impermeable	CZ4	2.8 Wall system (0.059 + 0.006 + 0.061+ 0.125 = 0.251)	2.549	0.6	1.949	10 pb/ R2.0 batt/foil/1 sheet-metal
	6 star - permeable	CZ6, CZ7		2.549		2.549	10 pb/ R2.5 batt/permeable membrane/1 sheet-metal
	6 star - permeable	CZ8	3.8	3.549		3.549	10 pb/ R3.5 batt/permeable membrane/1 sheet-metal

13.2 Flat sheet aluminium cladding (CZ 4) vapour impermeable (Note low R-value due to ineffective reflective air space)

SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Aluminium clad	0.0012	0.005 [11]	2680 [11]	880 [11]			0.006 to 0.040 [16]					
4.	Pliable membrane (Vapour imp)	0.001	0.002			Class 1 – 0.0000 to 0.0022 [2]	Class 1 – 90909 to undefined	Class 1 product [12]	0.002	2400	1000	200000	Roof Memb. V13 unlocked
4.	Insulated timber frame	0.090	2.000	10				Bradford Gold wall batts [14]	2.00	10	840	1	Thermalin ISO glass fibre batt unlocked
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.252										

13.3 Flat sheet aluminium cladding (CZ 6-7) vapour permeable

SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Aluminium clad	0.0012 [11]	0.005 [11]	2680 [11]	880 [11]			0.006 to 0.040 [16]					
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.090	2.500	21				R 2.5 Bradford Gold wall batts [14]	0.09/ 0.035 = 2.571	21	840	1	ISOVER GW Integra ZKF - 035
5.	Paper faced plasterboard	0.010	0.061[11]	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		2.752										

13.4 Flat sheet aluminium cladding (CZ 8) vapour permeable

SN	Layer	Thickness (m)	NatHERS or Manufacturer						Wufi				
			R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Vapour permeance µg/N.s	Water vapour diffusion resistance factor	Material selected	R-value (K/W)	Bulk density (kg/m³)	Specific heat capacity (J/kg.K)	Water vapour diffusion resistance factor	Material selected
1.	Exterior surface film coefficient		0.059										
2.	Aluminium clad	0.0012 [11]	0.005 [11]	2680 [11]	880 [11]			0.006 to 0.040 [16]					
3.	Pliable membrane (Vapour permeable)	0.001	0.002			Class 3 – 0.1429 to 1.1403 [2]	Class 3 – to 1399.580	Class 3 product [12]	0.001 /0.5 = 0.002	130	2300	1399	Class 3 - Vapour retarder (sd=1m) unlocked
4.	Insulated timber frame	0.075 + 0.090 = 0.165	3.500	9 + 10 = 21				R 1.5 + R 2.0 Bradford Gold wall batts [14]	3.500	21	840	1	ISOVER GW Integra ZKF - 035
5.	Paper faced plasterboard	0.010	0.061	880	1050			Plasterboard (Gypsum board) [11]	0.061	880	1050	6	Gypsum Board (USA) unlocked
6.	Interior surface film coefficient		0.125										
7.	Total		3.752										

14 References

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Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 2: Hygrothermal simulation results- timber cladding Revision 01 (10/03/2023)

1. Climate zone 21

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth - Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

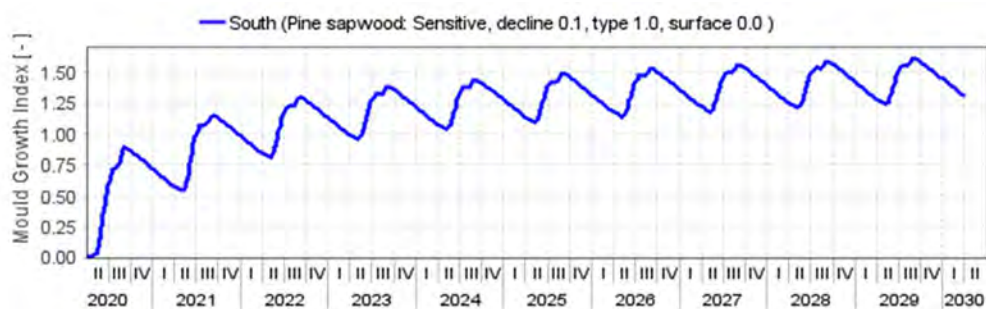


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth - Nil

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

2. Climate zone 22

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth - Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

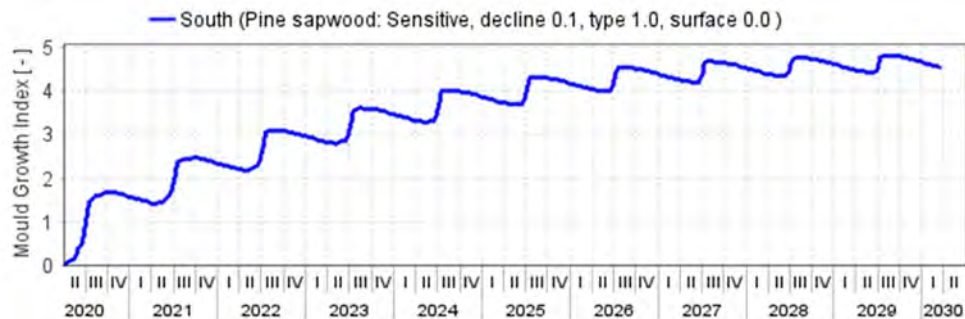


Figure 2: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall type requires further investigation.

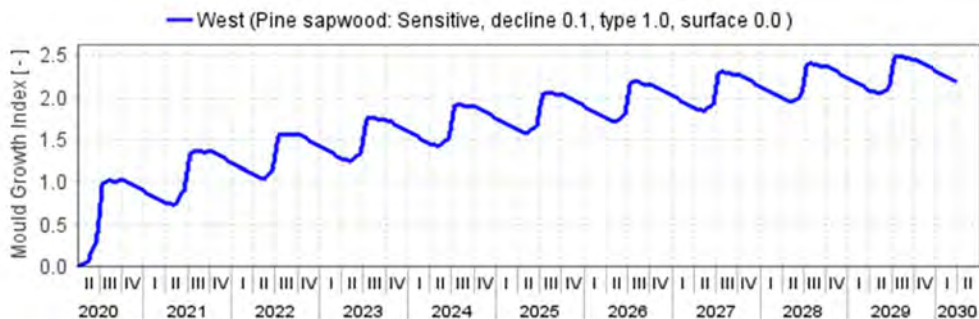


Figure 3: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the sixth year. This wall type requires further investigation.

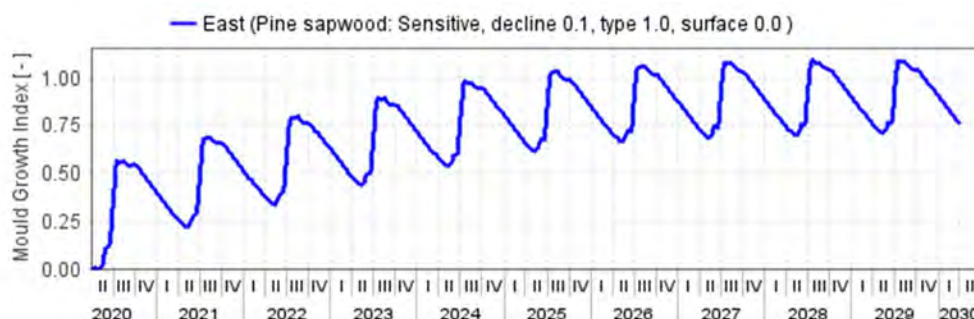


Figure 4: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth - Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

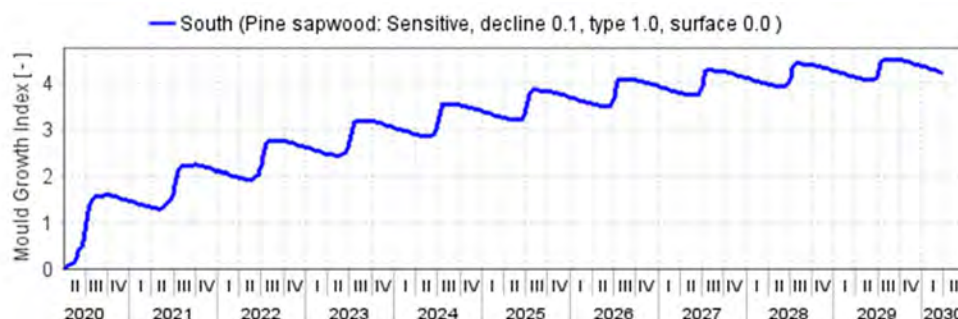


Figure 5: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

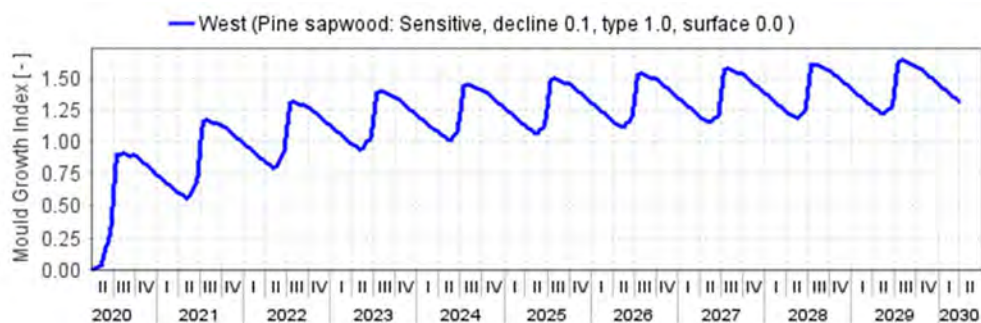


Figure 6: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

3. Climate zone 27

NCC CZ 4

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall type requires further investigation.

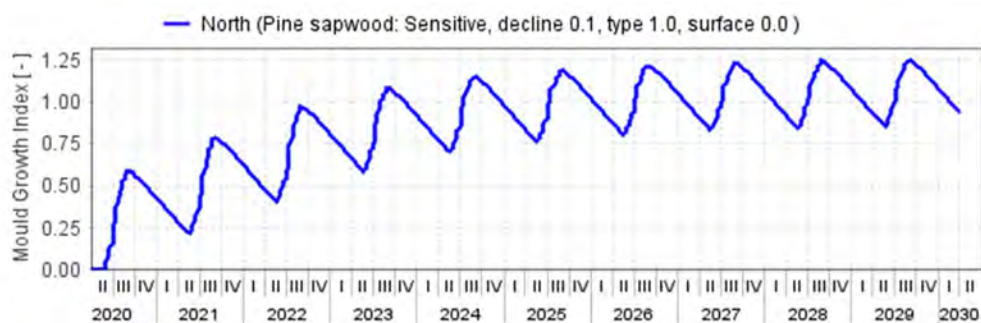


Figure 7: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

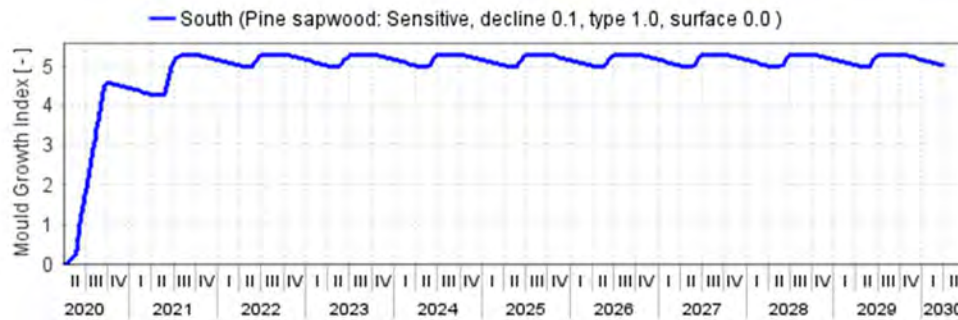


Figure 8: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

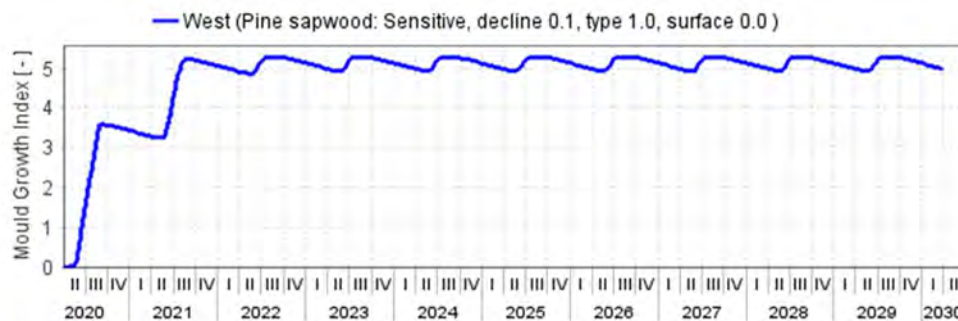


Figure 9: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

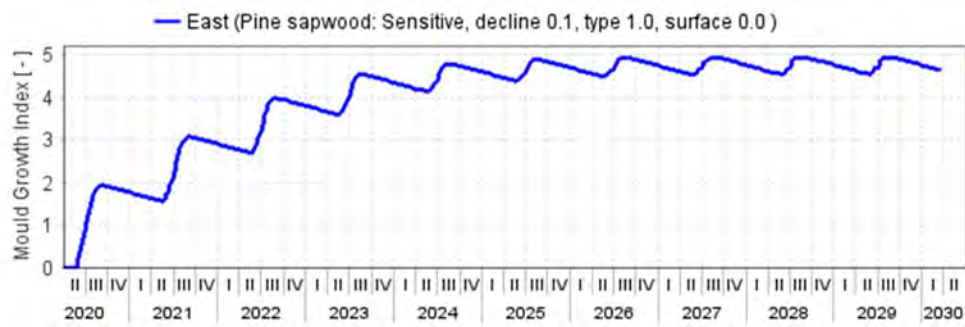


Figure 10: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall type requires further investigation.

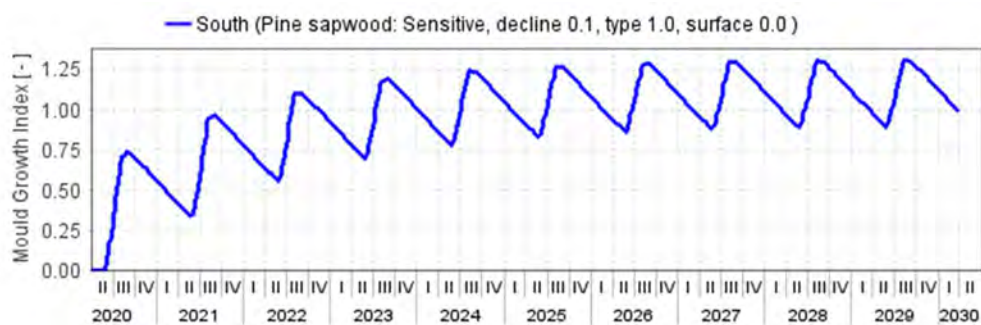


Figure 11: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

4. Climate zone 60

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 by the fifth year.

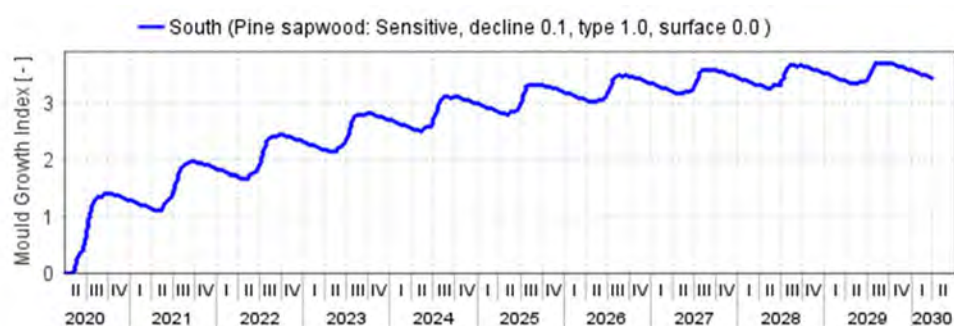


Figure 12: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

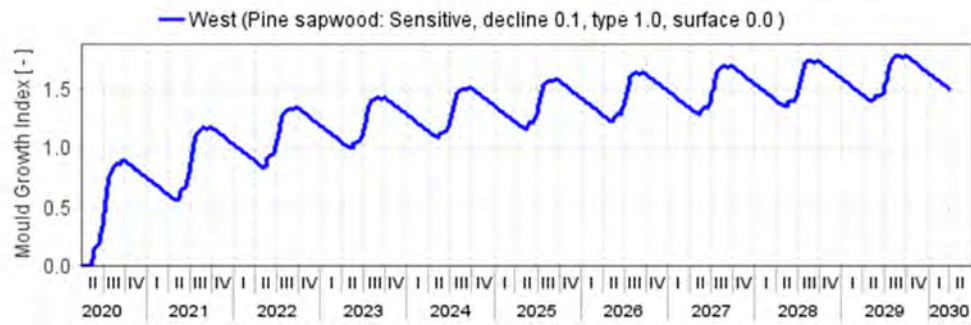


Figure 13: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the seventh year. This wall type requires further investigation.

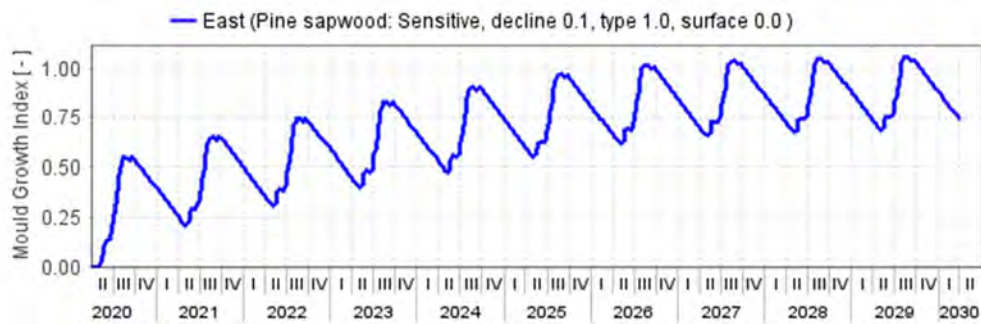


Figure 14: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

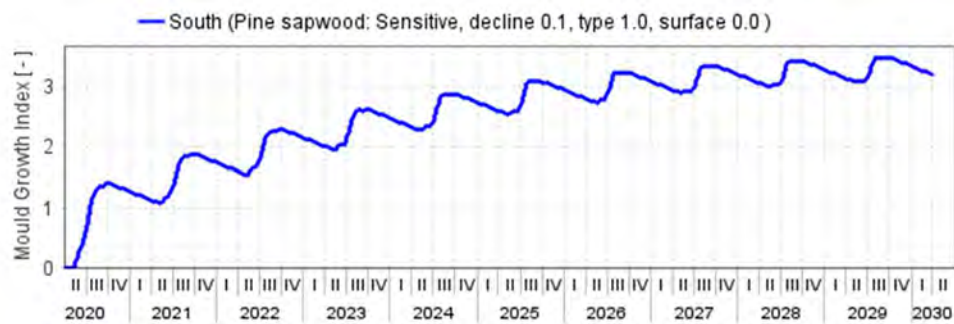


Figure 15: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

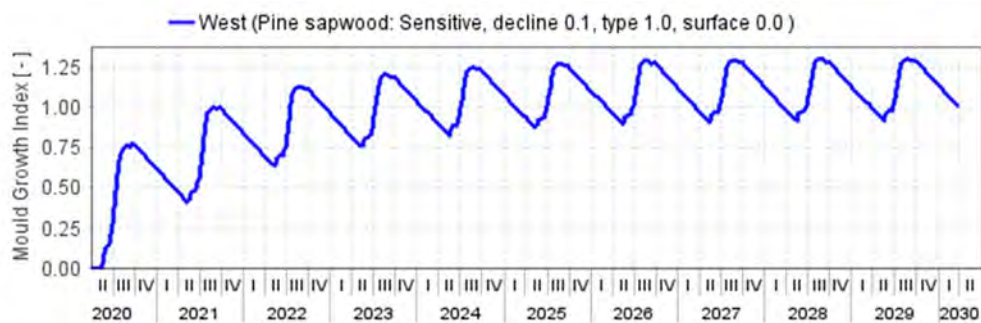


Figure 16: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

5. Climate zone 61

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

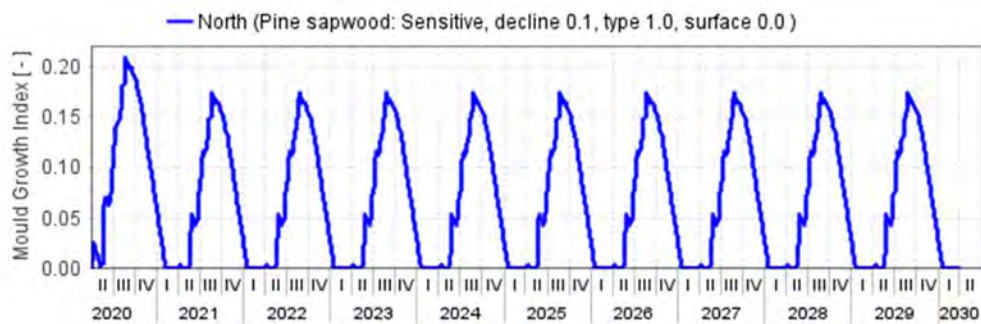


Figure 17: NatHERS CZ 61/ NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

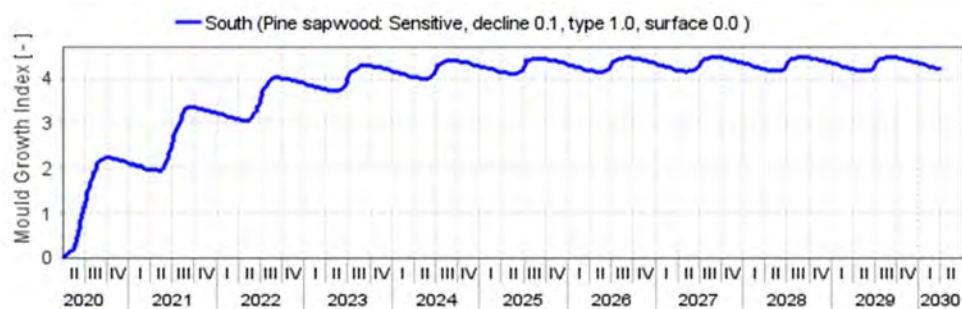


Figure 18: NatHERS CZ 61/ NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

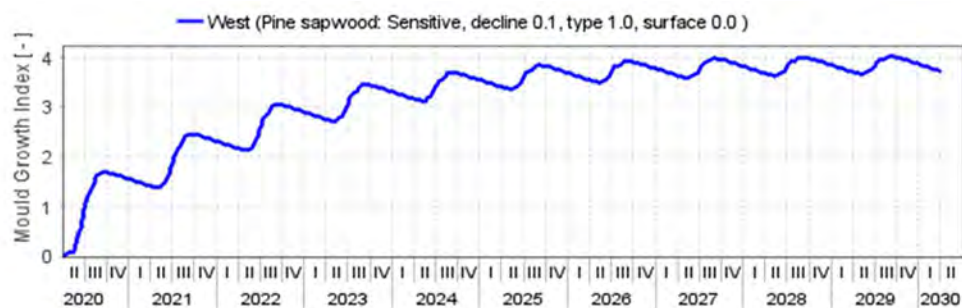


Figure 19: NatHERS CZ 61/ NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall type requires further investigation.

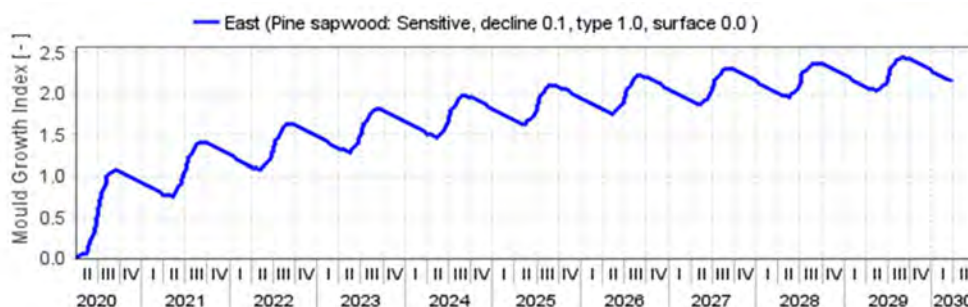


Figure 20: NatHERS CZ 61/ NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

6. Climate zone 63

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

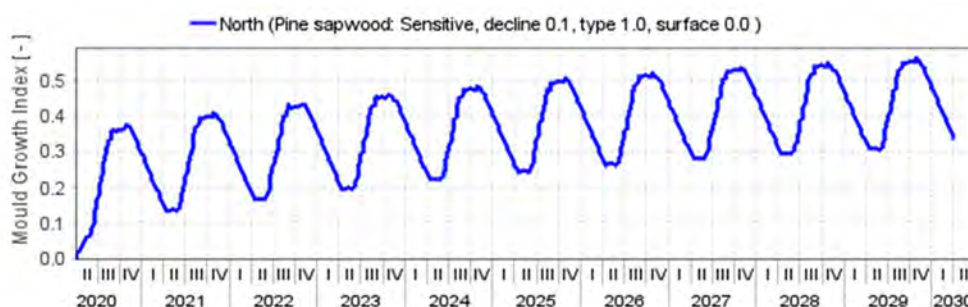


Figure 21: NatHERS CZ 63/ NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

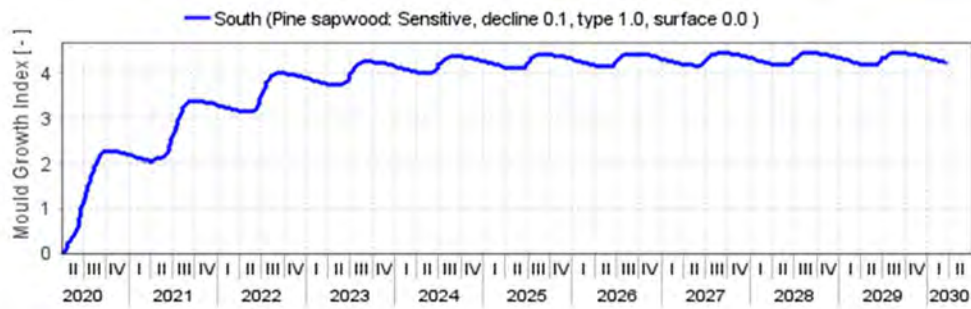


Figure 22: NatHERS CZ 63/ NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

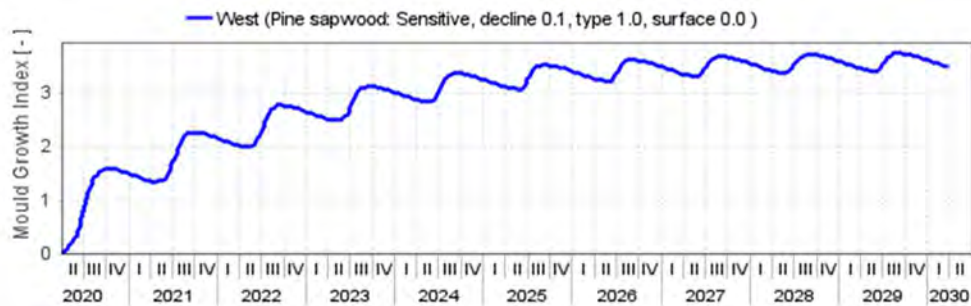


Figure 23: NatHERS CZ 63/ NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall type requires further investigation.

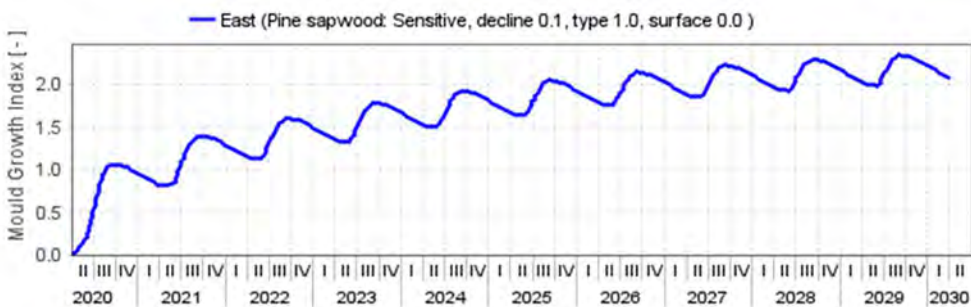


Figure 24: NatHERS CZ 63/ NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

7. Climate zone 64

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

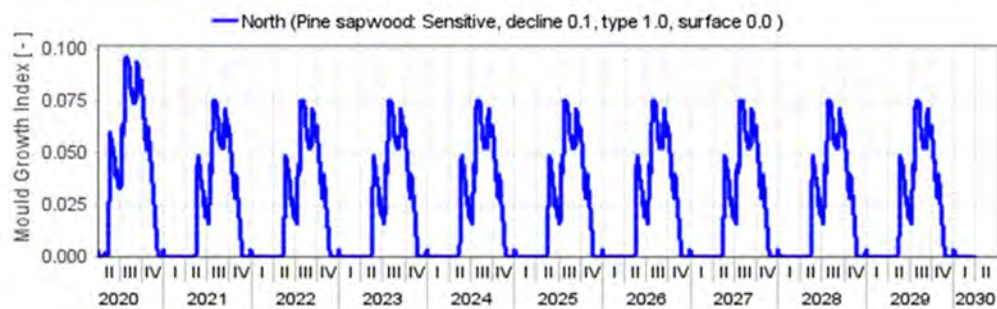


Figure 25: NatHERS CZ 64/ NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall type requires further investigation.

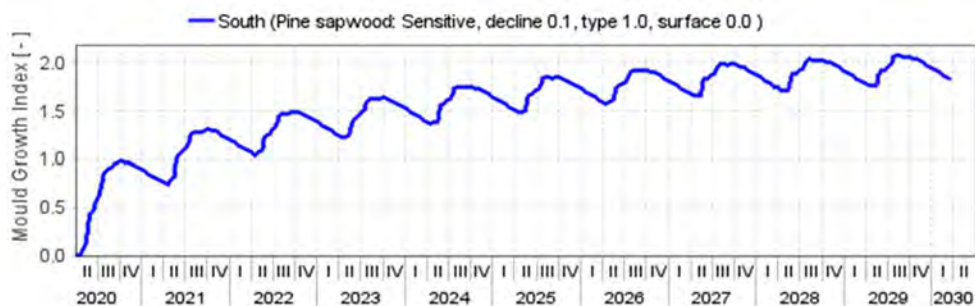


Figure 26: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall type requires further investigation.

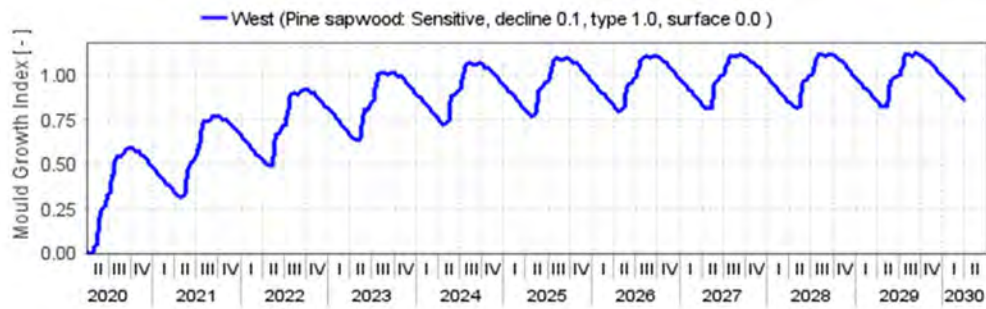


Figure 27: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

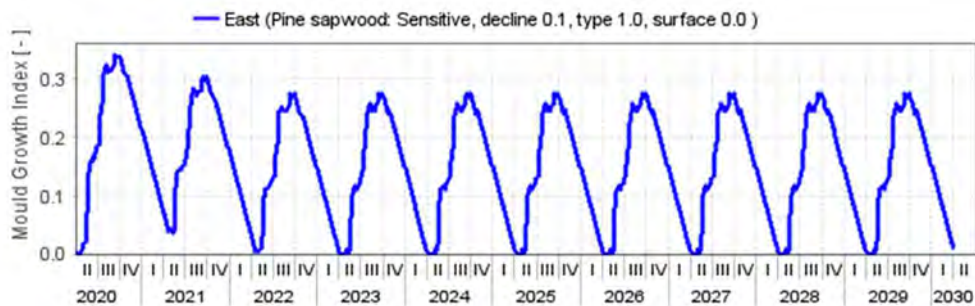


Figure 28: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

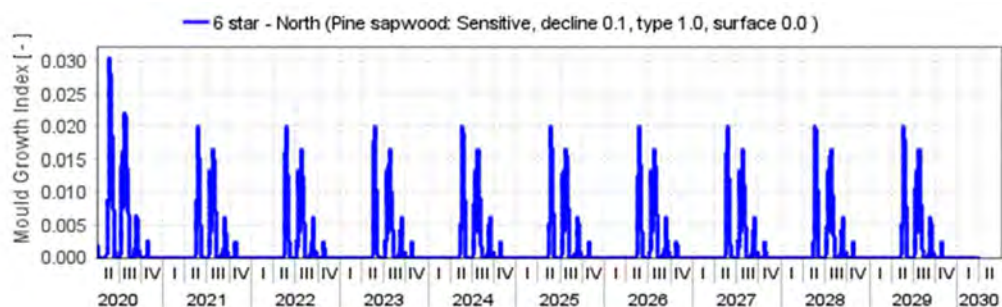


Figure 29: NatHERS CZ 64/ NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

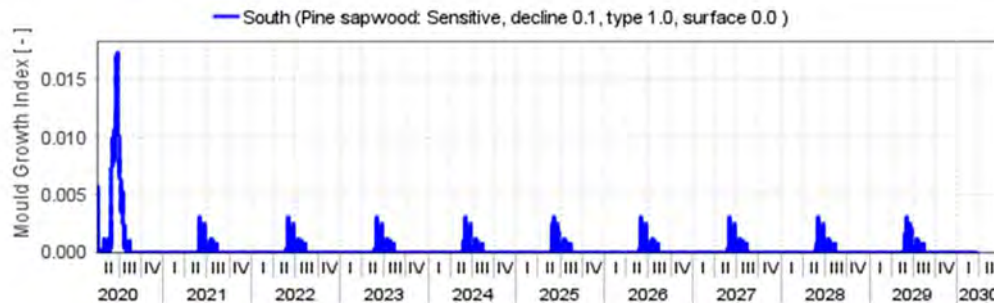


Figure 30: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

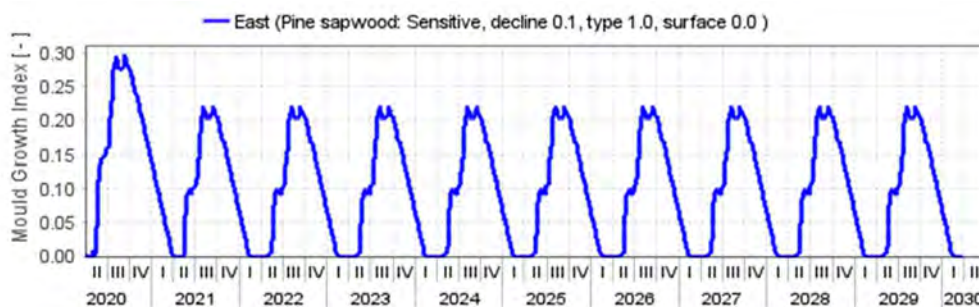


Figure 31: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

8. Climate zone 66

NCC CZ 4

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

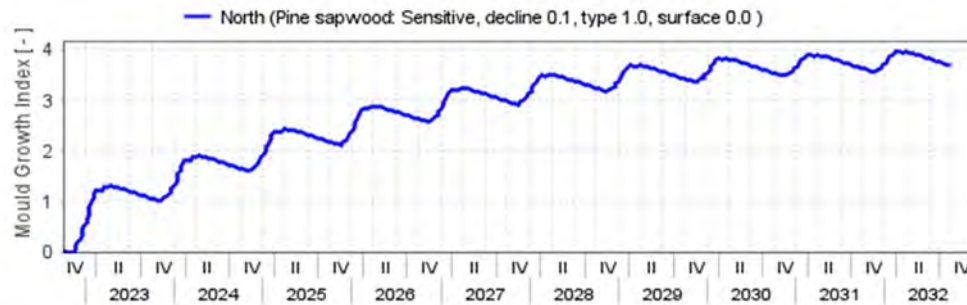


Figure 32: NatHERS CZ 66/ NCC CZ 4 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

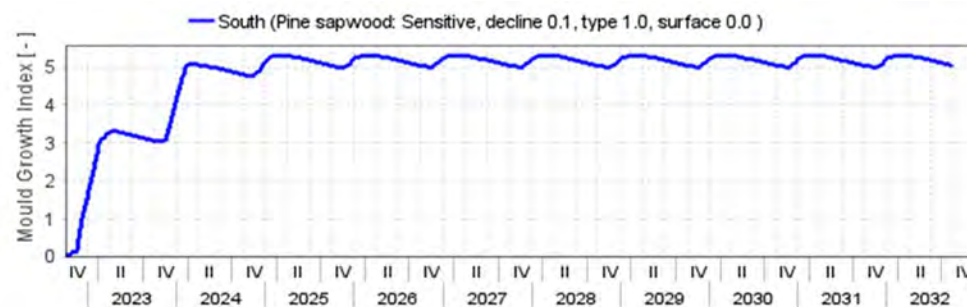


Figure 33: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

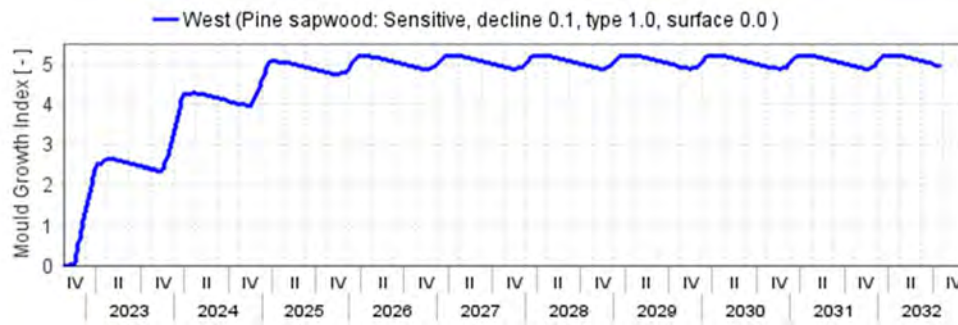


Figure 34: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

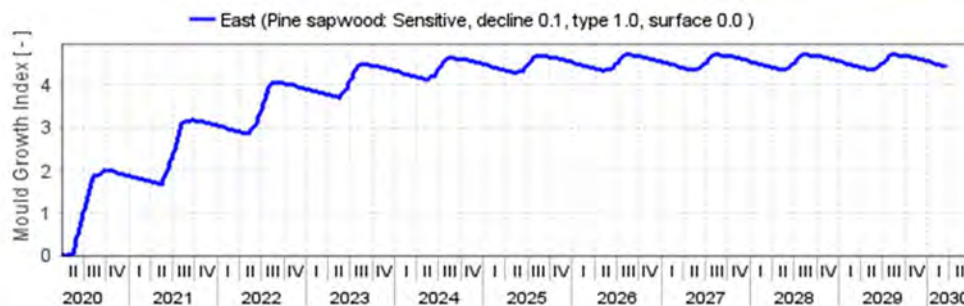


Figure 35: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame

NCC CZ 6-7

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

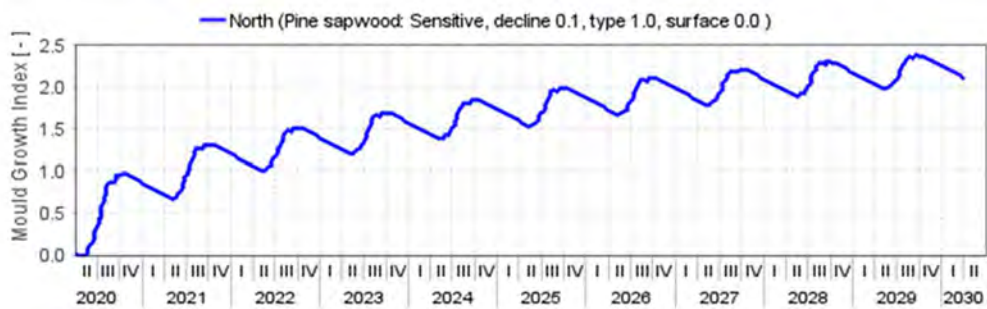


Figure 36: NatHERS CZ 66/ NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

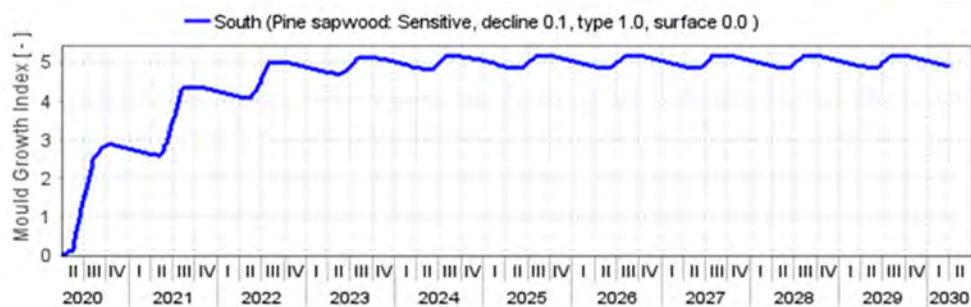


Figure 37: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

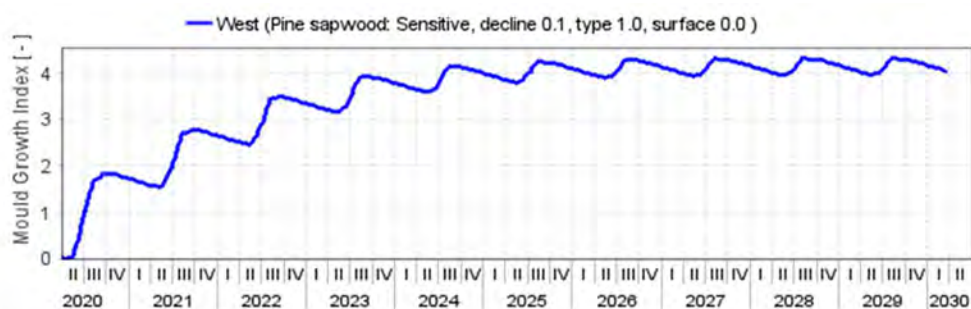


Figure 38: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

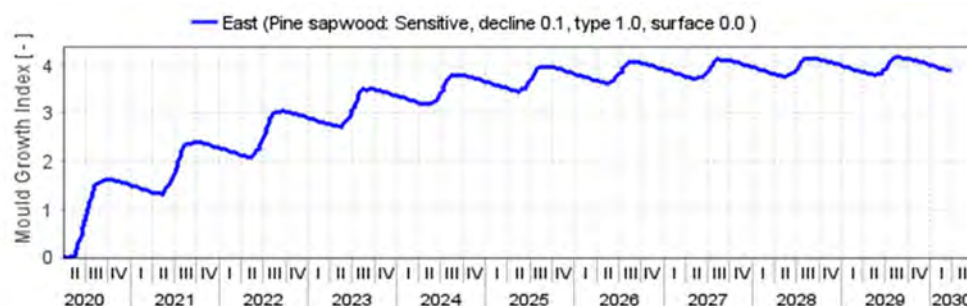


Figure 39: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

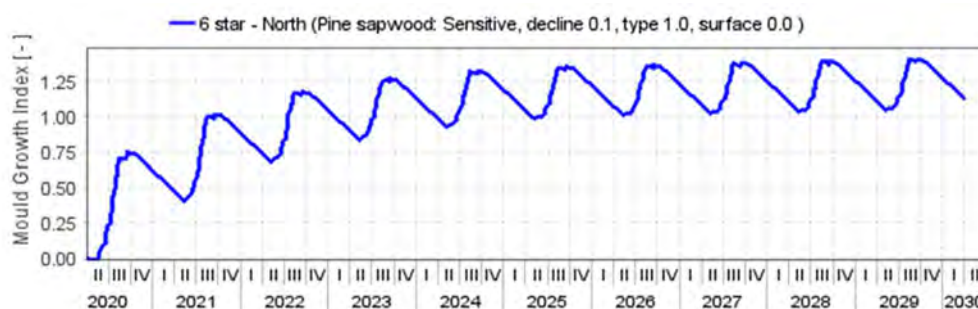


Figure 40: NatHERS CZ 66/ NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

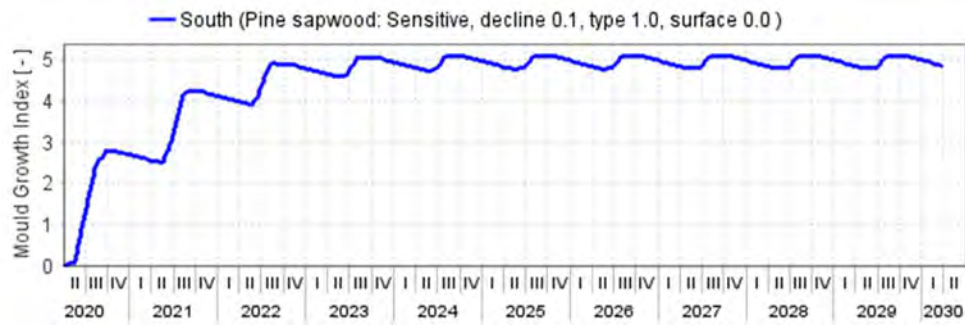


Figure 41: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

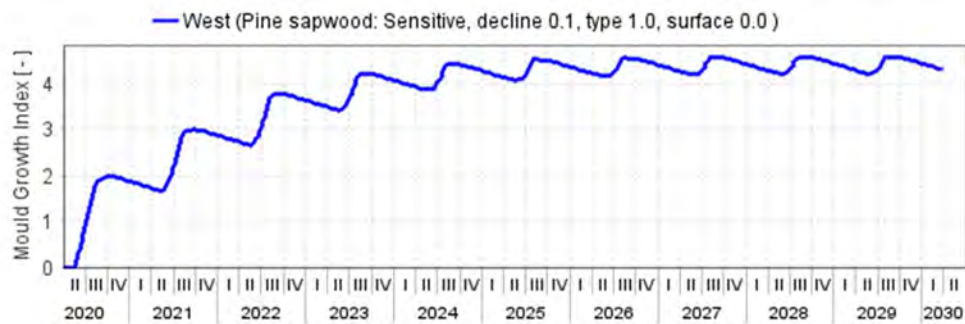


Figure 42: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

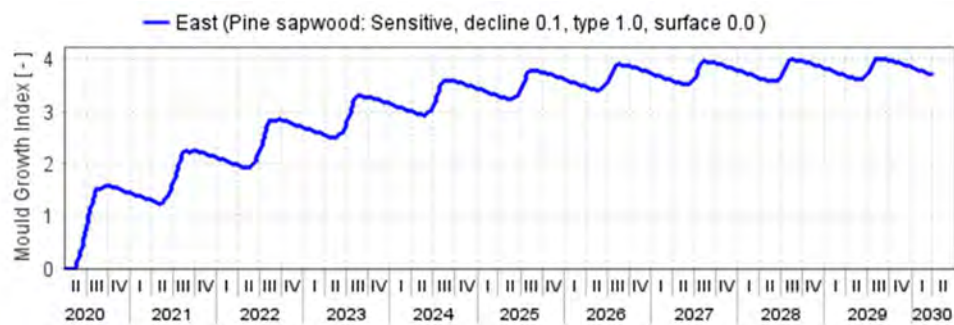


Figure 43: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 3: Hygrothermal simulation results- compressed fibre cement sheet Cladding Revision 2 (10/03/2023)

1. Climate zone 21

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

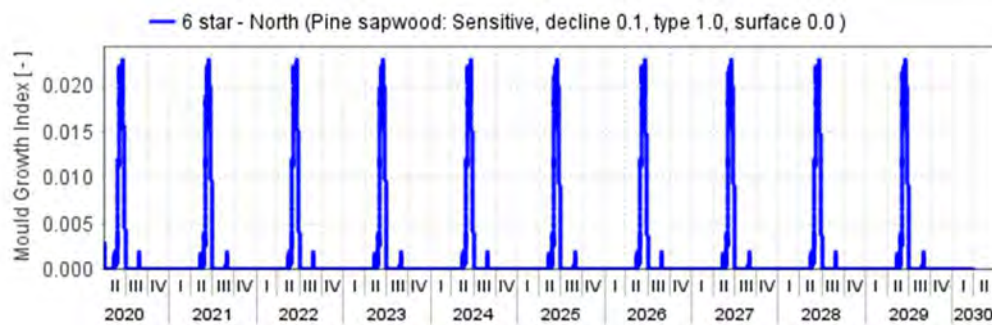


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall system requires further investigation.

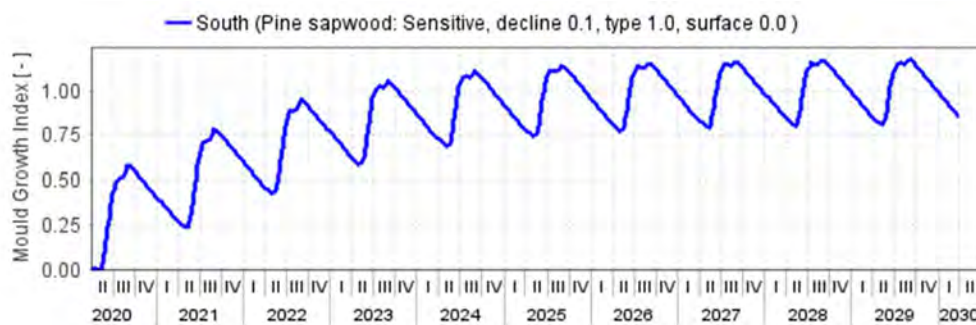


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

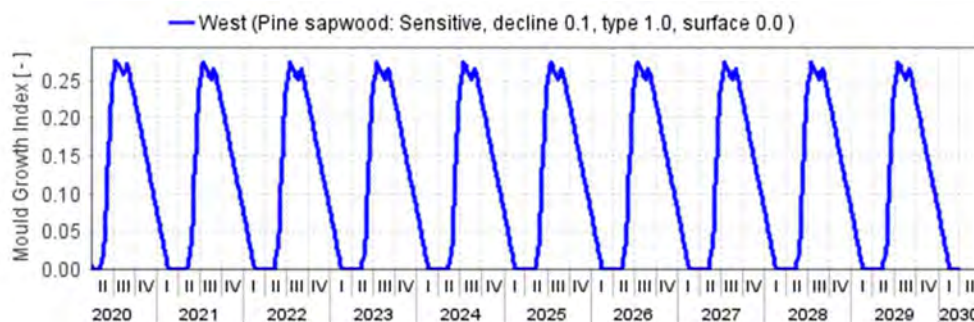


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

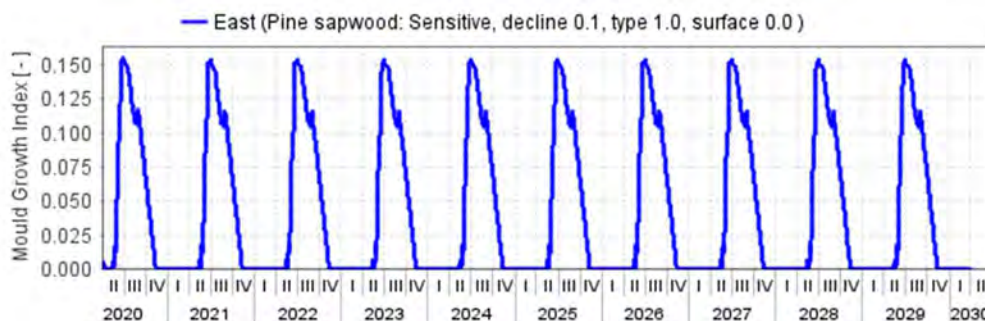


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

2. Climate zone 22

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

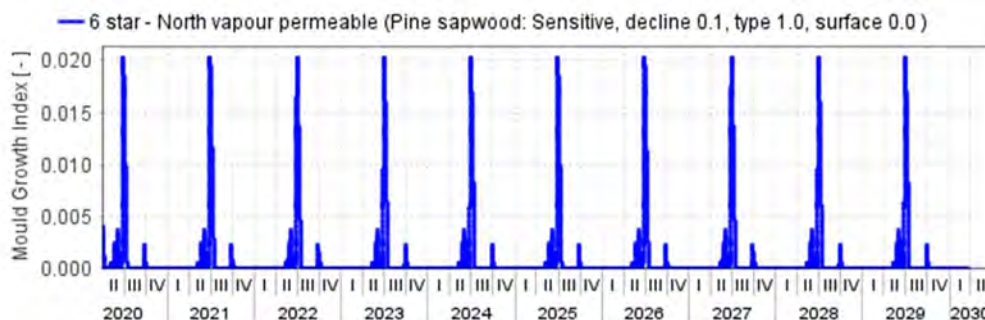


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

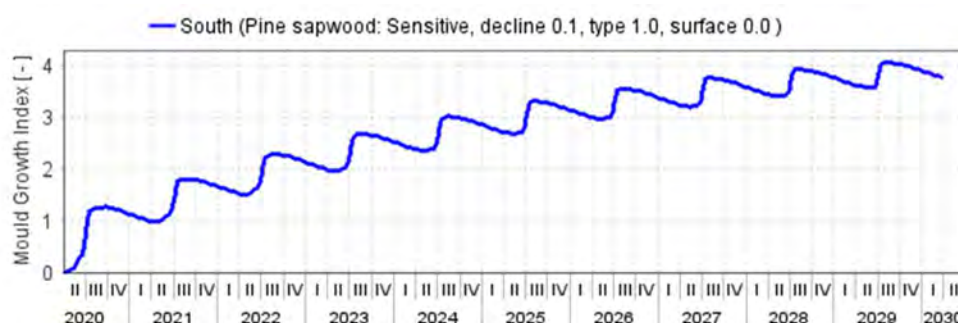


Figure 6: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall system requires further investigation.

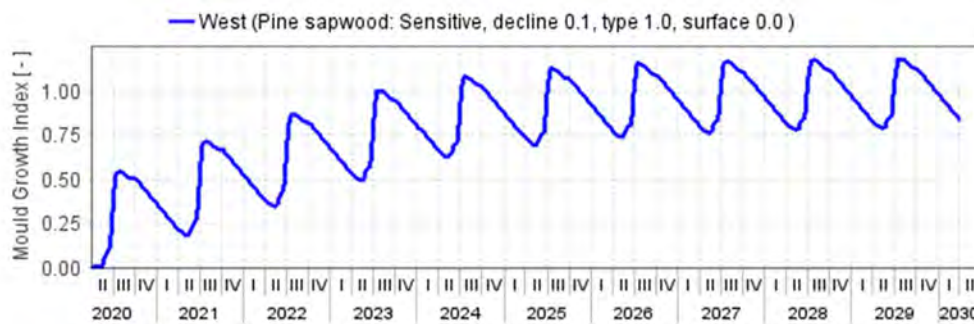


Figure 7: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

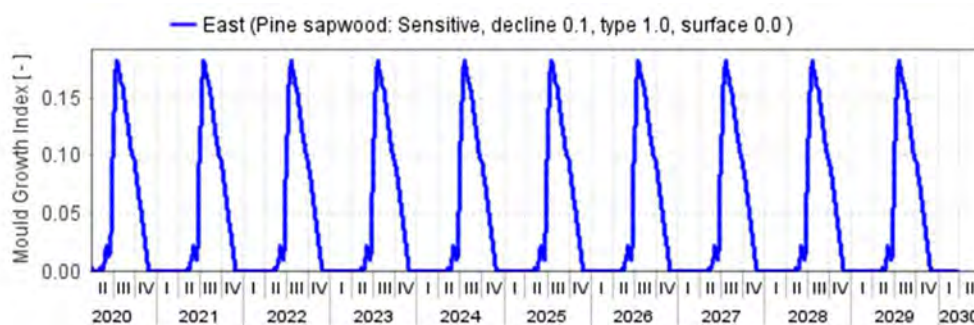


Figure 8: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

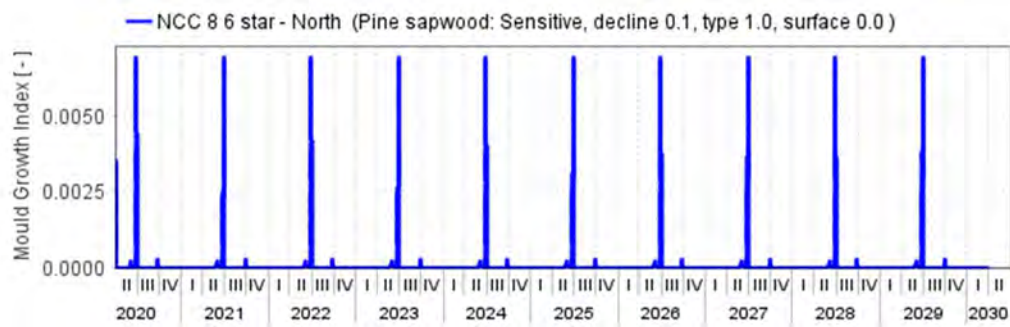


Figure 9: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 by the fifth year.

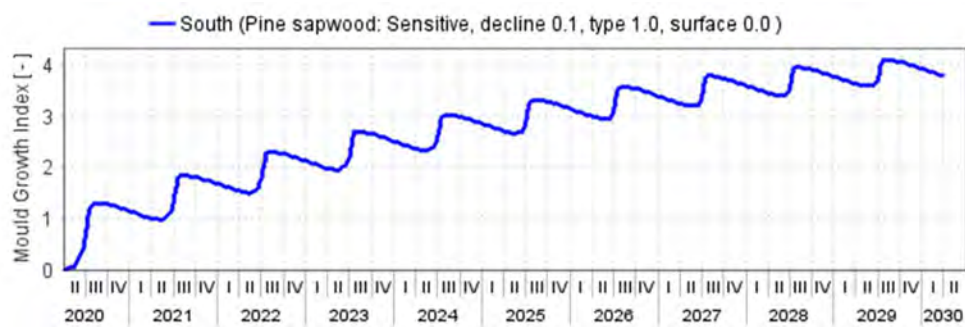


Figure 10: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the ninth year. This wall system requires further investigation.

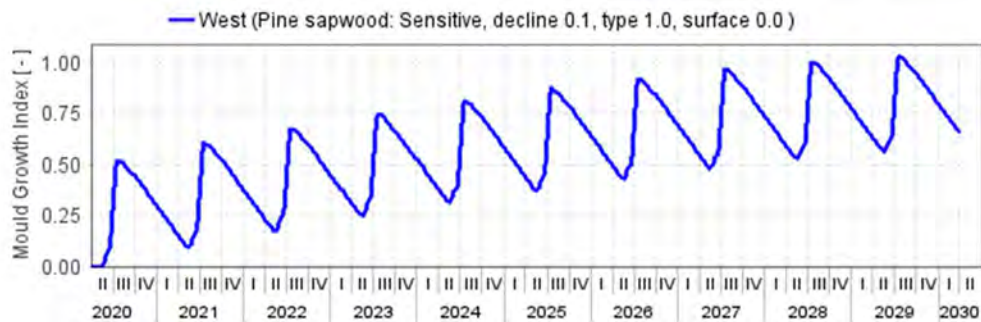


Figure 11: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

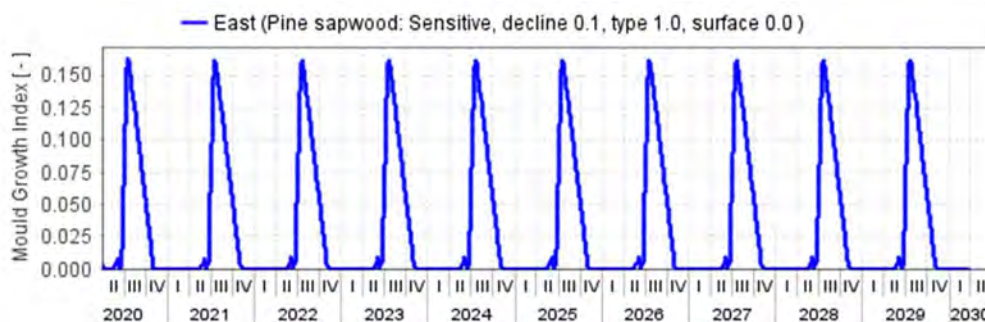


Figure 12: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

3. Climate zone 27

NCC CZ 4

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

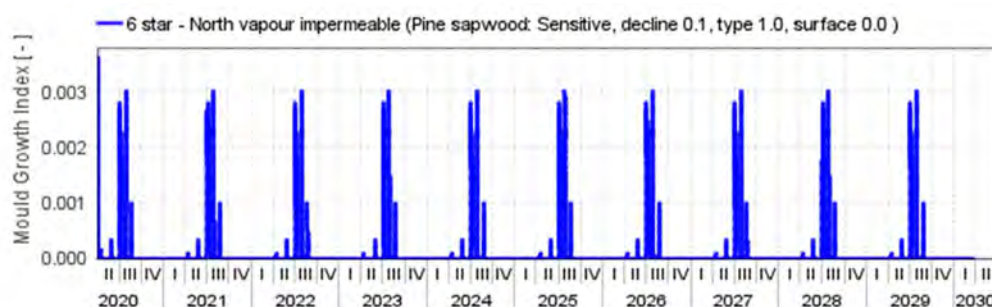


Figure 13: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall system requires further investigation.

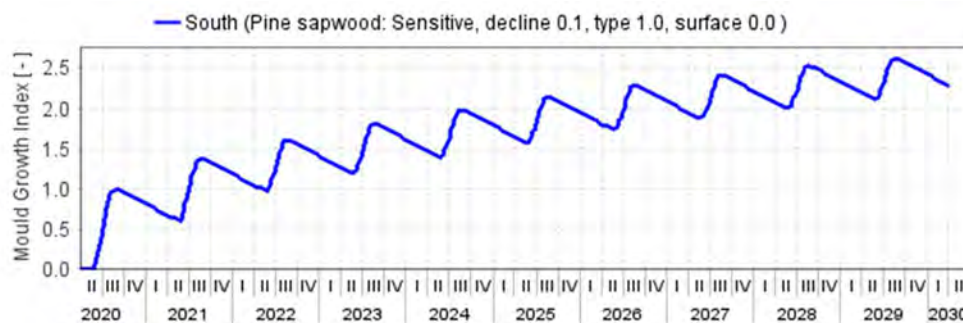


Figure 14: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

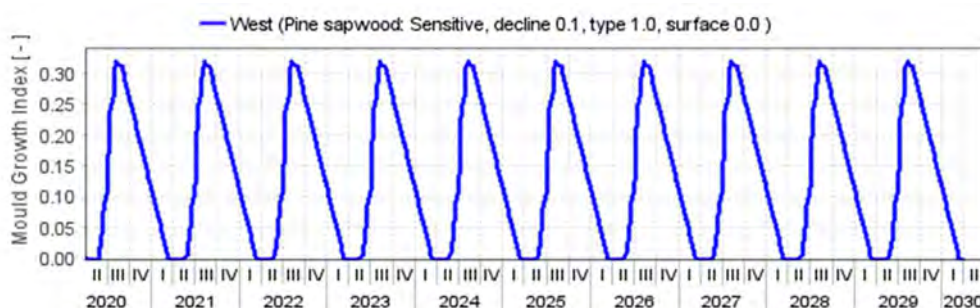


Figure 15: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

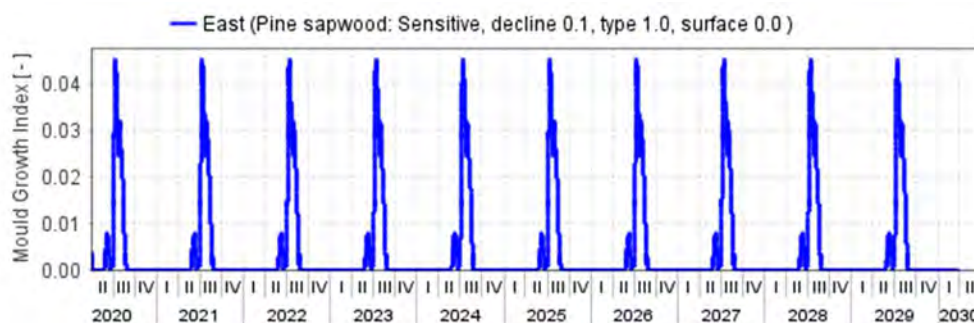


Figure 16: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

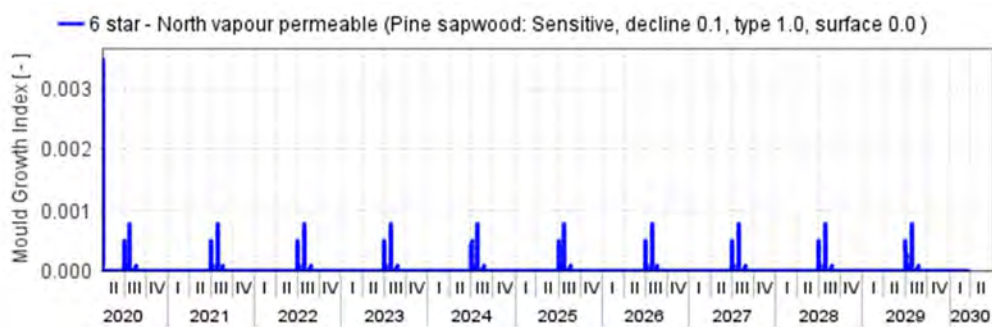


Figure 17: NatHERS CZ 27 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the sixth year. This wall system requires further investigation.

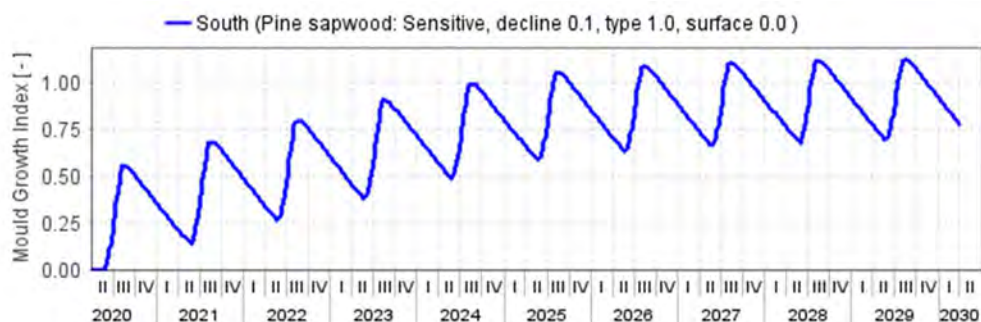


Figure 18: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

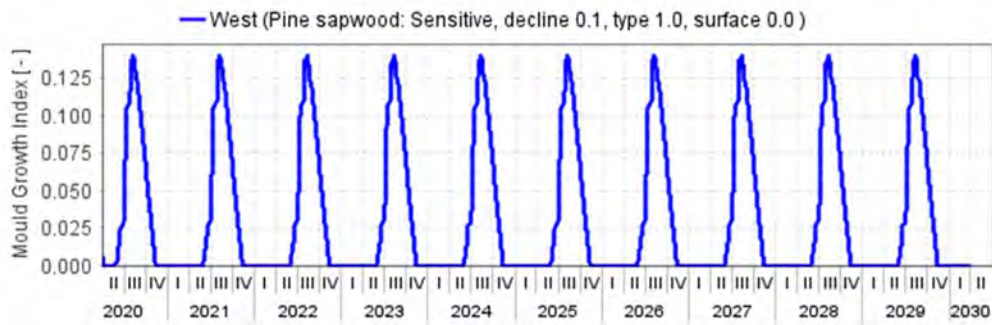


Figure 19: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

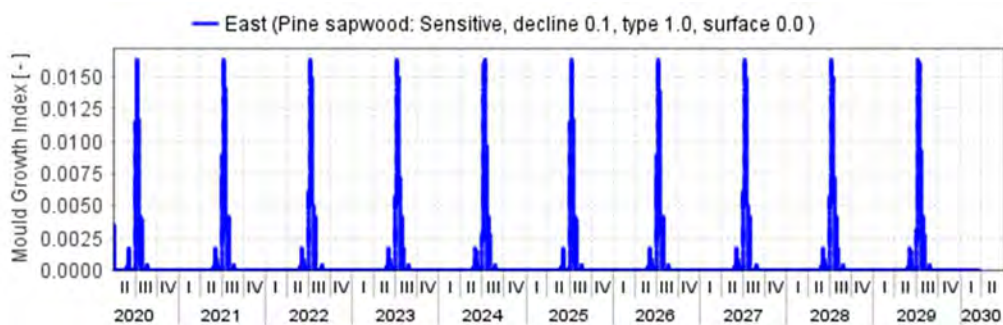


Figure 20: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

4. Climate zone 60

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

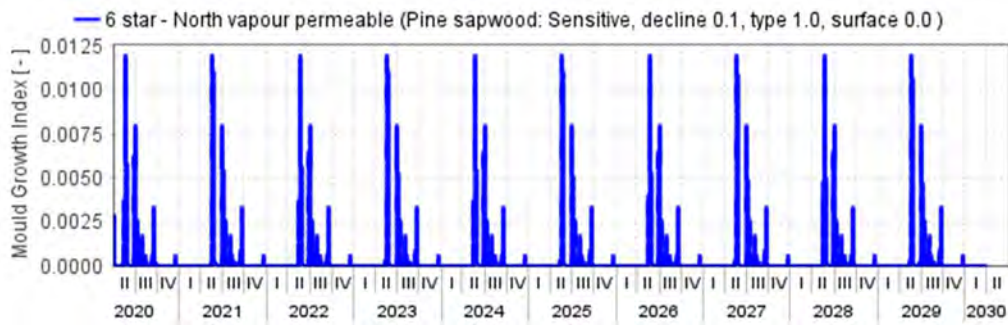


Figure 21: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 by the seventh year.

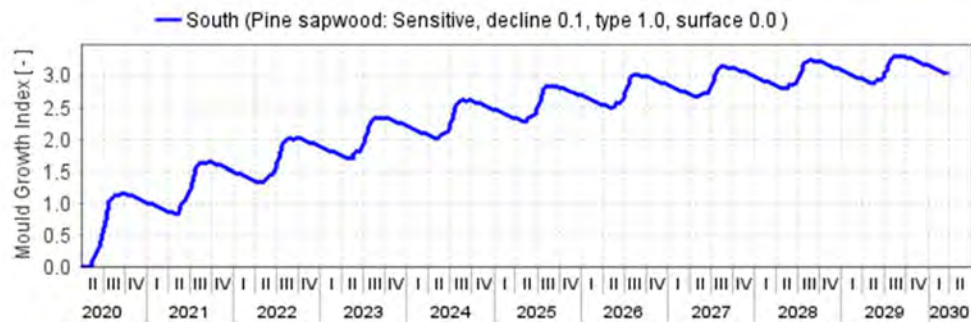


Figure 22: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the seventh year. This wall system requires further investigation.

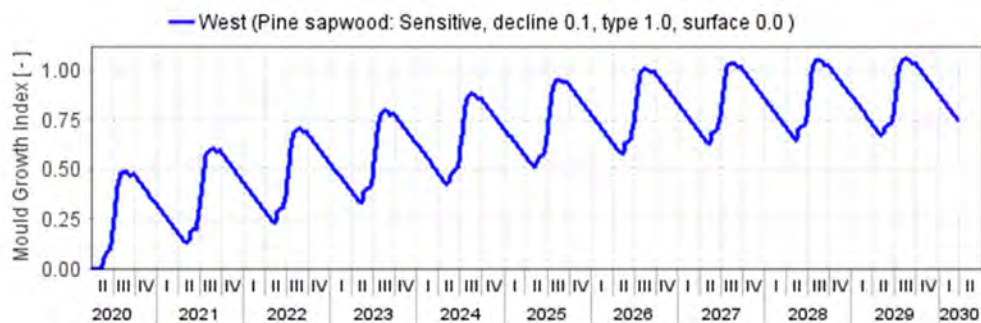


Figure 23: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

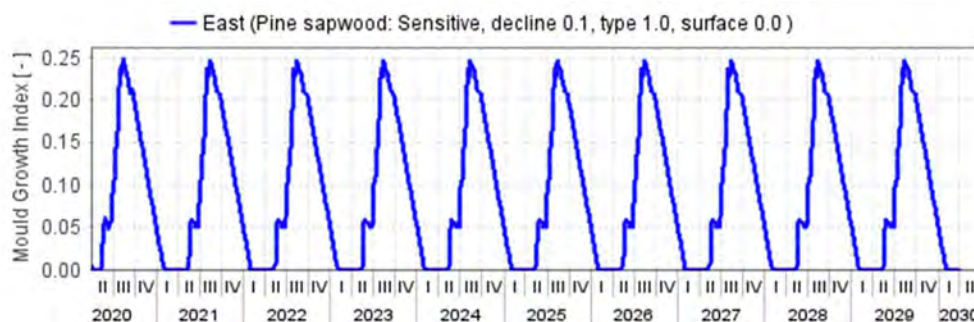


Figure 24: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

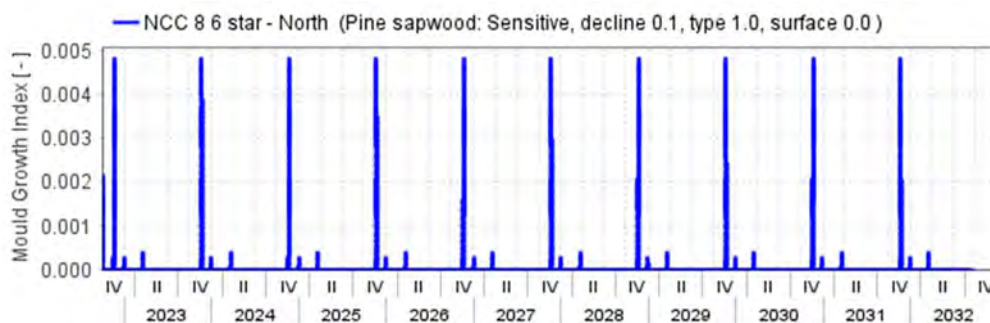


Figure 25: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceed 3.0 by the sixth year.

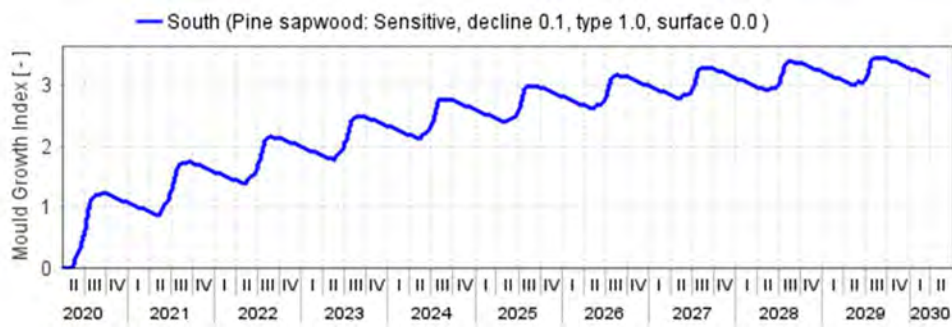


Figure 26: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

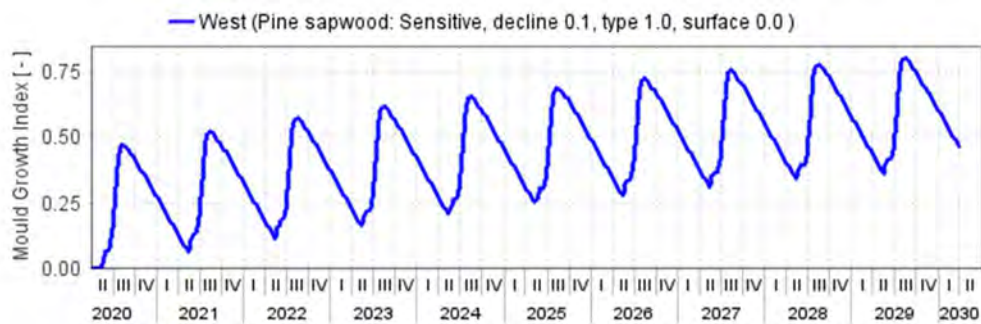


Figure 27: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

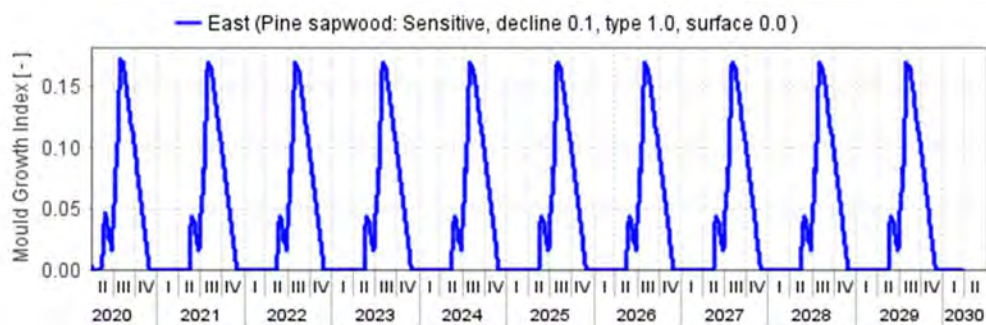


Figure 28: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

5. Climate zone 61

NCC CZ 4

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

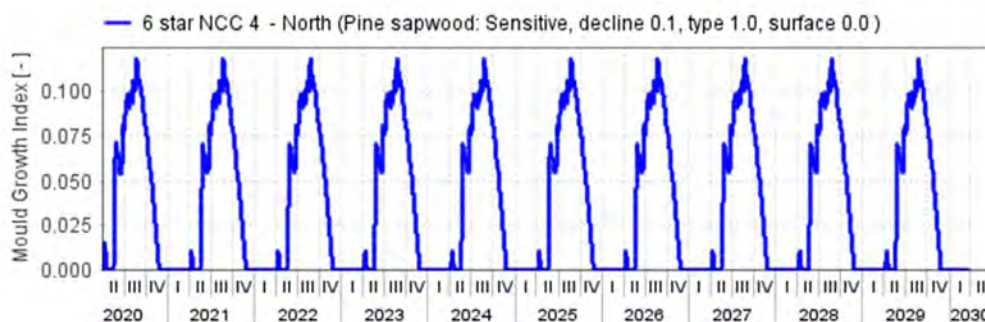


Figure 29: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

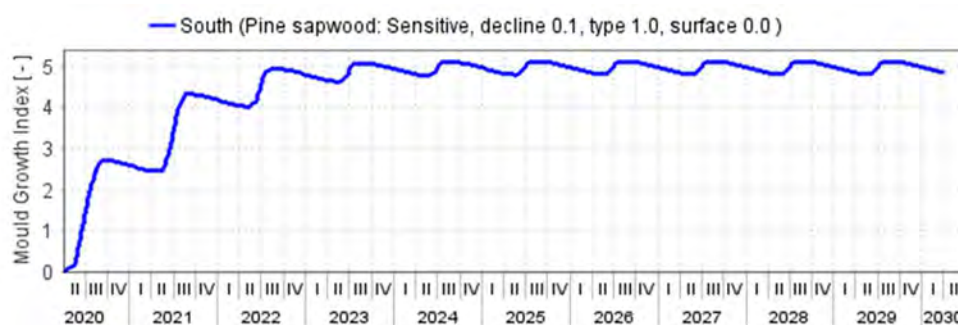


Figure 30: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceed 3.0 in the third year.

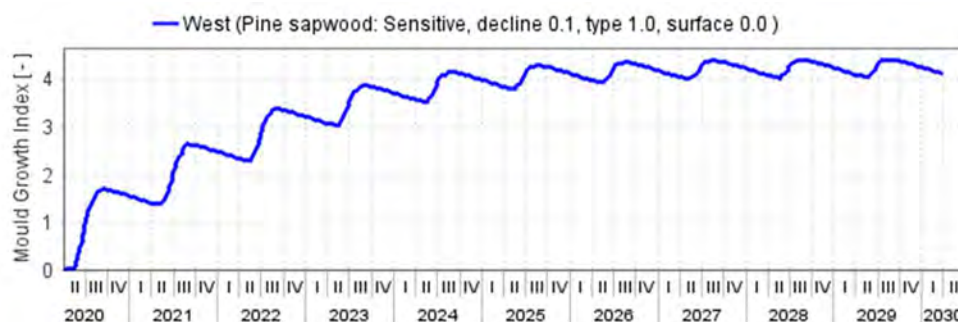


Figure 31: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

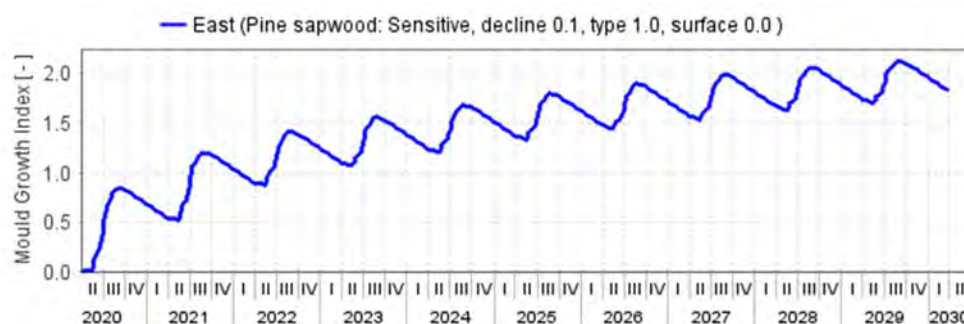


Figure 32: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

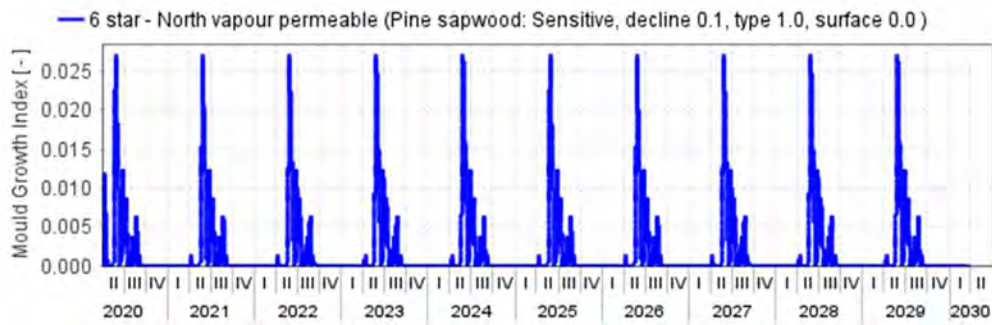


Figure 33: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

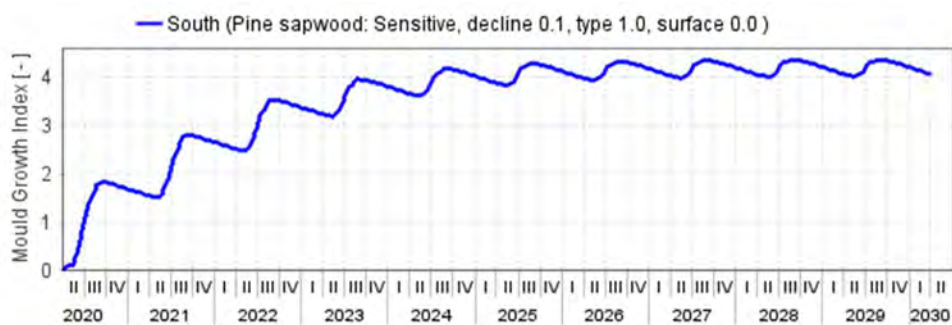


Figure 34: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

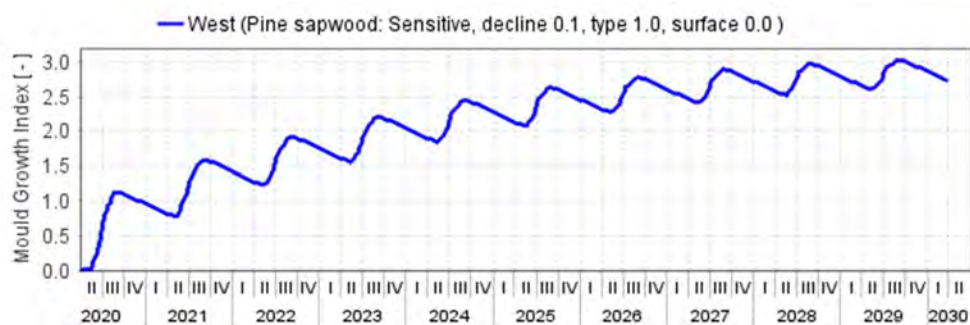


Figure 35: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the ninth year. This wall system requires further investigation.

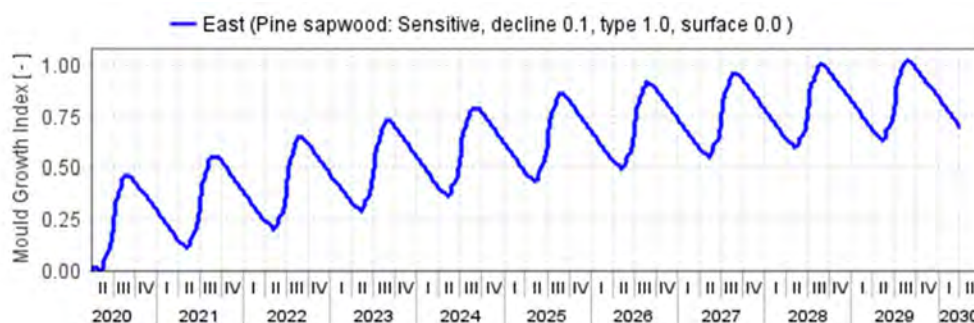


Figure 36: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

6. Climate zone 63

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

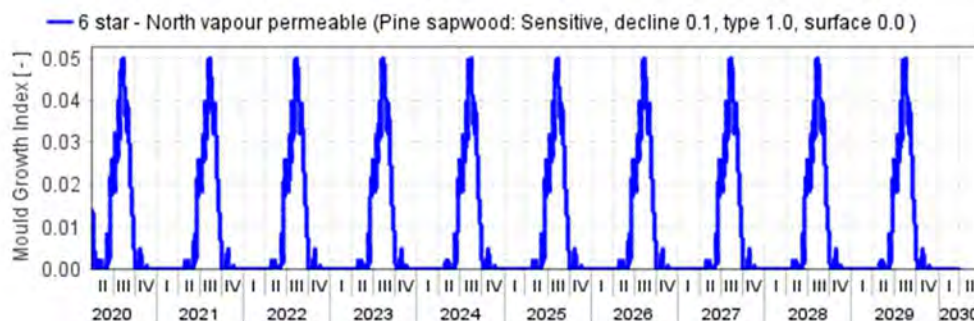


Figure 37: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

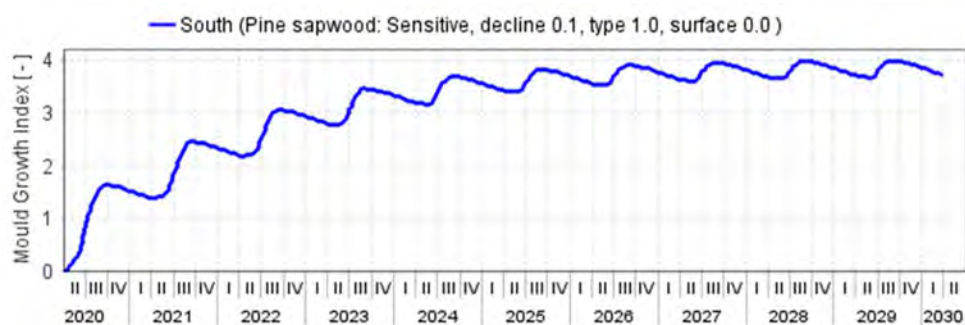


Figure 38: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall system requires further investigation.

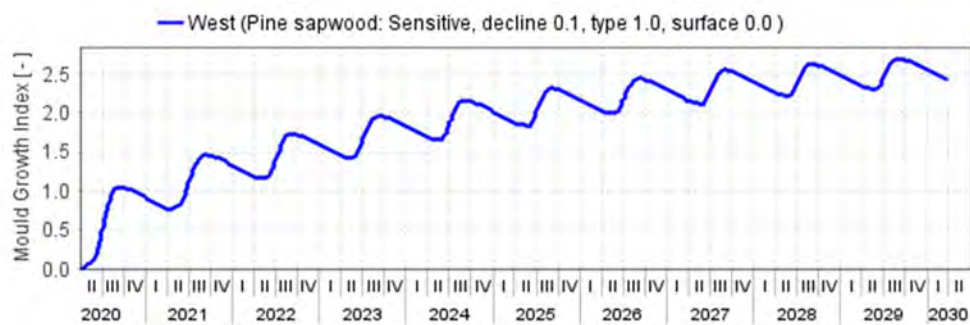


Figure 39: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the seventh year. This wall system requires further investigation.

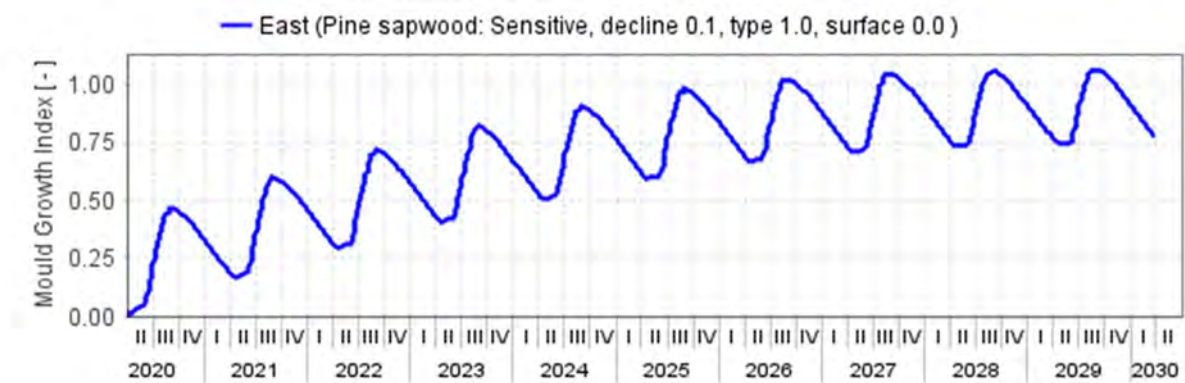


Figure 40: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

7. Climate zone 64

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

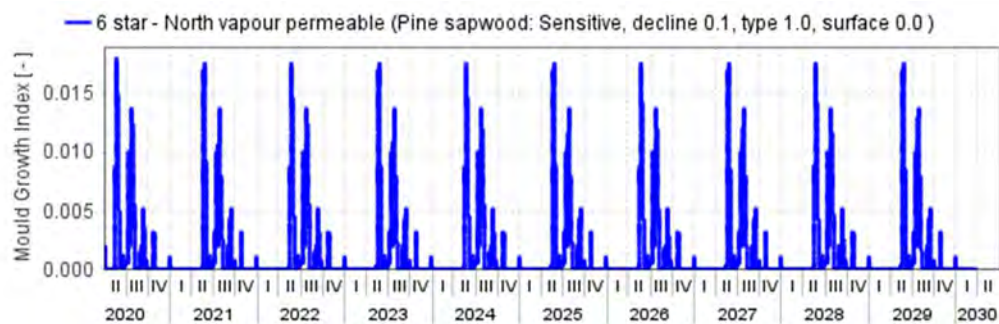


Figure 41: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

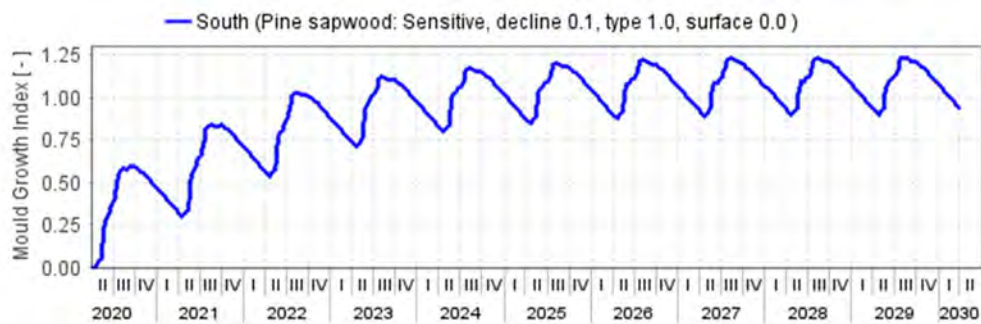


Figure 42: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

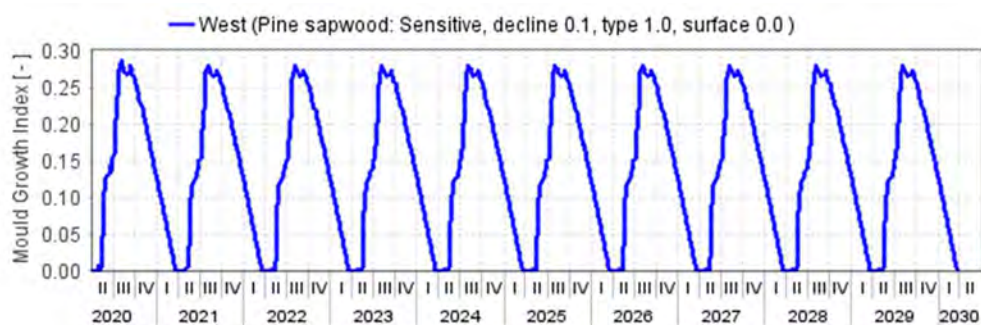


Figure 43: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

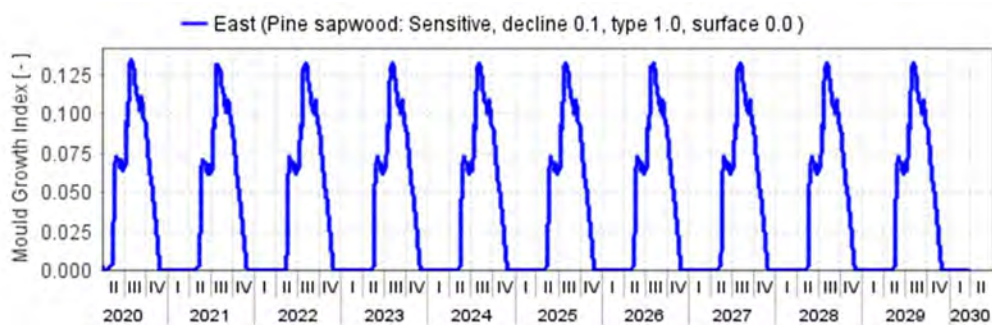


Figure 44: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame

NCC CZ 8

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

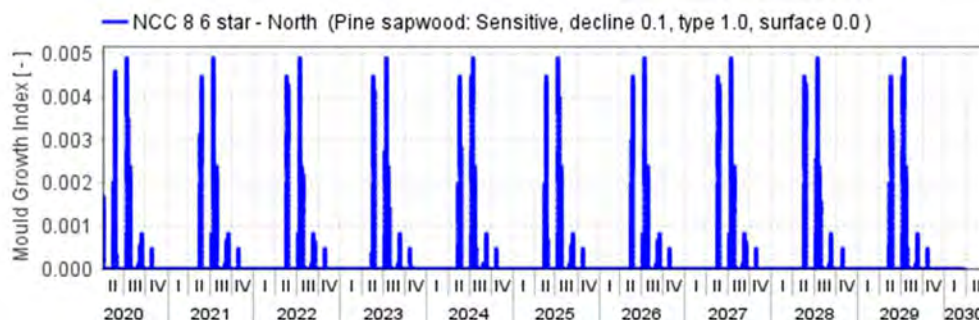


Figure 45: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

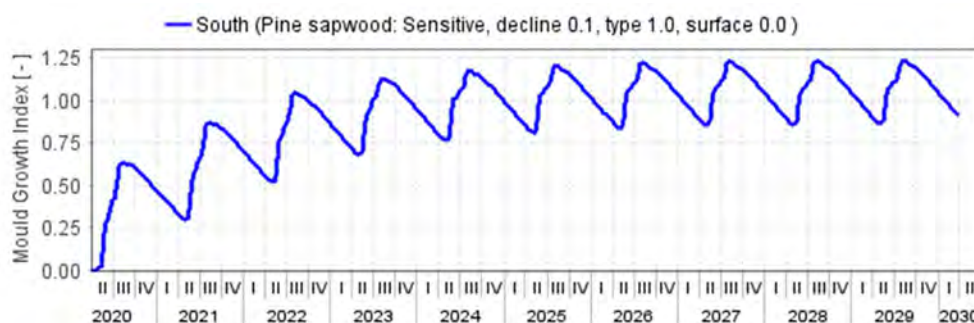


Figure 46: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

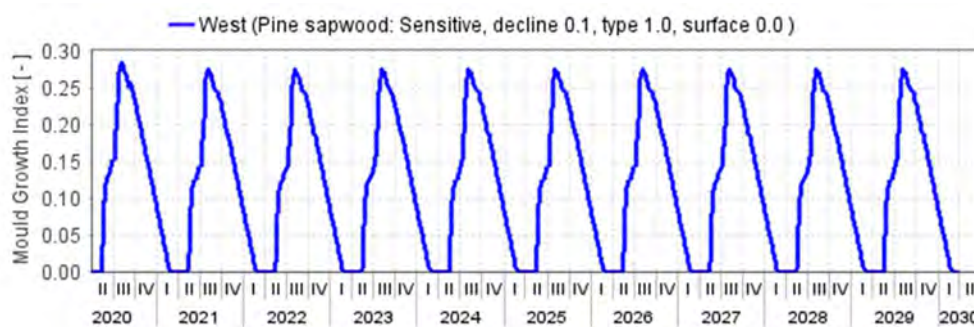


Figure 47: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern Orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

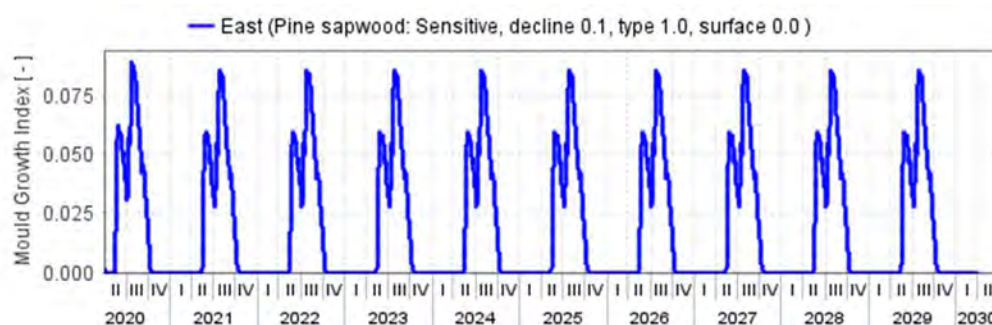


Figure 48: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

8. Climate zone 66

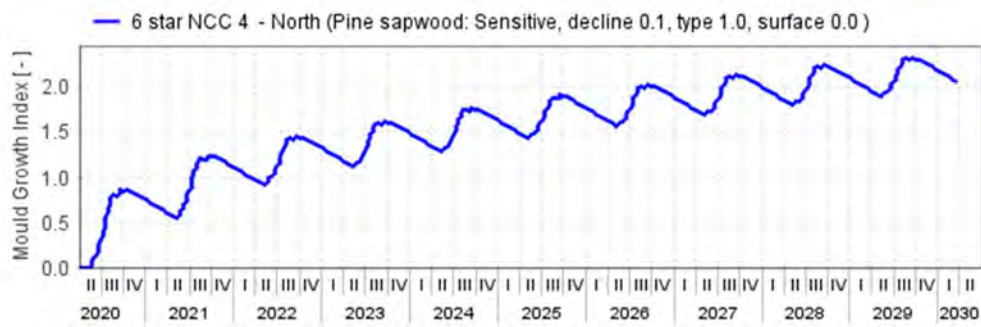
NCC CZ 4

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

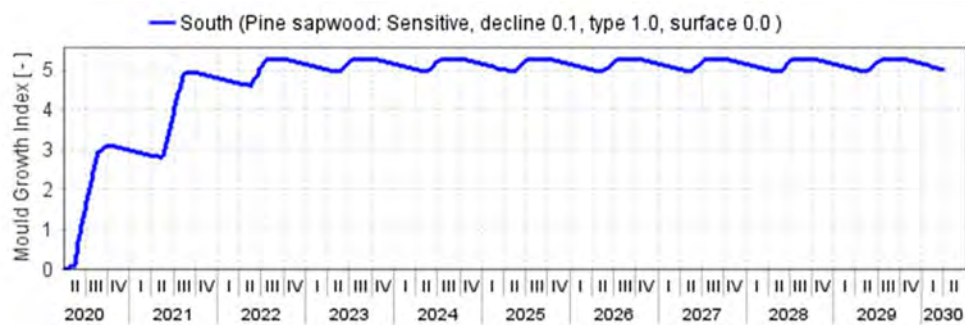


Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

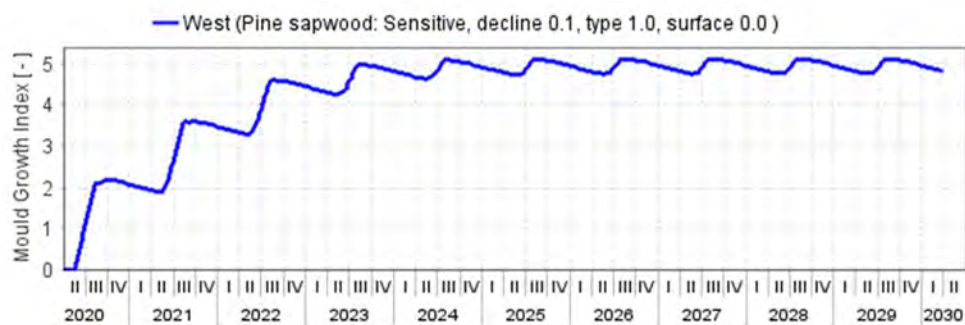


Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.



Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

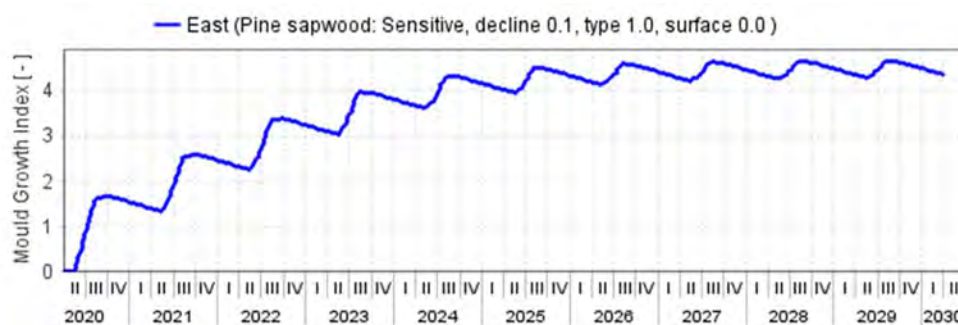


Figure 52: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame

NCC CZ 6-7

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

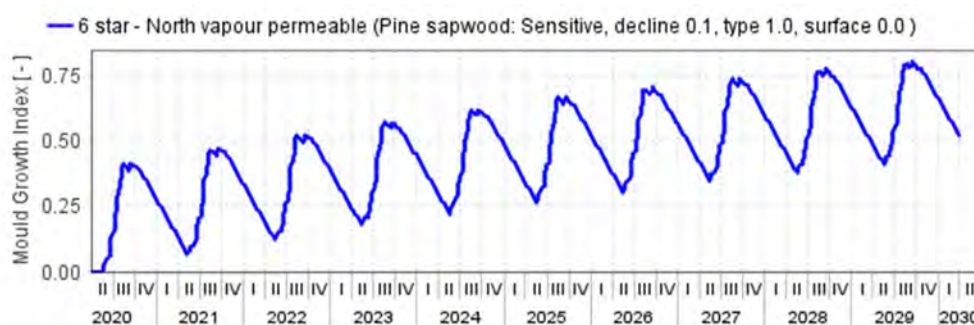


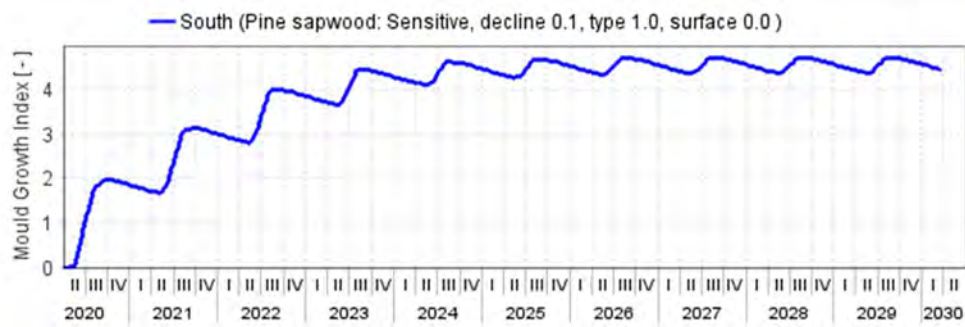
Figure 53: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

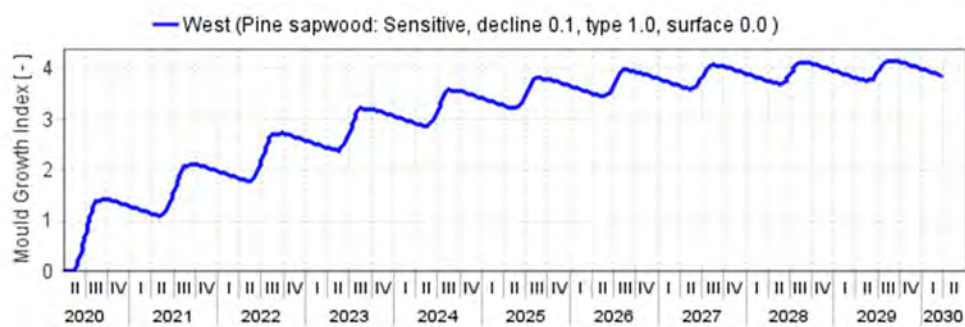


Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

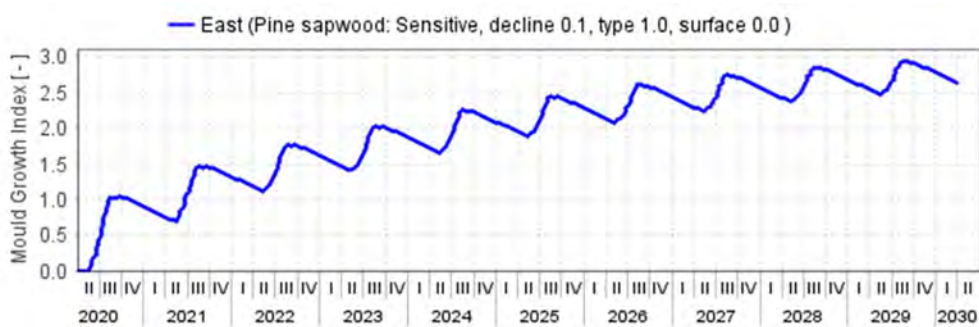


Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the tenth year.



NCC CZ 8

Northern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that does not exceed 1.0.

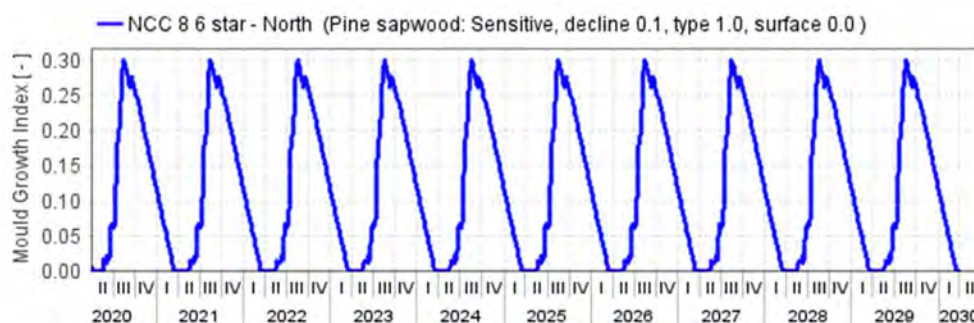


Figure 57: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame

Southern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

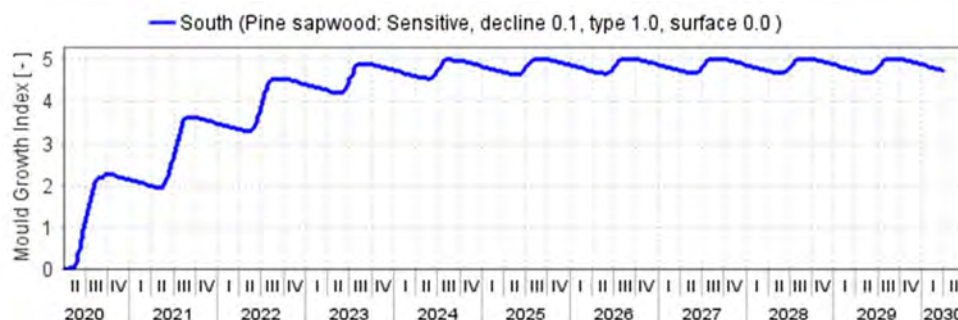


Figure 58: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame

Western orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

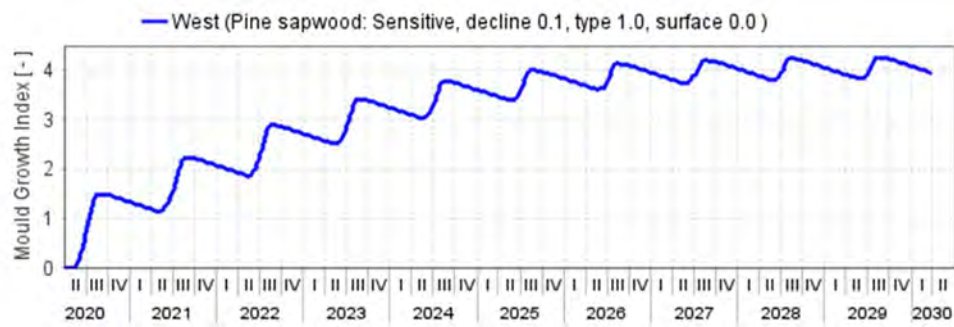


Figure 59: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame

Eastern orientation

Air change rate variable 10.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

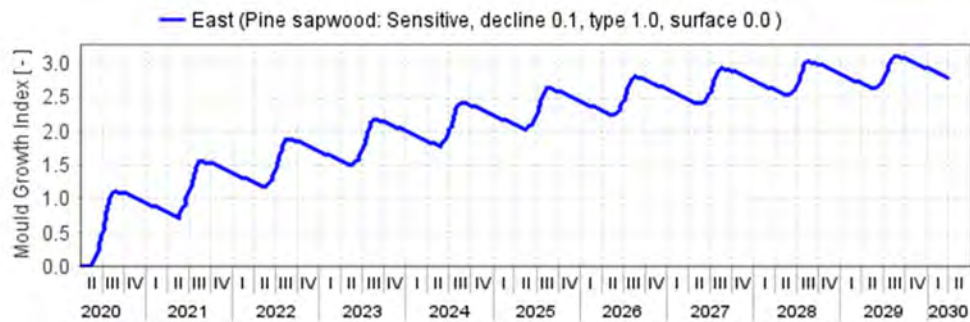


Figure 60: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame

Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 4: Hygrothermal simulation results – Clay masonry veneer

Revision 1 (10/03/2023)

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0

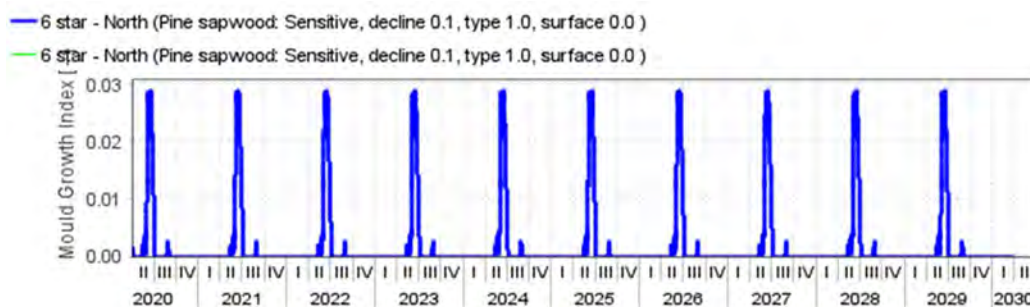


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall system requires further investigation.

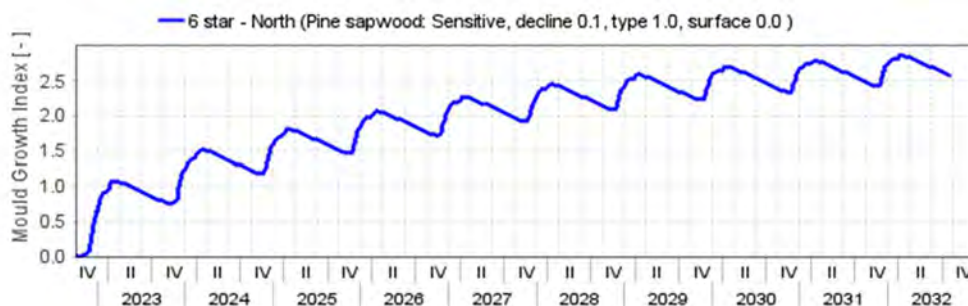


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0.

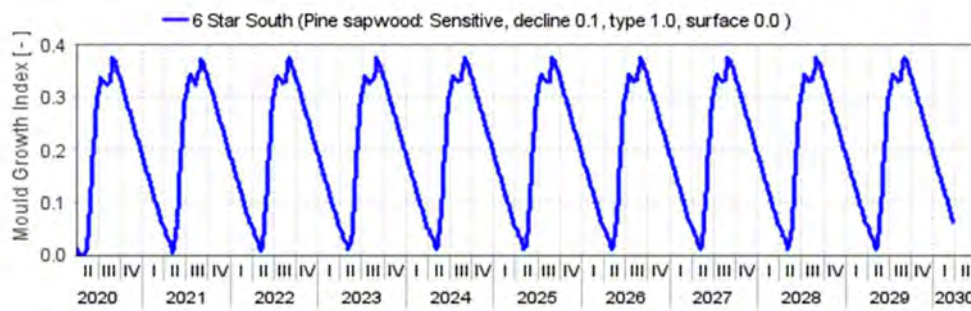


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

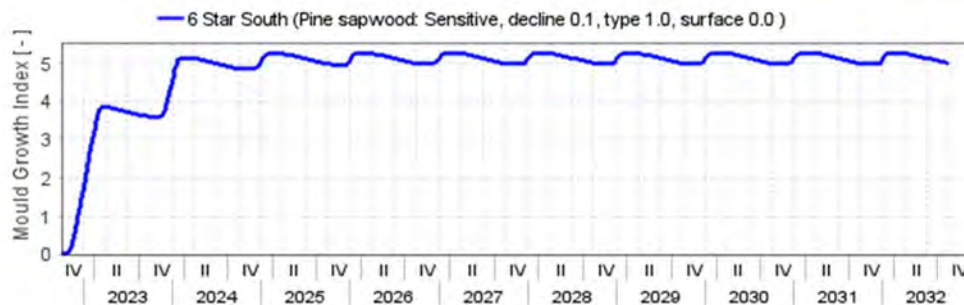


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0

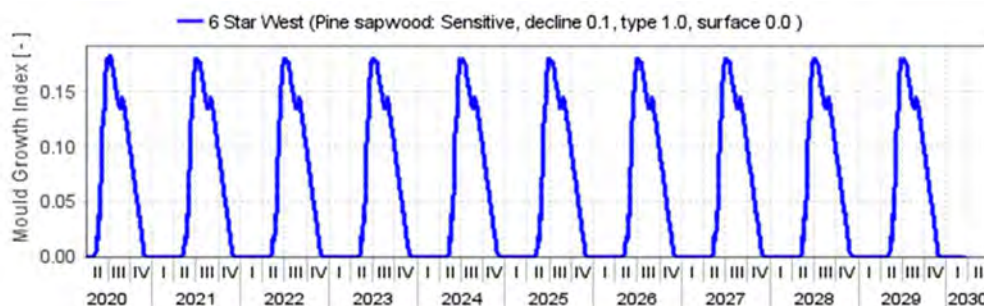


Figure 5: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

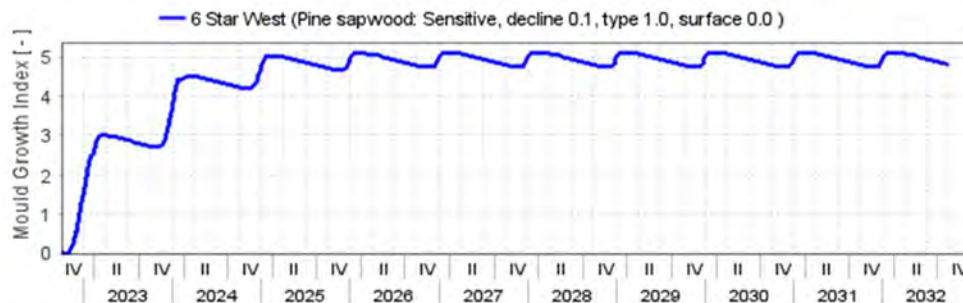


Figure 6: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0

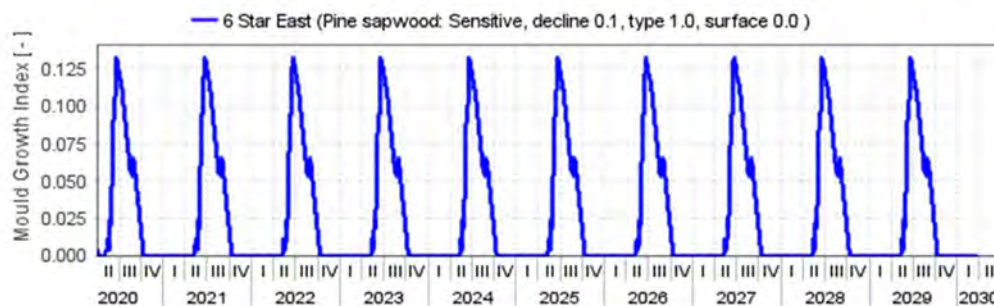


Figure 7: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

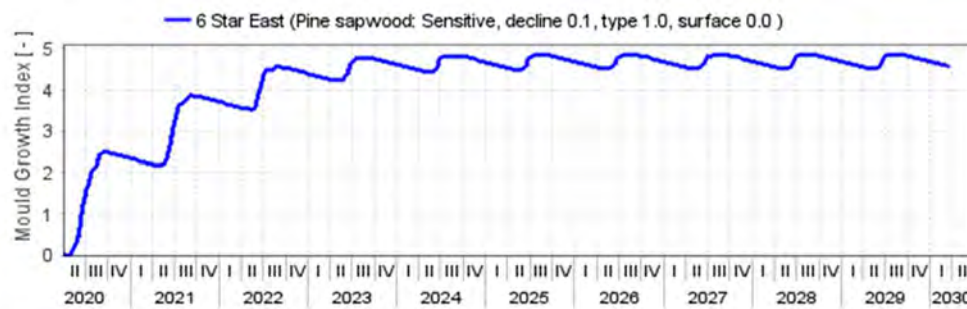


Figure 8: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0

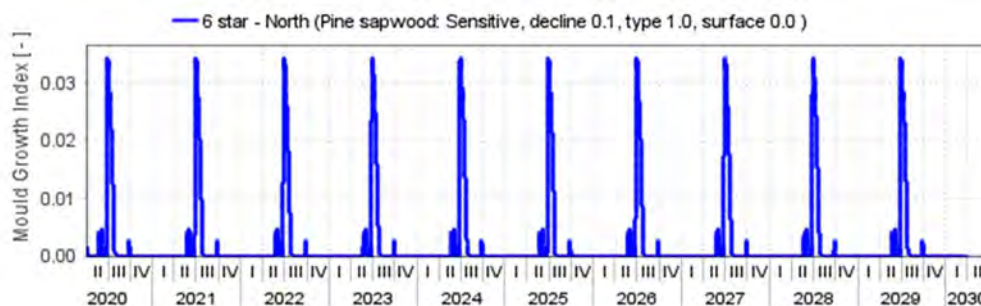


Figure 9: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

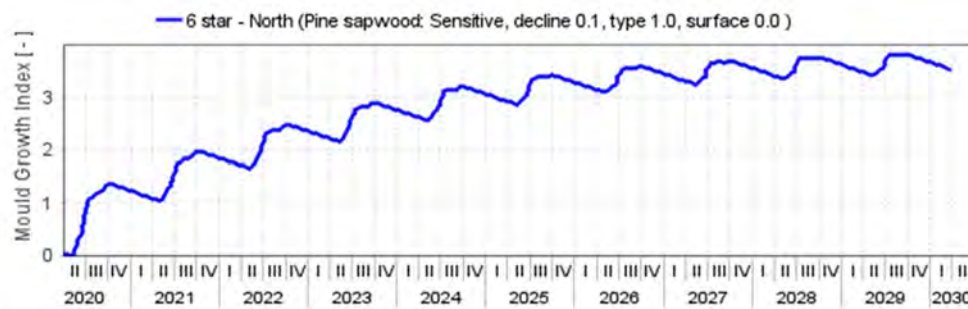


Figure 10: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year.

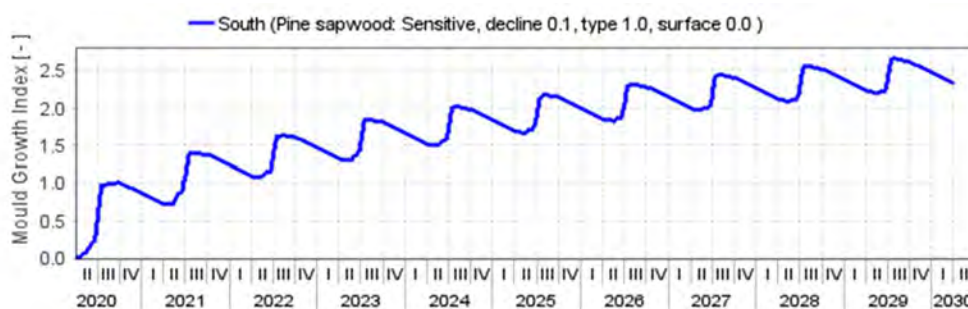


Figure 11: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

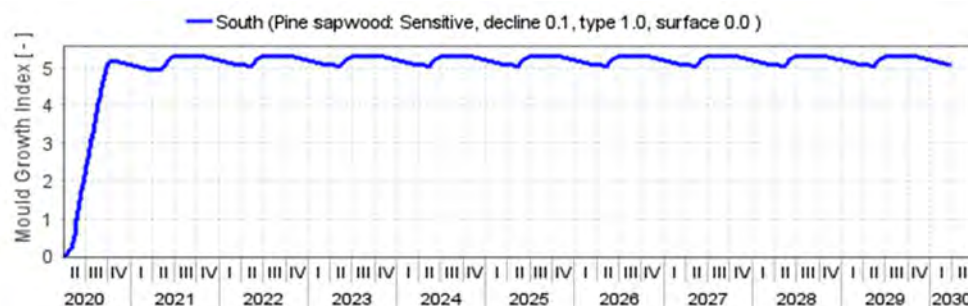


Figure 12: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

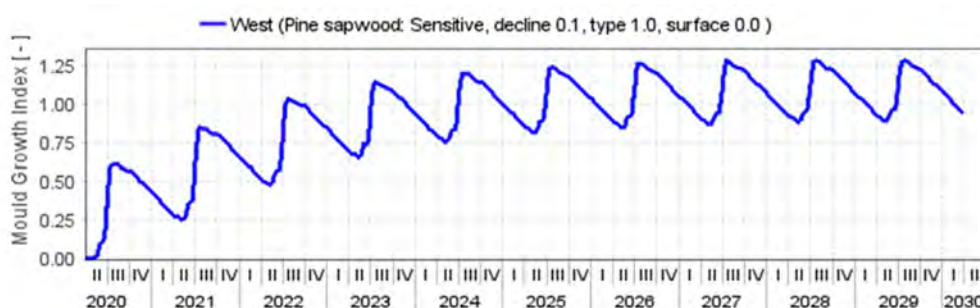


Figure 13: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

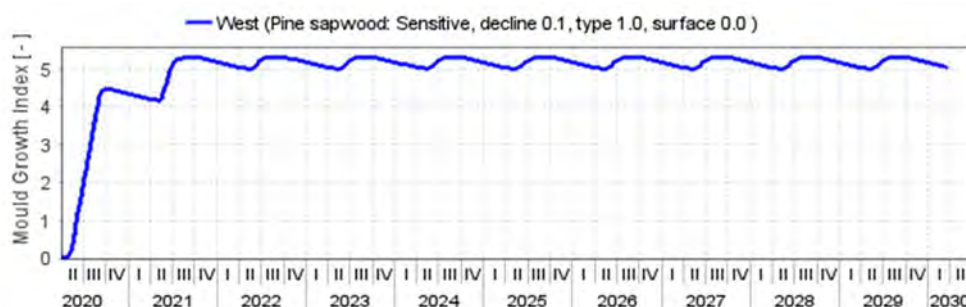


Figure 14: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the mould growth index does not exceed 1.0.

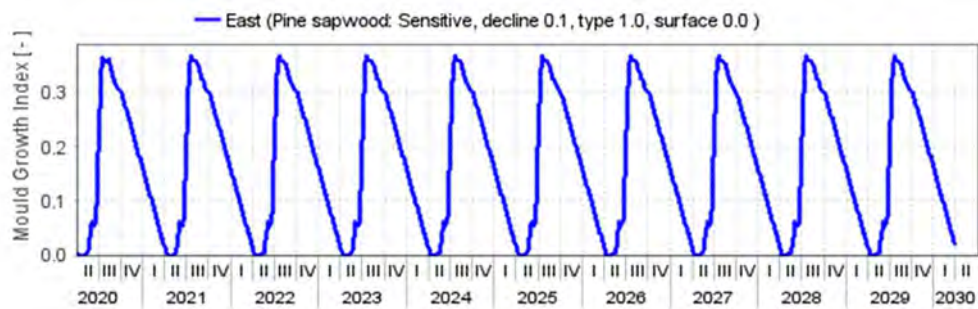


Figure 15: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

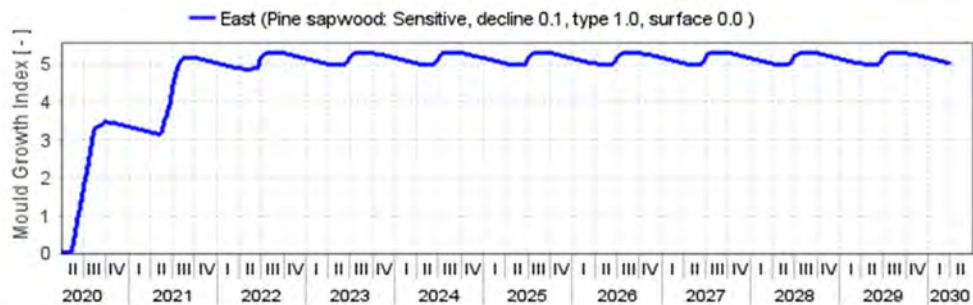


Figure 16: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However the Mould Growth Index does not exceed 1.0.

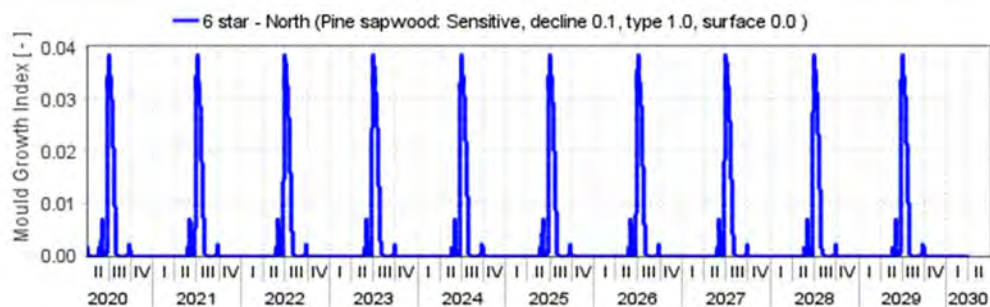


Figure 17: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the tenth year.

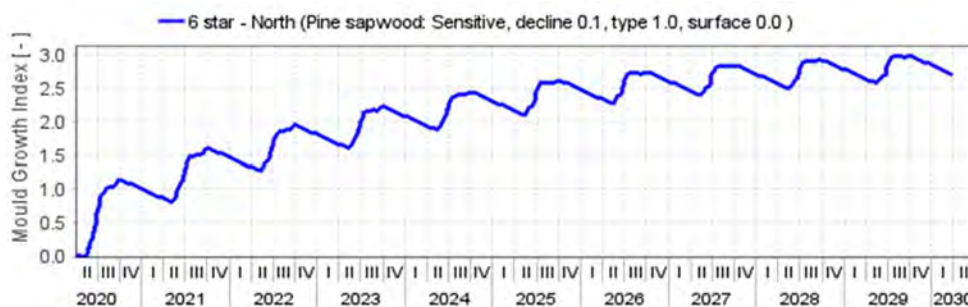


Figure 18: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

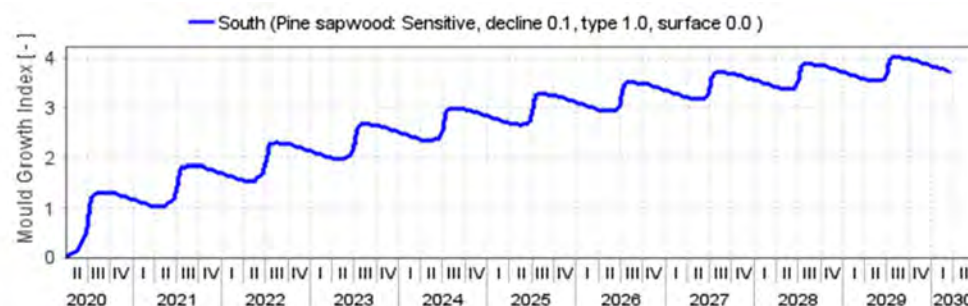


Figure 19: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air change rate variable 5

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

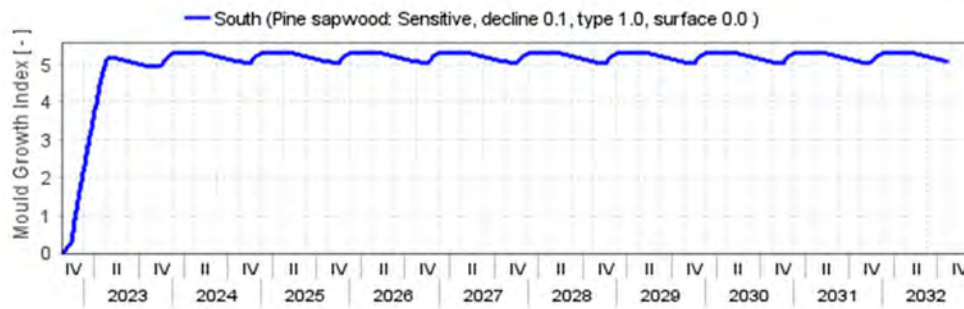


Figure 20: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

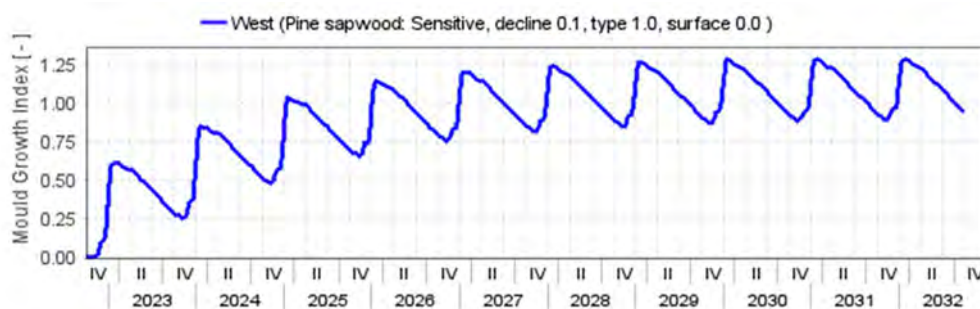


Figure 21: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

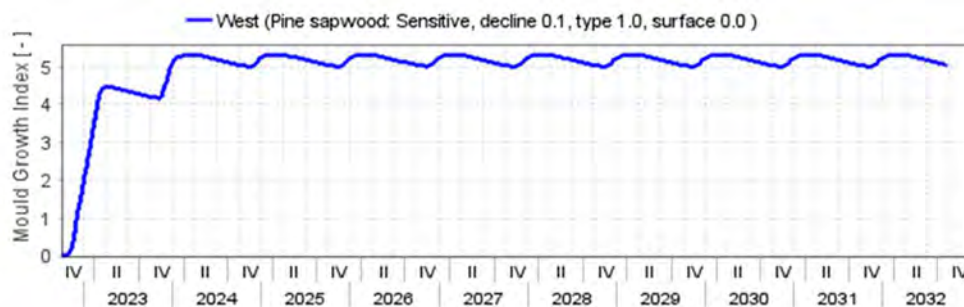


Figure 22: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

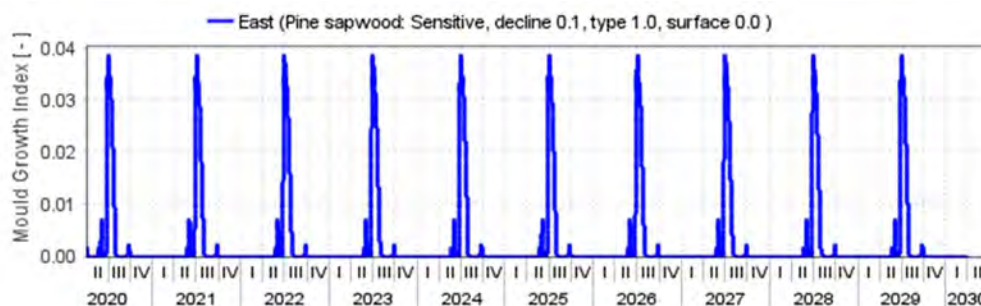


Figure 23: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

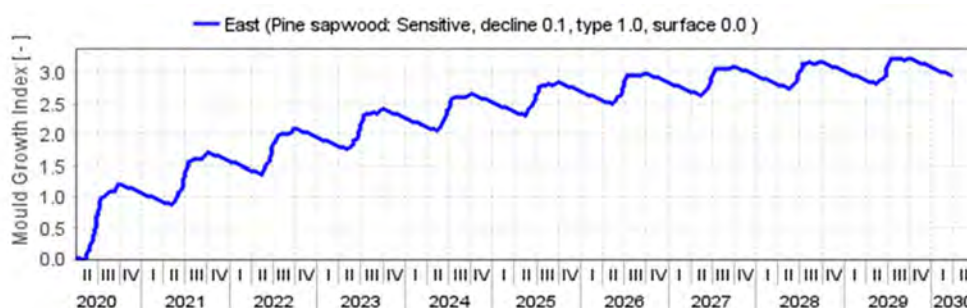


Figure 24: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0

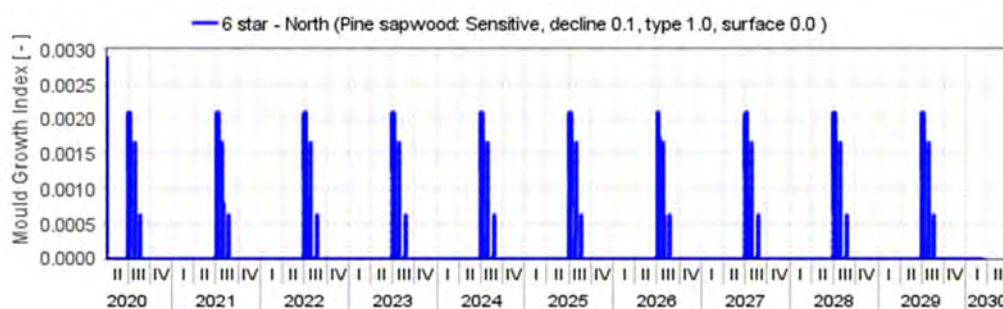


Figure 25: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

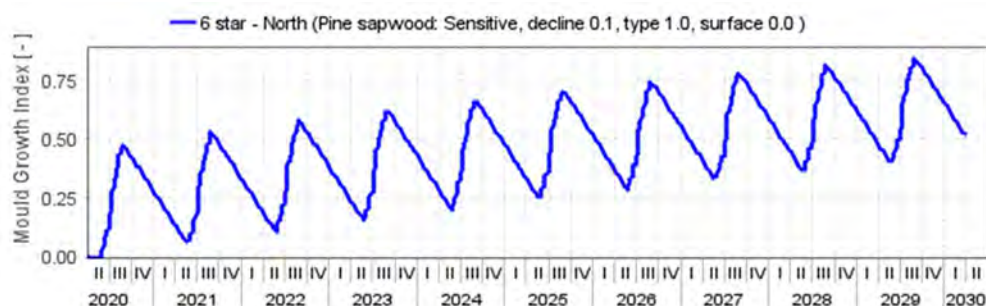


Figure 26: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

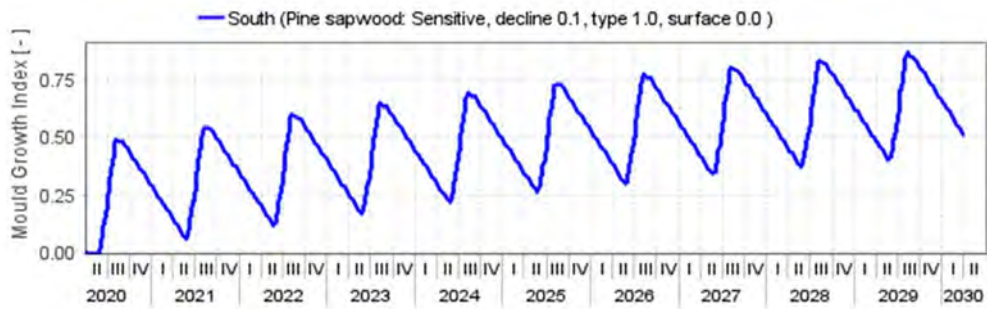


Figure 27: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

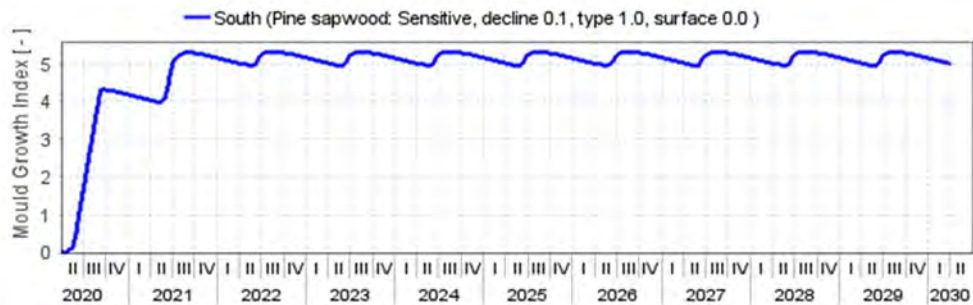


Figure 28: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

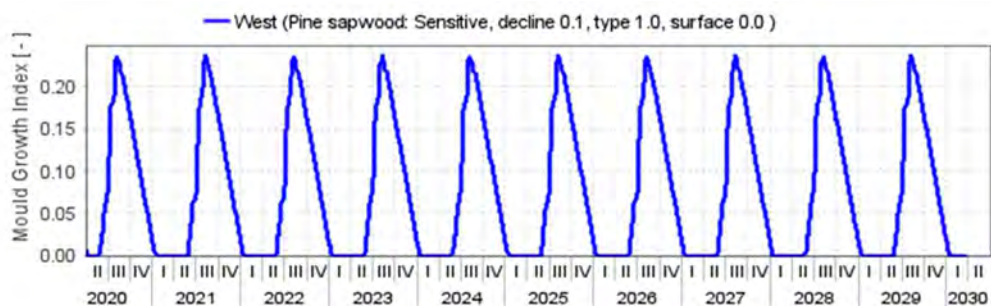


Figure 29: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

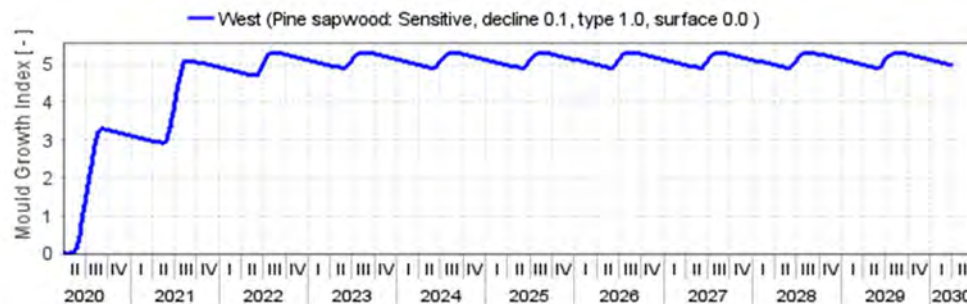


Figure 30: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

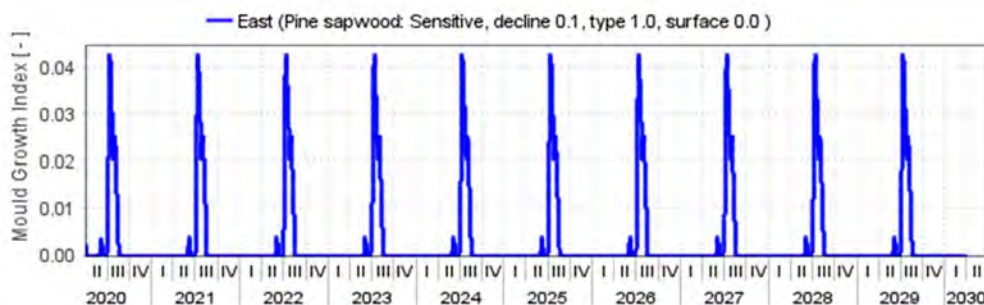


Figure 31: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

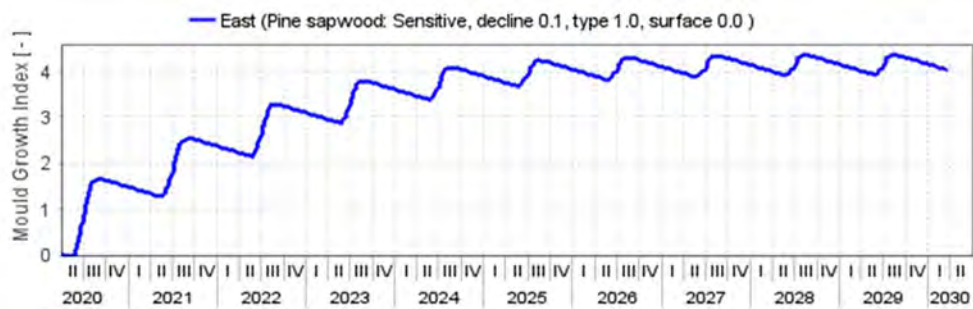


Figure 32: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Nil

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

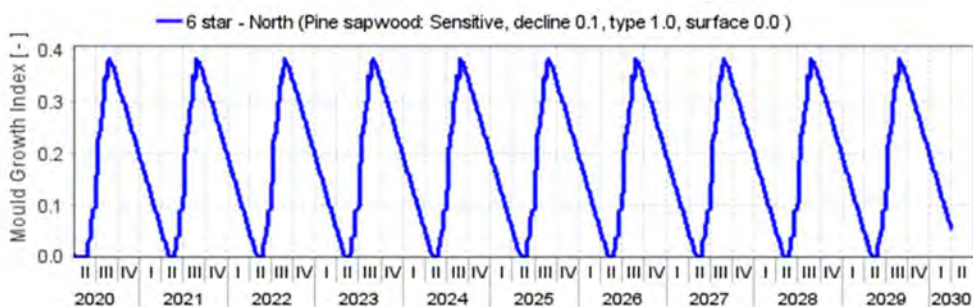


Figure 33: NatHERS CZ 27 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

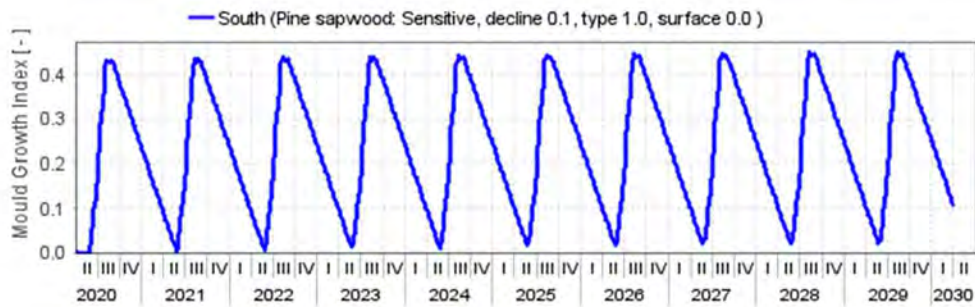


Figure 34: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

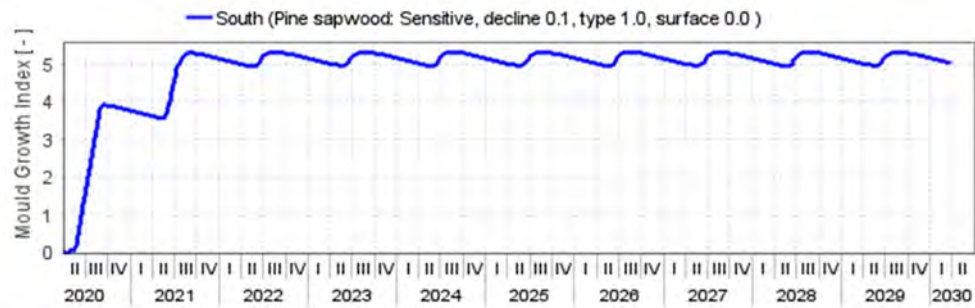


Figure 35: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

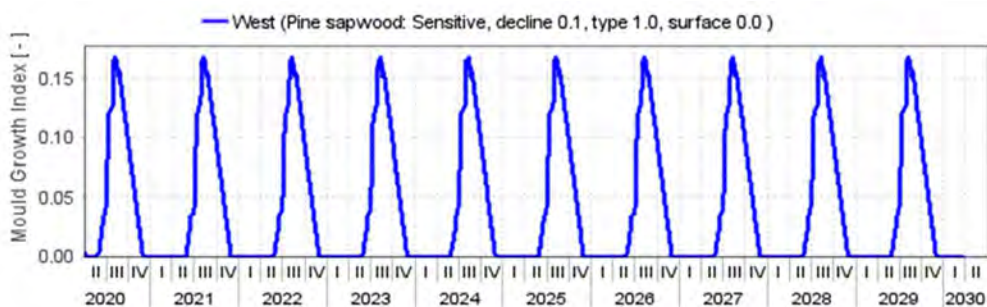


Figure 36: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

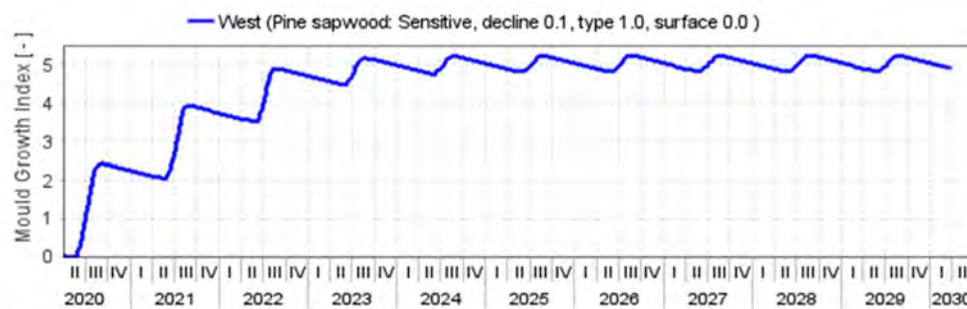


Figure 37: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

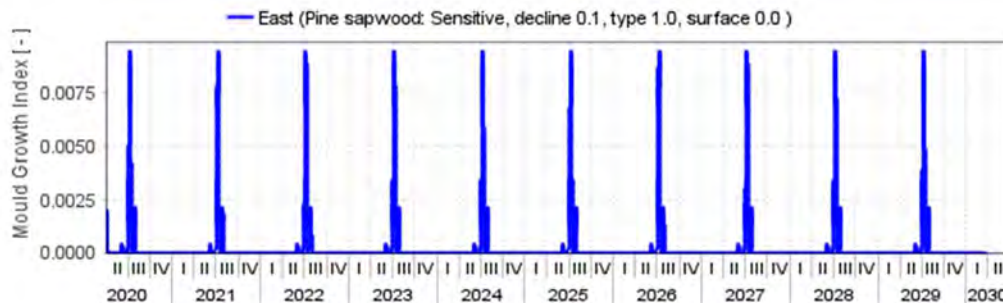


Figure 38: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

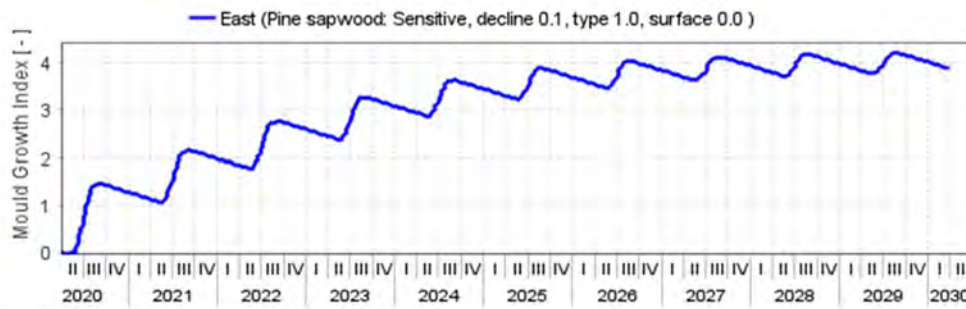


Figure 39: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

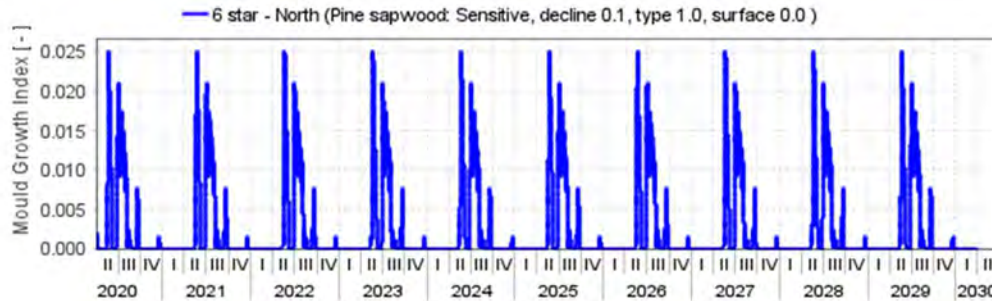


Figure 40: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

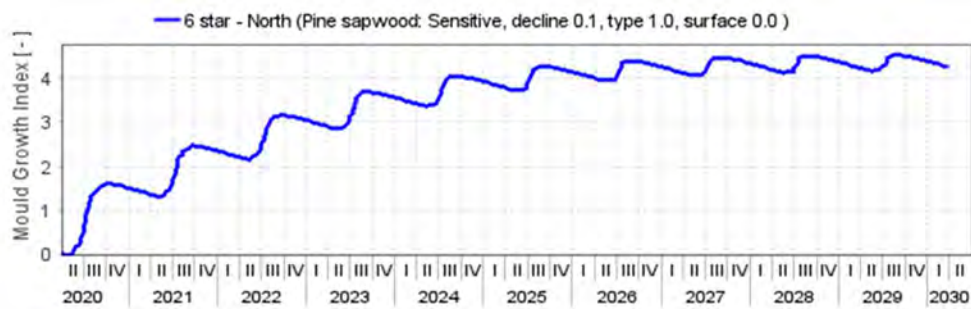


Figure 41: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall type requires further investigation.

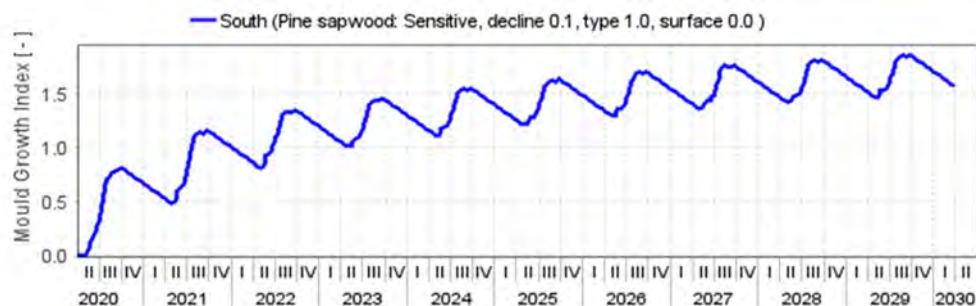


Figure 42: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

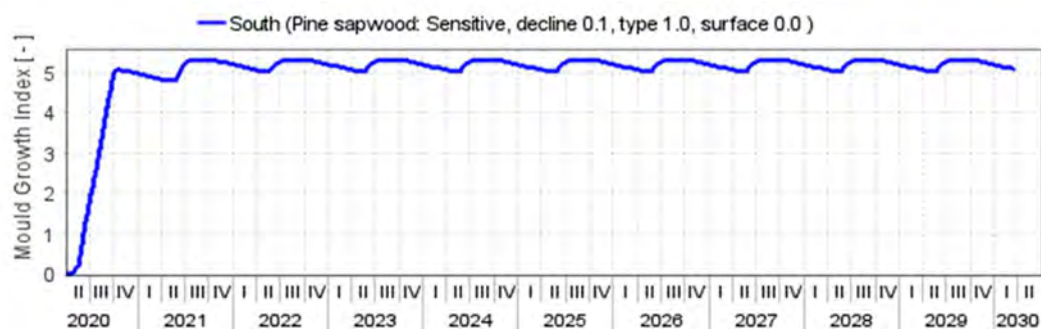


Figure 43: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

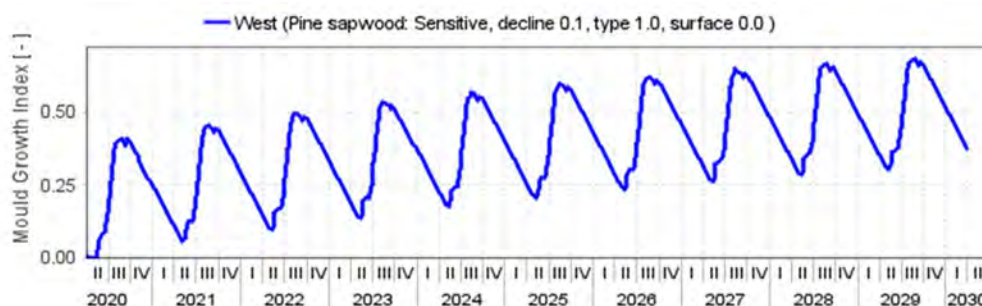


Figure 44: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

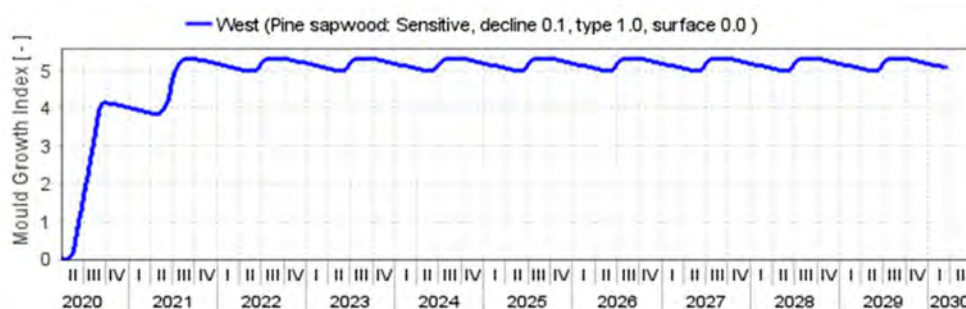


Figure 45: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

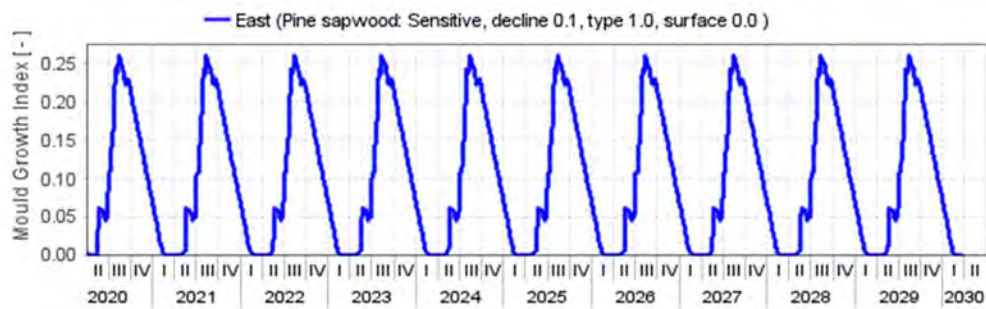


Figure 46: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

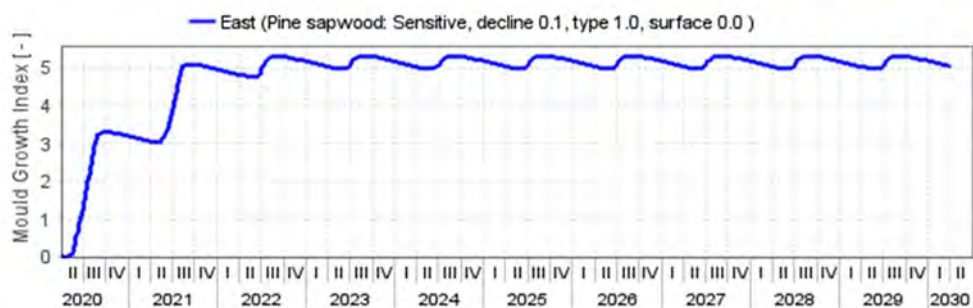


Figure 47: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

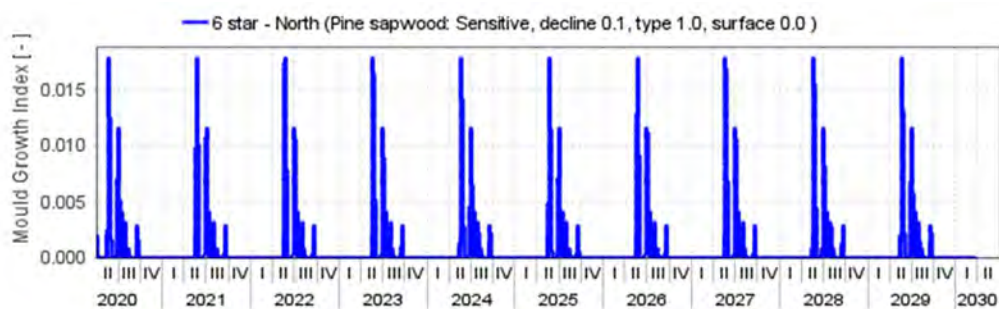


Figure 48: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall type requires further investigation.

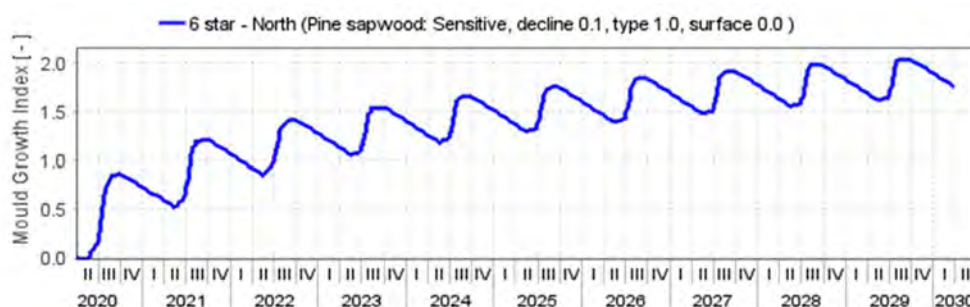


Figure 49: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall type requires further investigation.

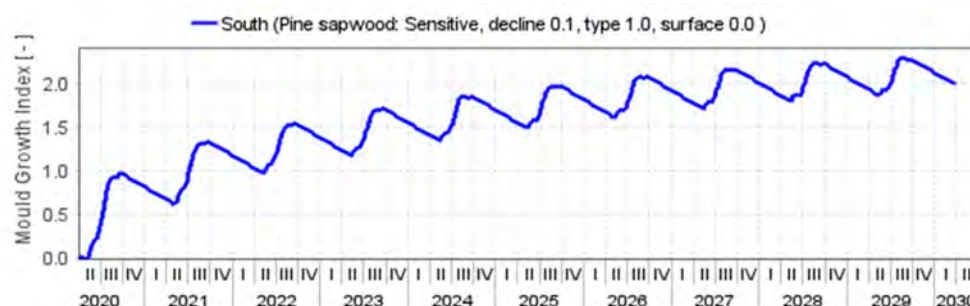


Figure 50: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

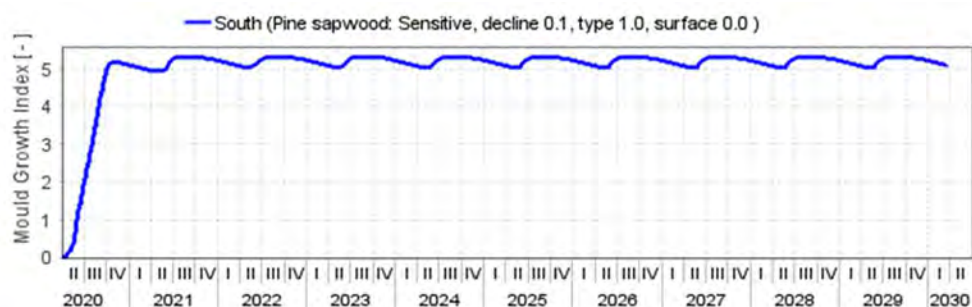


Figure 51: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fifth year. This wall type requires further investigation.

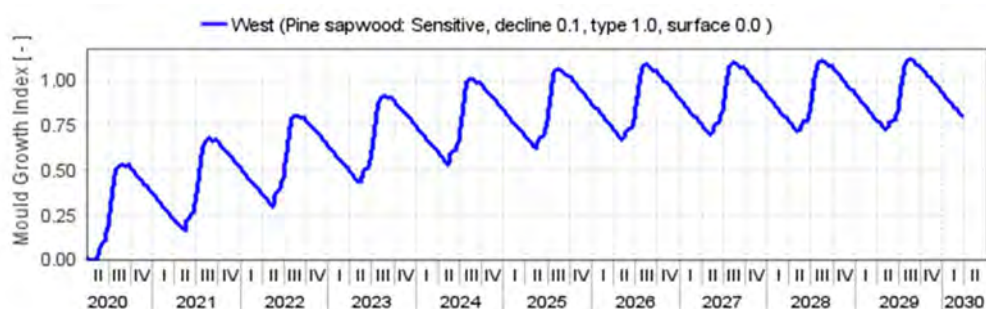


Figure 52: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

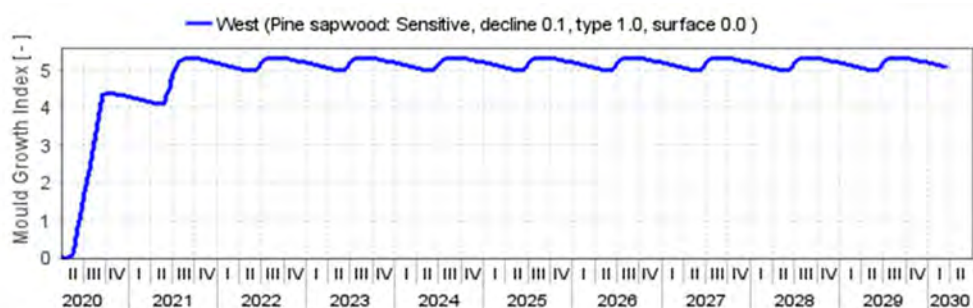


Figure 53: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

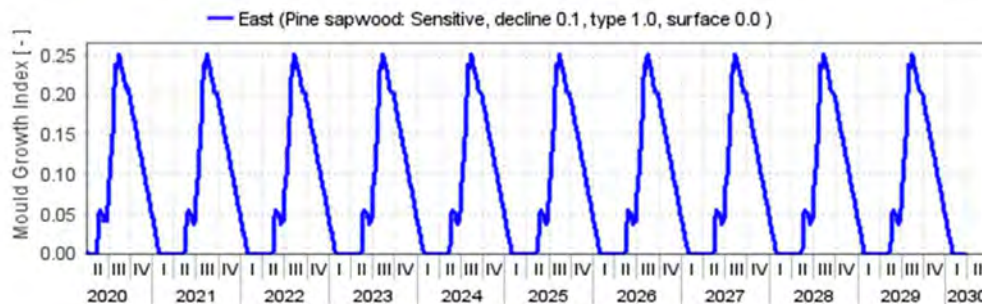


Figure 54: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

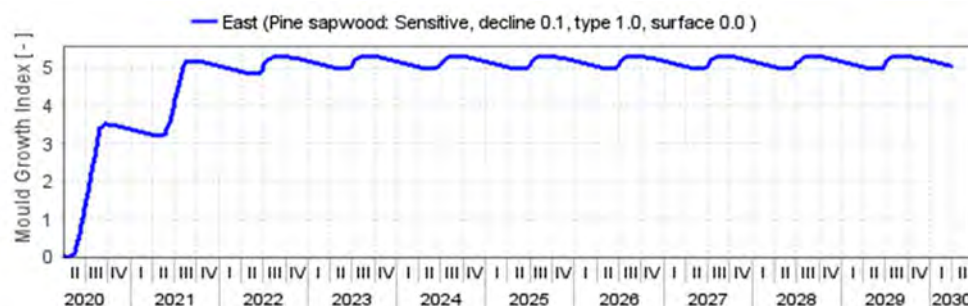


Figure 55: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 61

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

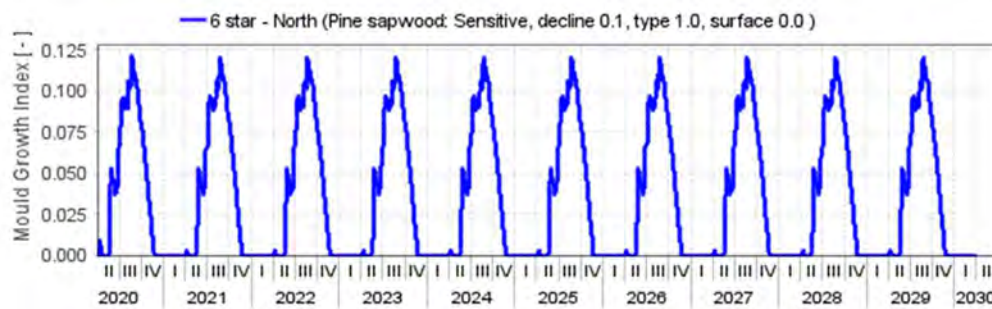


Figure 56: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

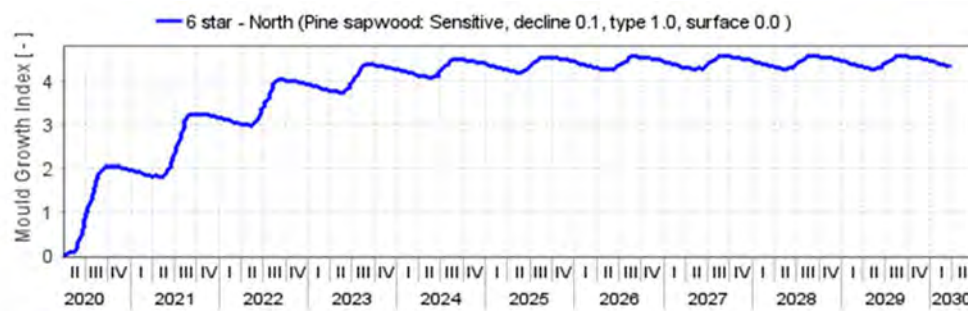


Figure 57: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

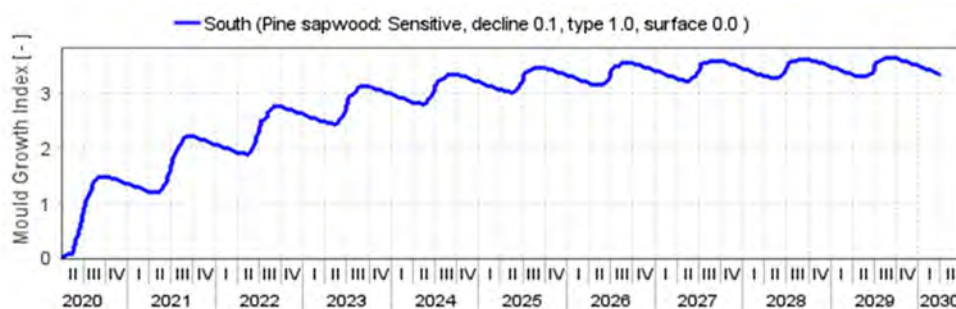


Figure 58: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

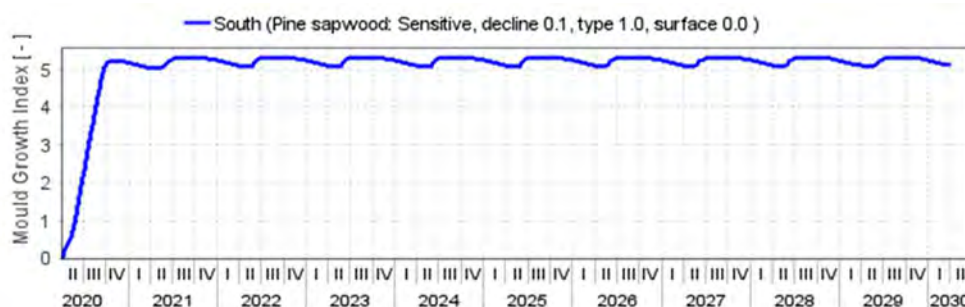


Figure 59: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall type requires further investigation.

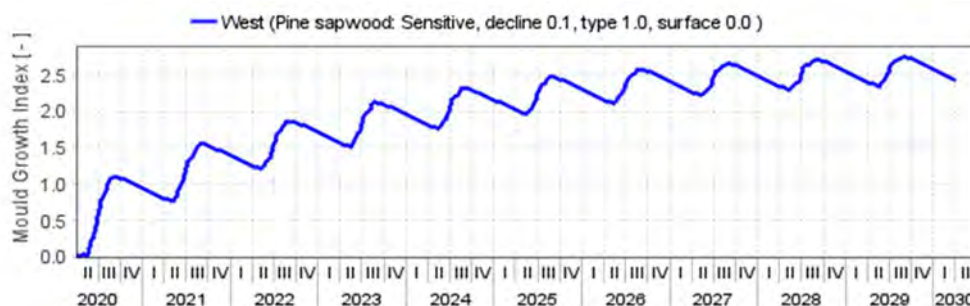


Figure 60: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

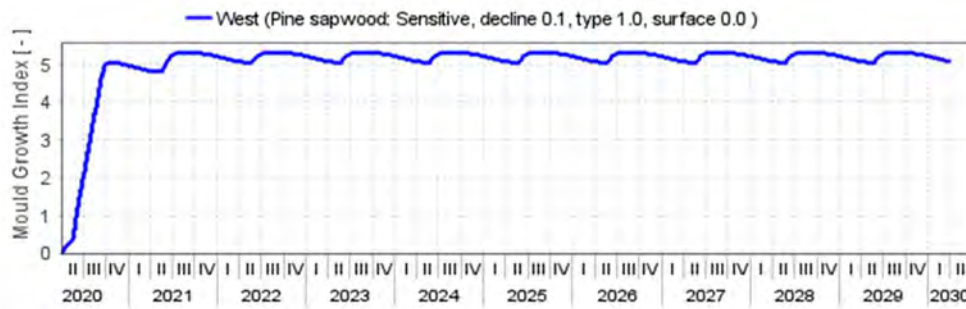


Figure 61: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall type requires further investigation.

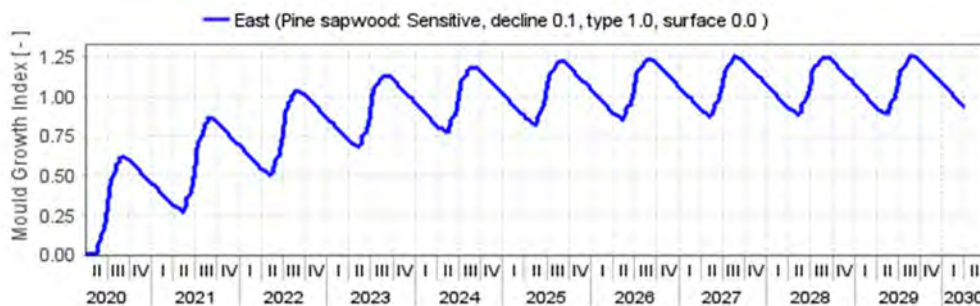


Figure 62: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

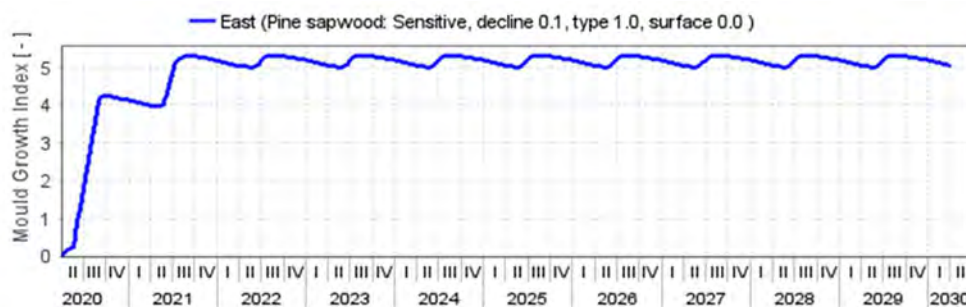


Figure 63: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

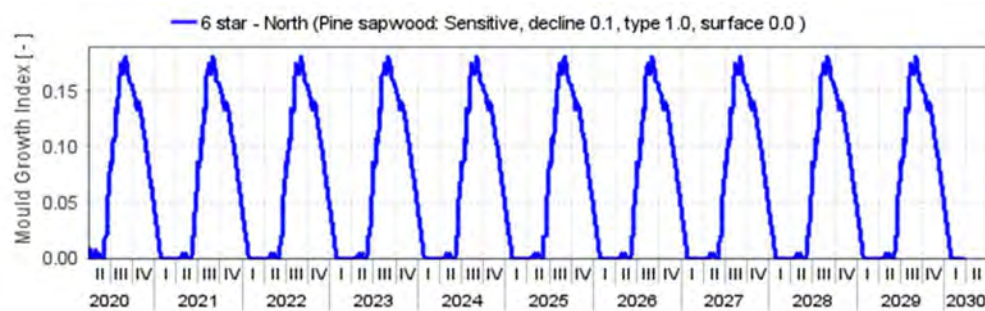


Figure 64: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

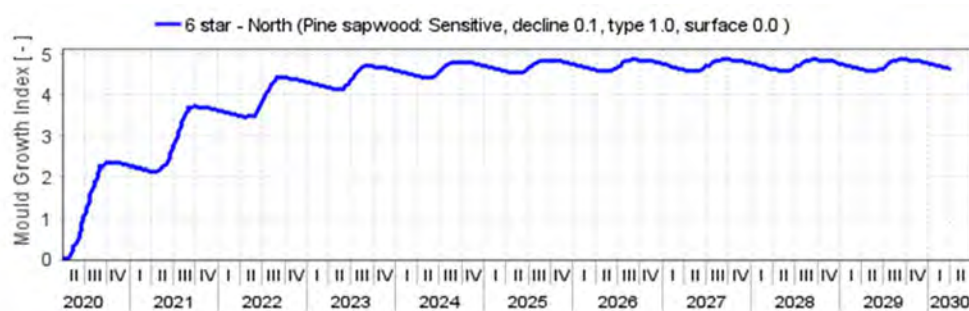


Figure 65: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

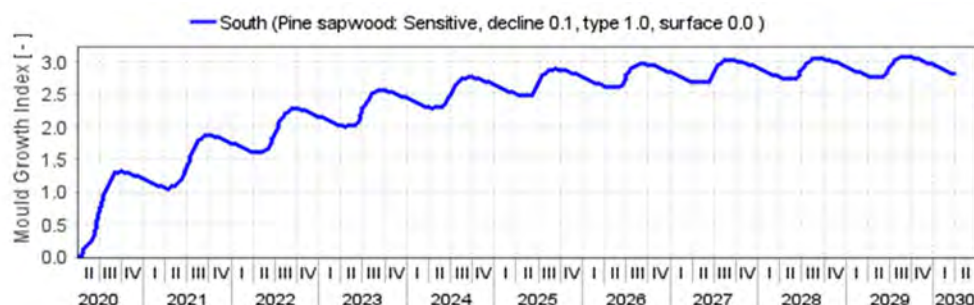


Figure 66: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

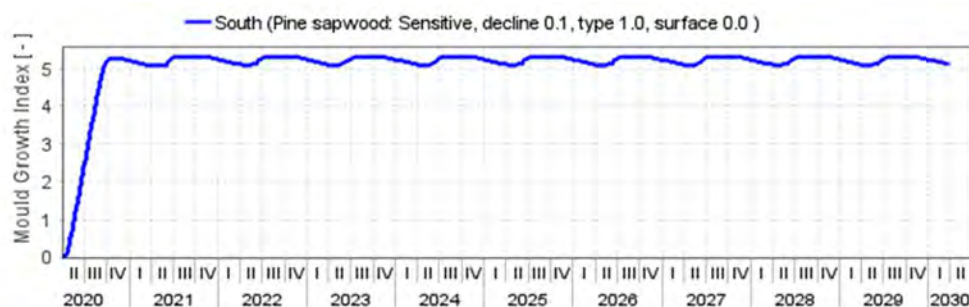


Figure 67: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall type requires further investigation.

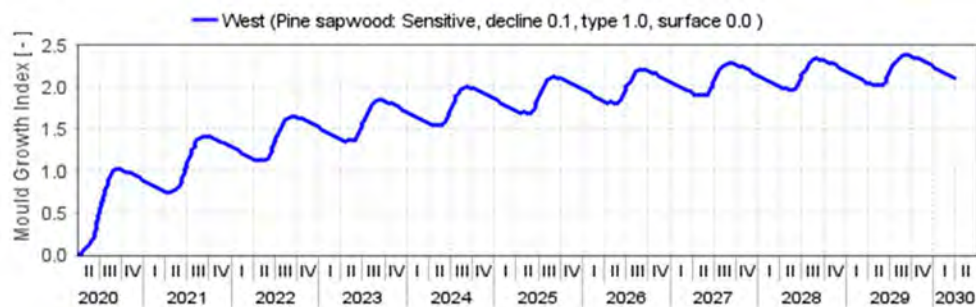


Figure 68: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

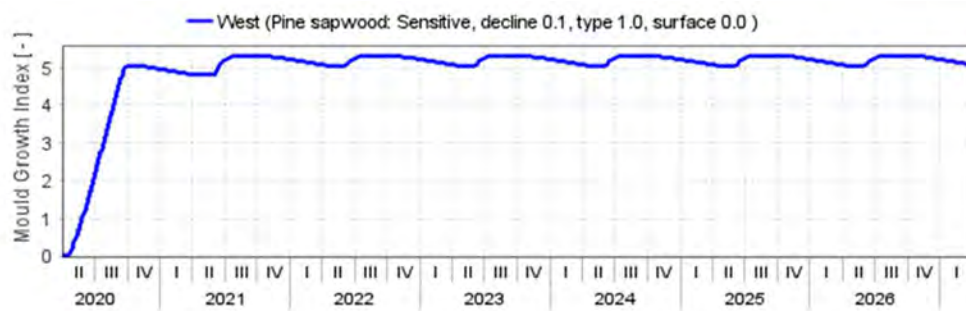


Figure 69: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall type requires further investigation.

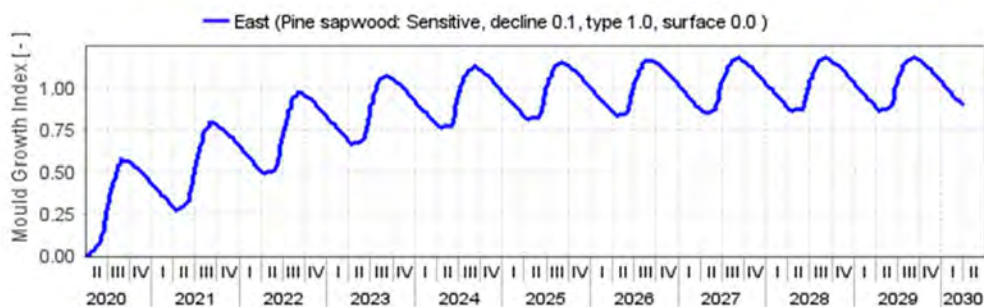


Figure 70: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

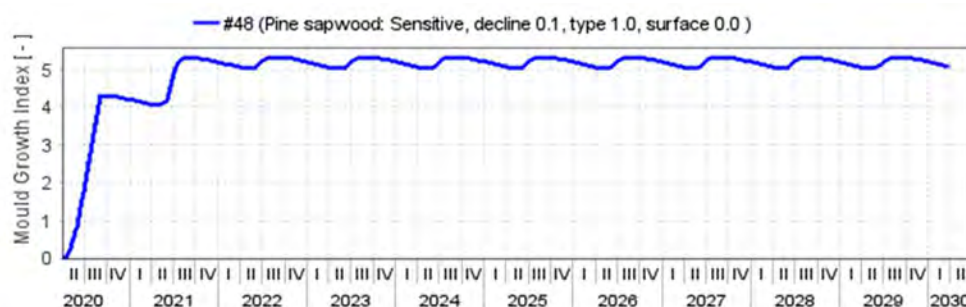


Figure 71: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

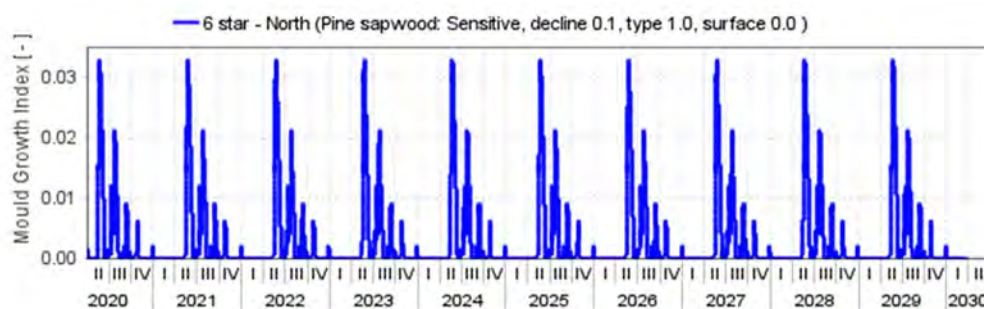


Figure 72: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

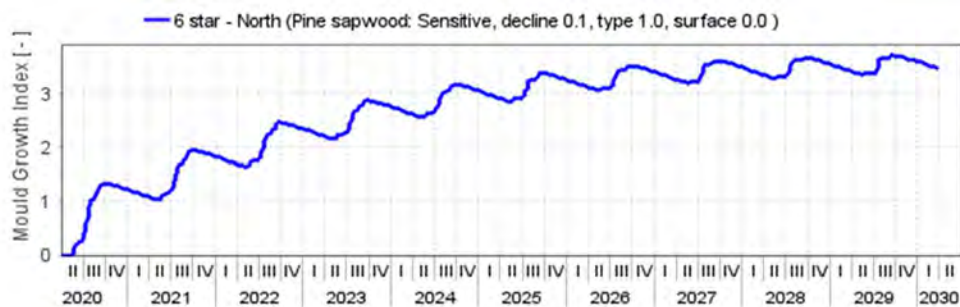


Figure 73: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

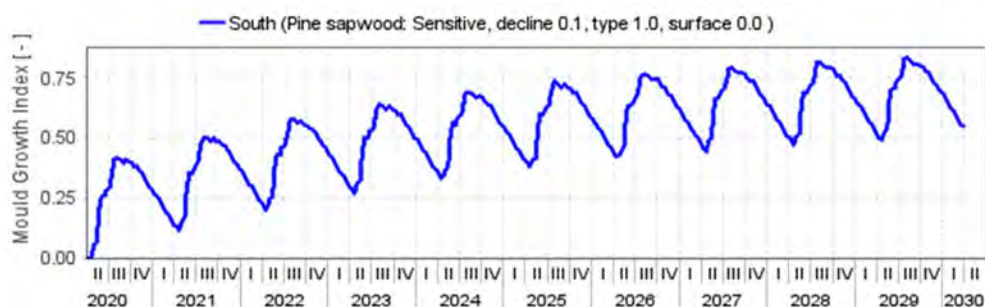


Figure 74: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

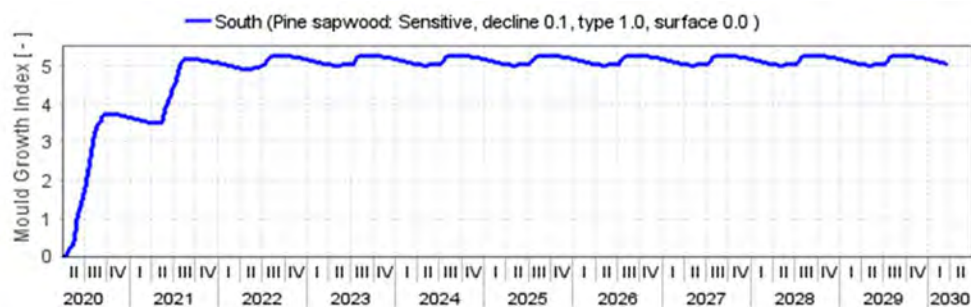


Figure 75: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

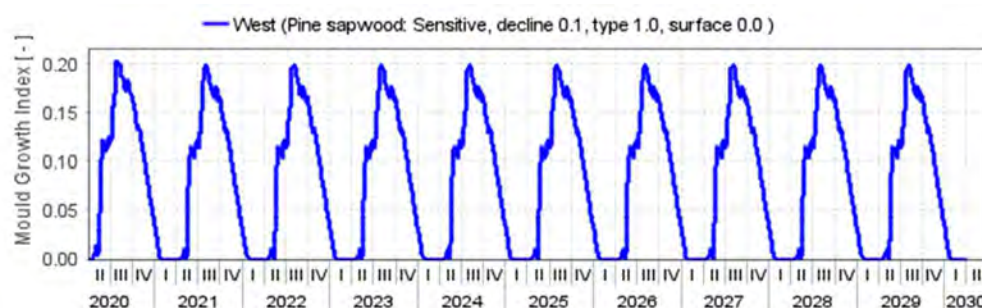


Figure 76: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

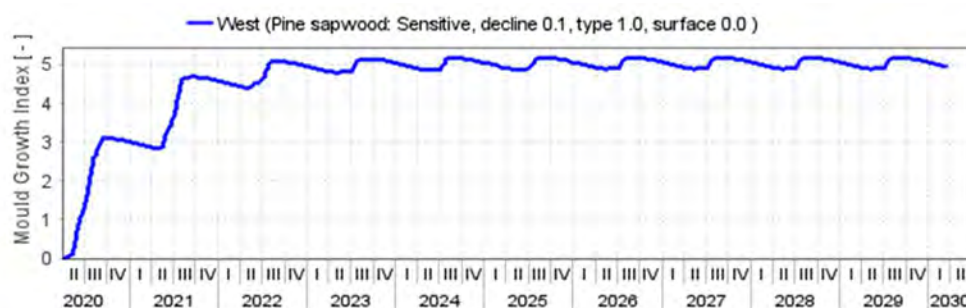


Figure 77: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

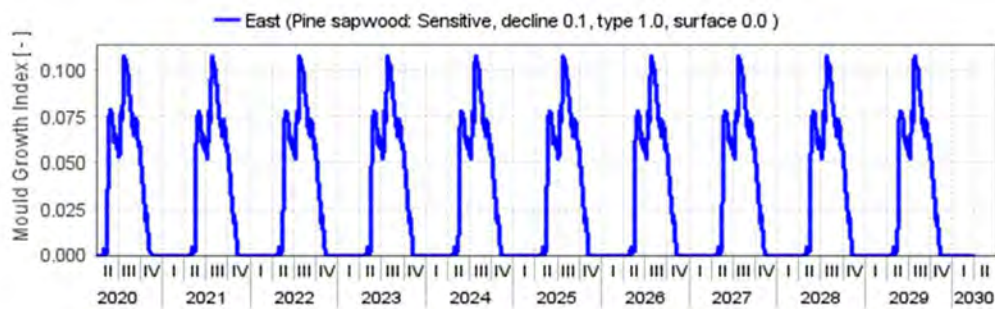


Figure 78: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

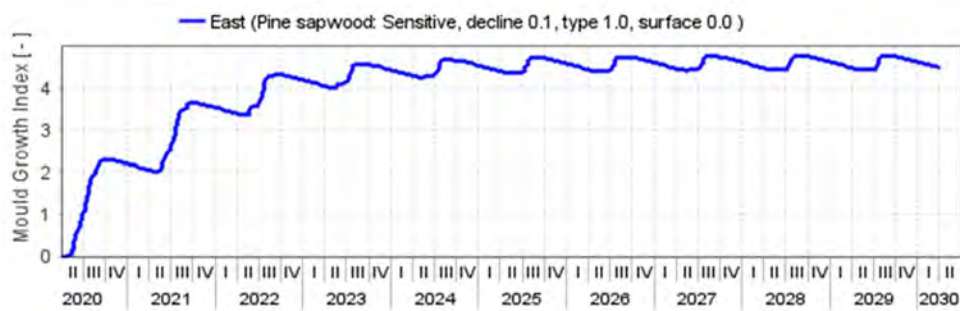


Figure 79: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

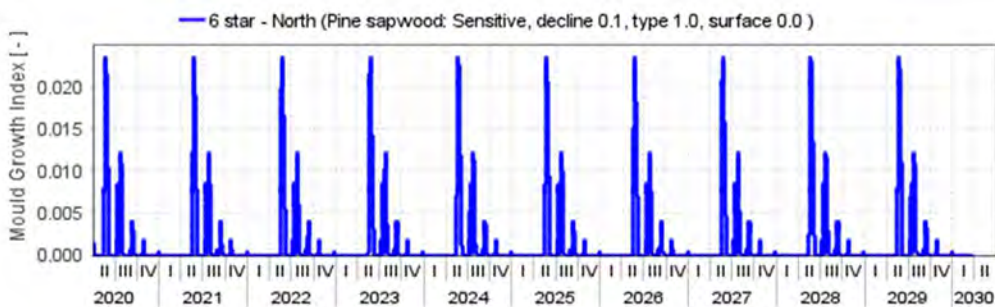


Figure 80: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

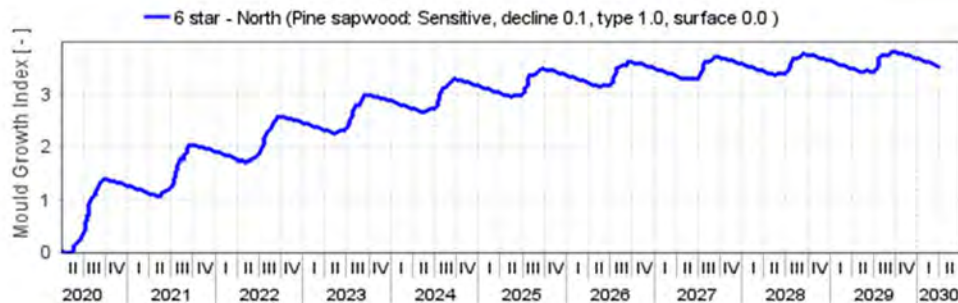


Figure 81: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the tenth year. This wall type requires further investigation.

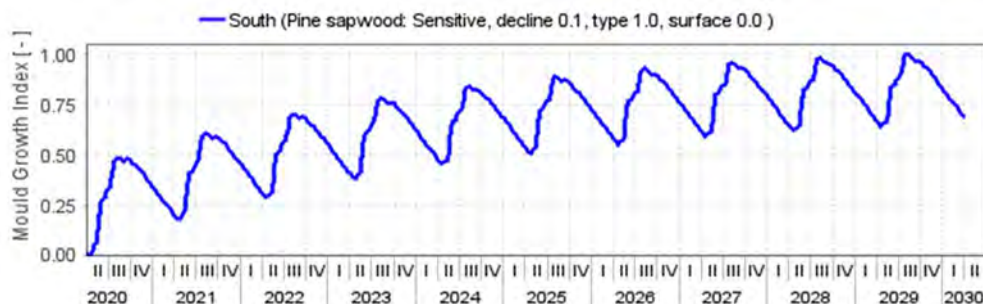


Figure 82: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

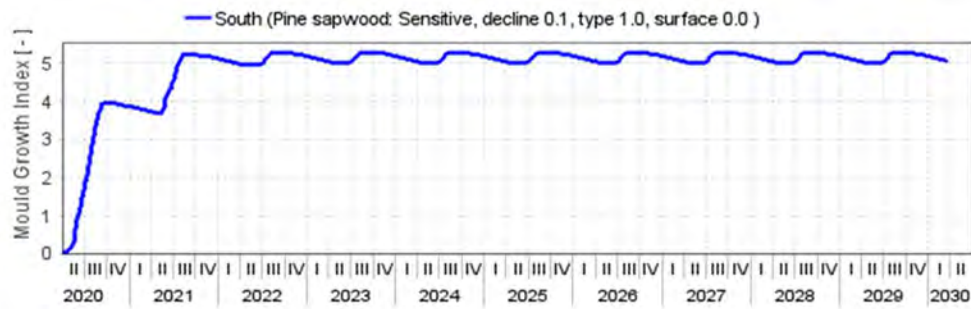


Figure 83: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

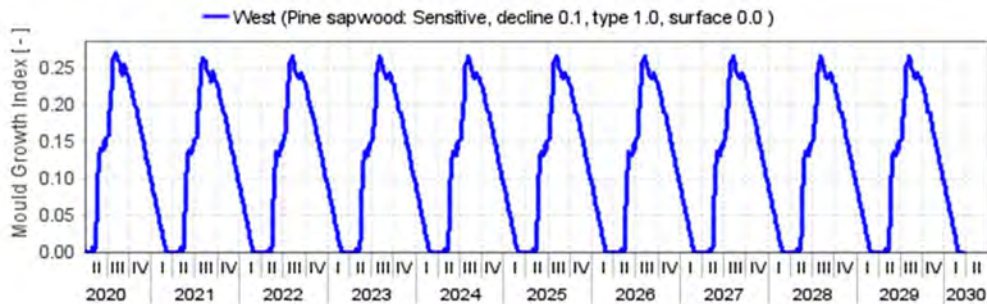


Figure 84: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

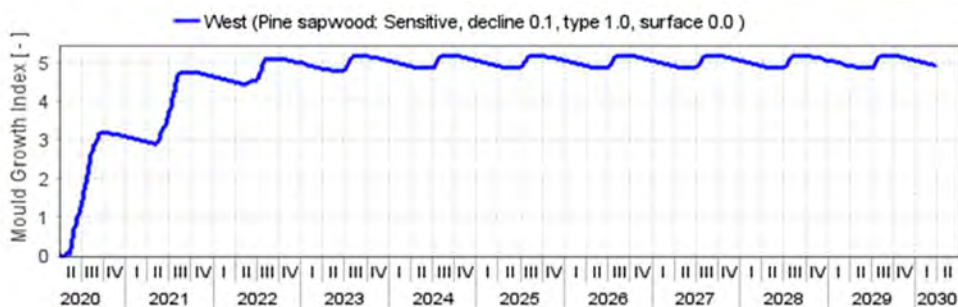


Figure 85: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame. However, the Mould Growth Index does not exceed 1.0.

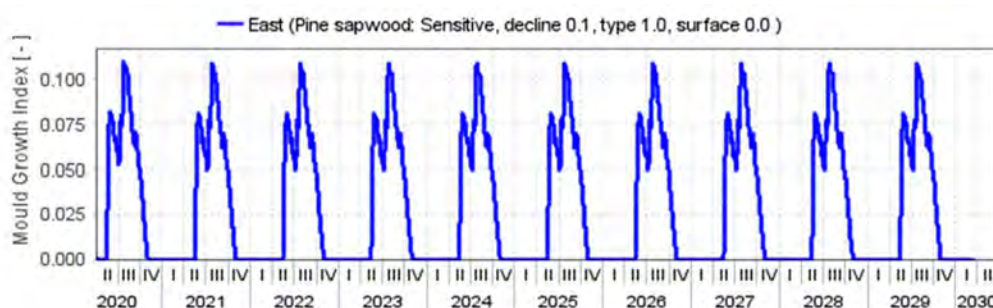


Figure 86: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

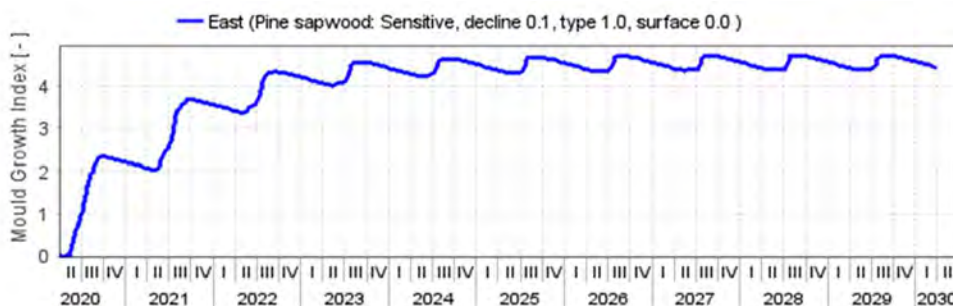


Figure 87: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

9. Climate zone 66

NCC CZ 4

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall type requires further investigation.

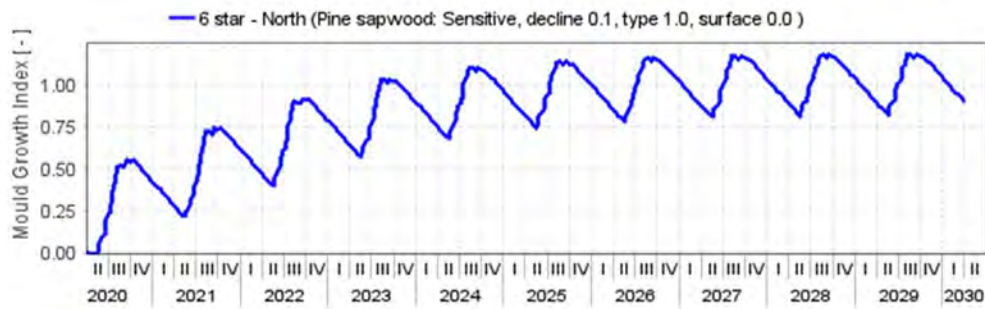


Figure 88: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

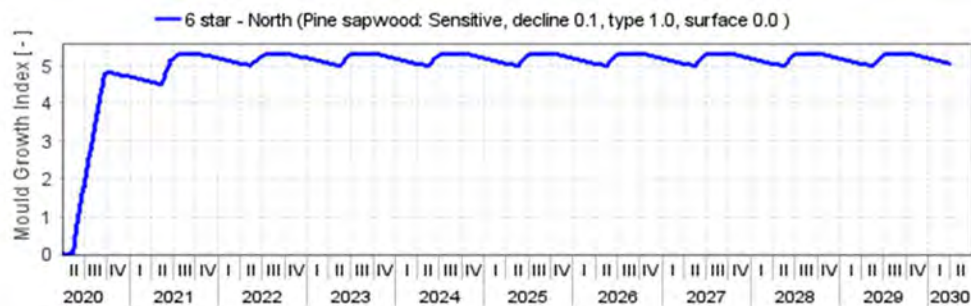


Figure 89: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

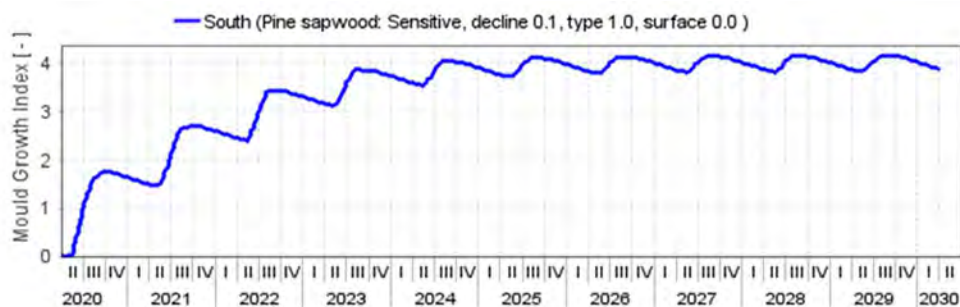


Figure 90: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

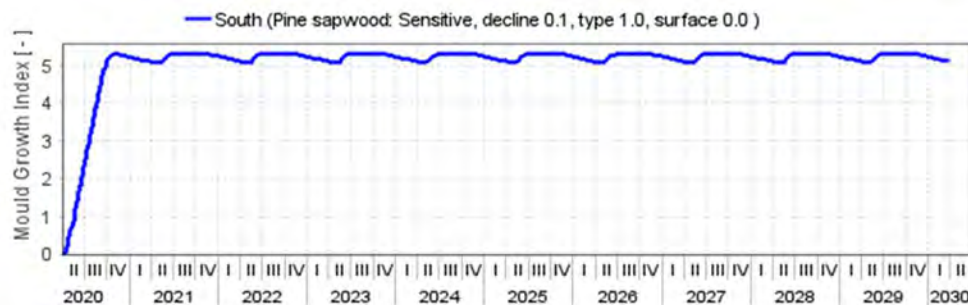


Figure 91: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall type requires further investigation.

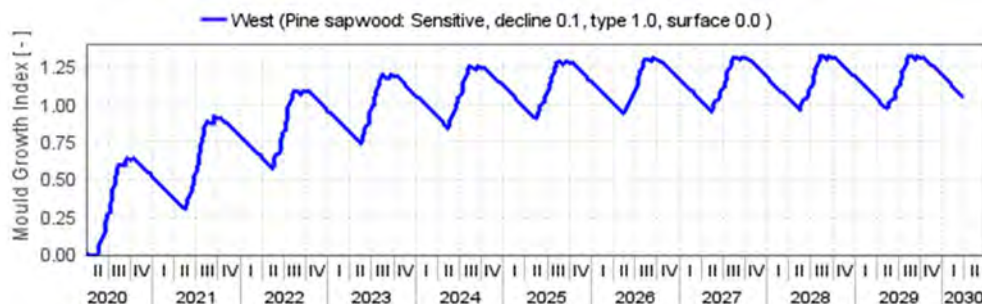


Figure 92: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

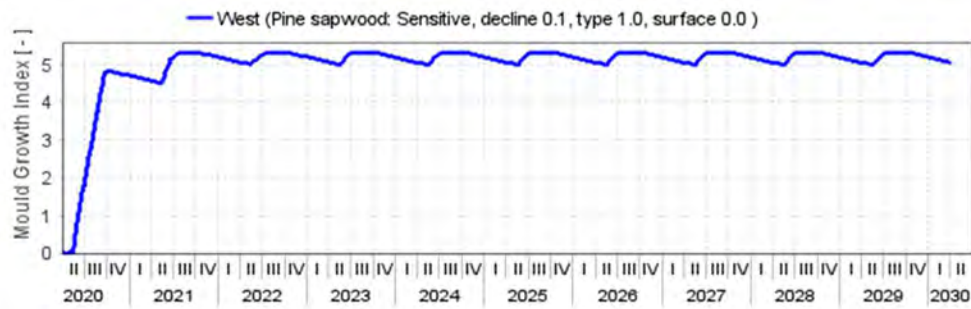


Figure 93: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

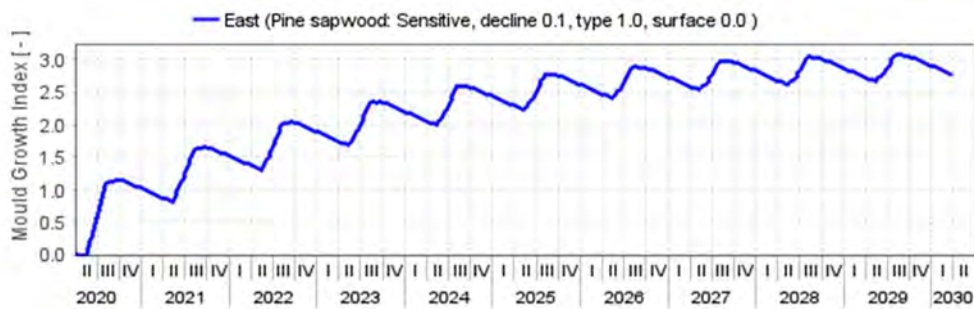


Figure 94: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

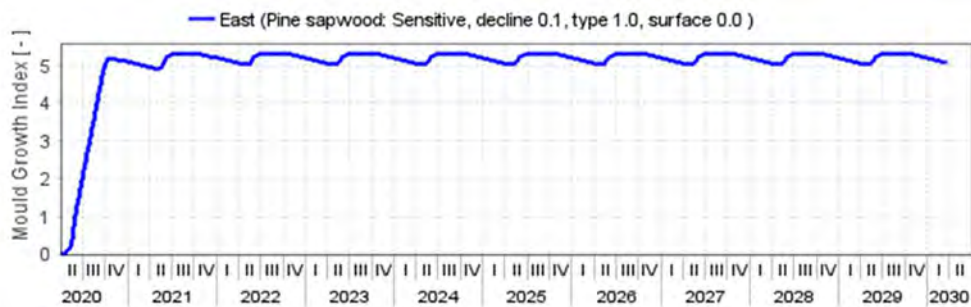


Figure 95: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall type requires further investigation.

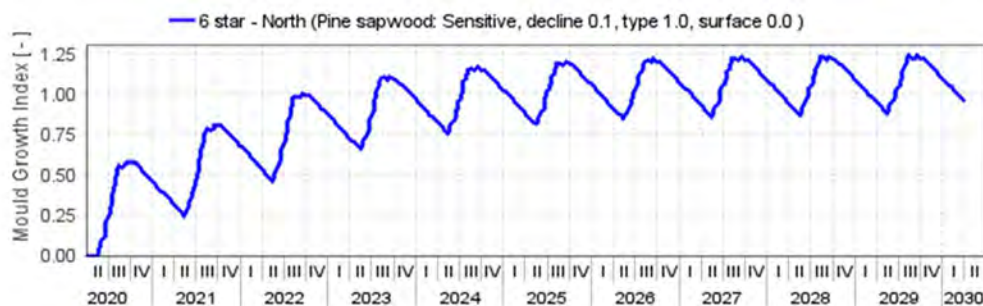


Figure 96: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

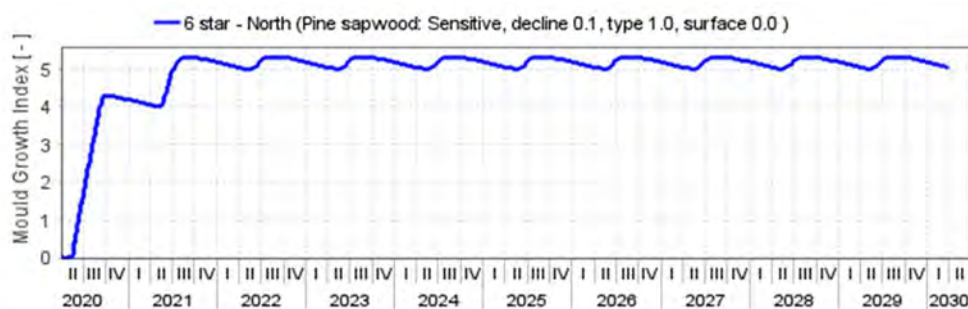


Figure 97: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

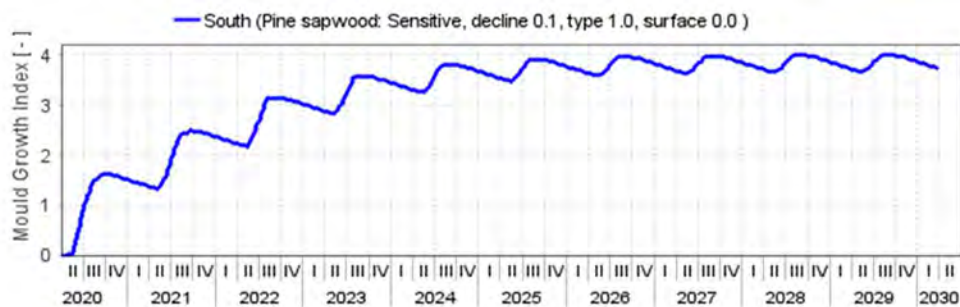


Figure 98: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

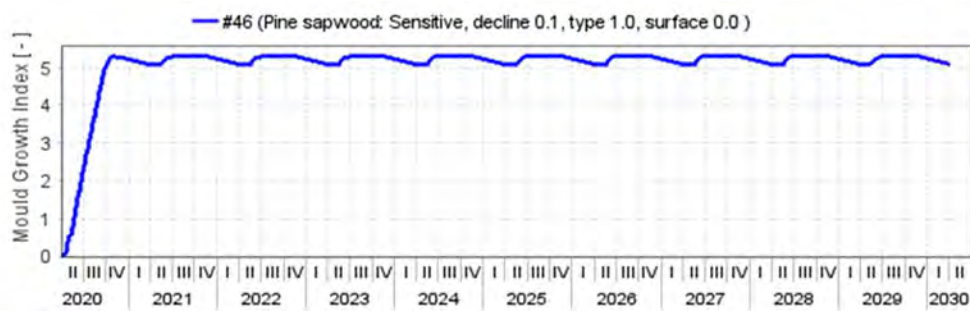


Figure 99: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

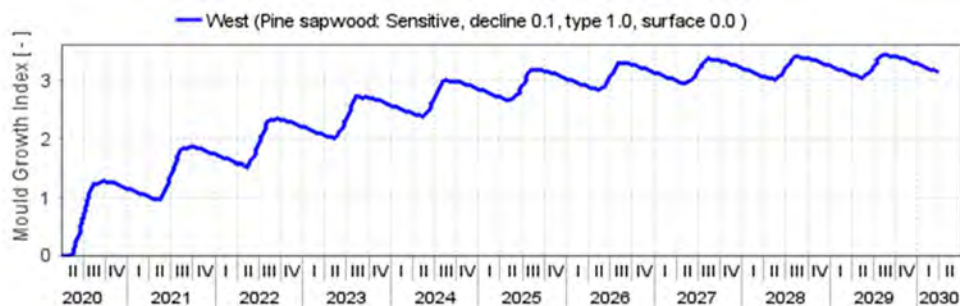


Figure 100: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

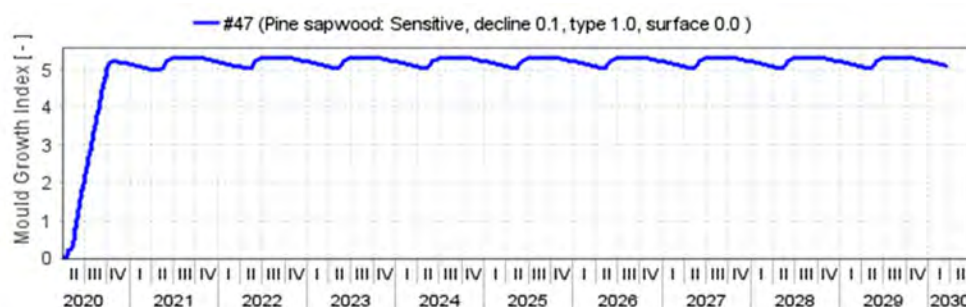


Figure 101: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall type requires further investigation.

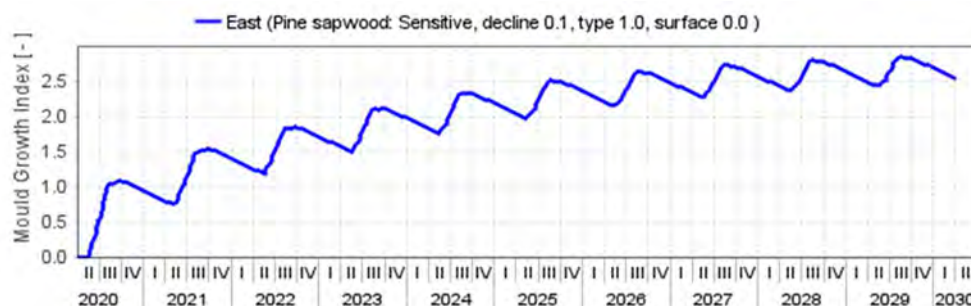


Figure 102: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

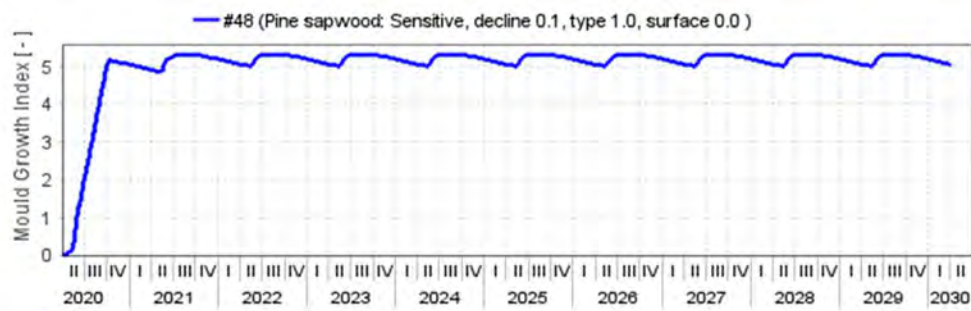


Figure 103: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall type requires further investigation.

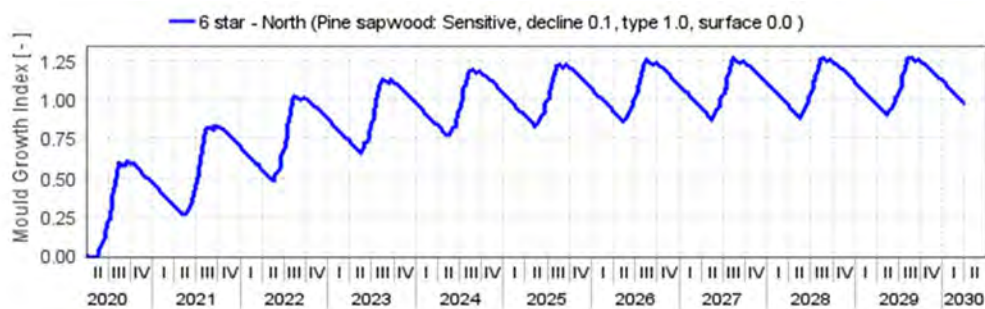


Figure 104: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

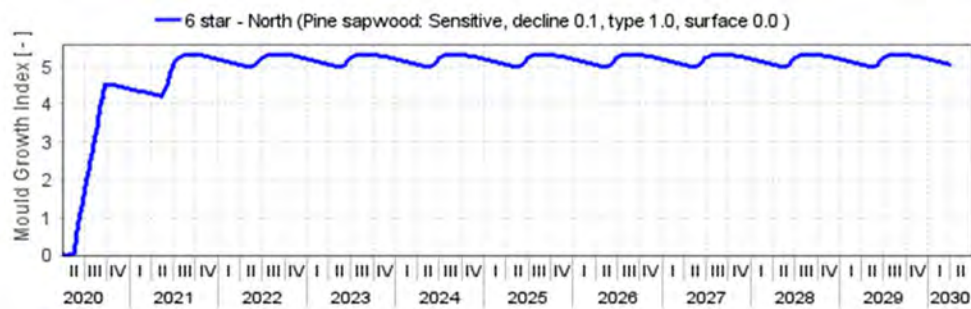


Figure 105: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

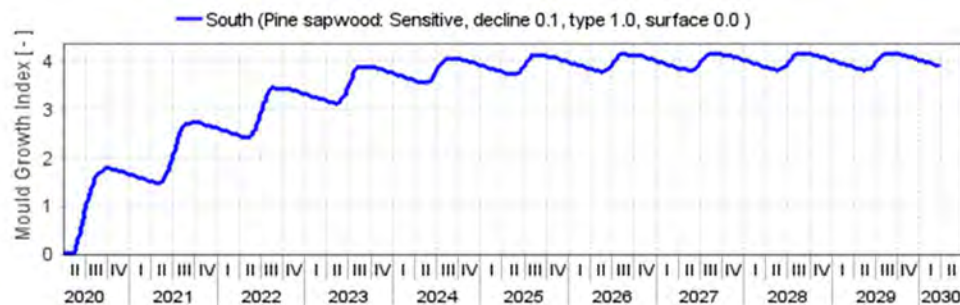


Figure 106: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

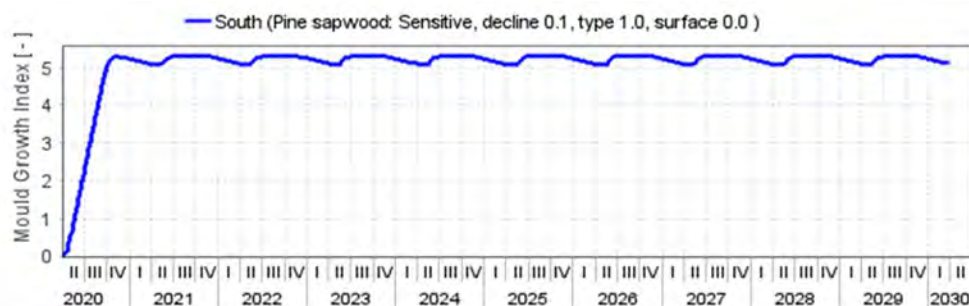


Figure 107: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

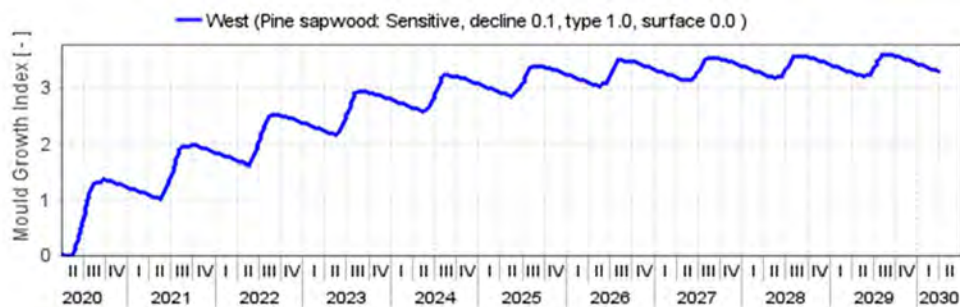


Figure 108: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

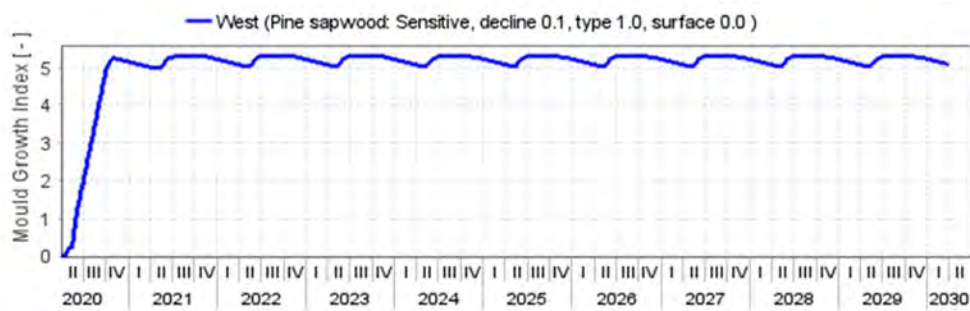


Figure 109: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

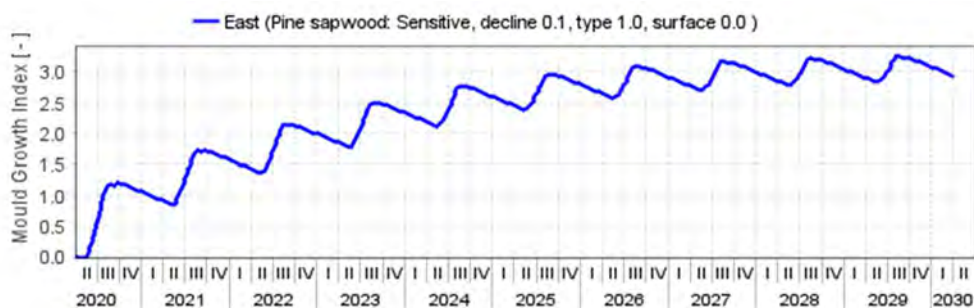


Figure 110: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture Accumulation – Nil

Mould Growth – Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

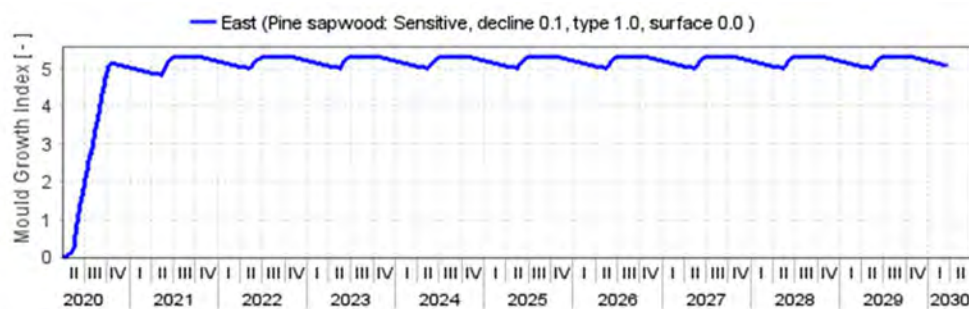


Figure 111: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 5: Hygrothermal simulation results – Concrete block, internally insulated

Revision 1 (10/03/2023)

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

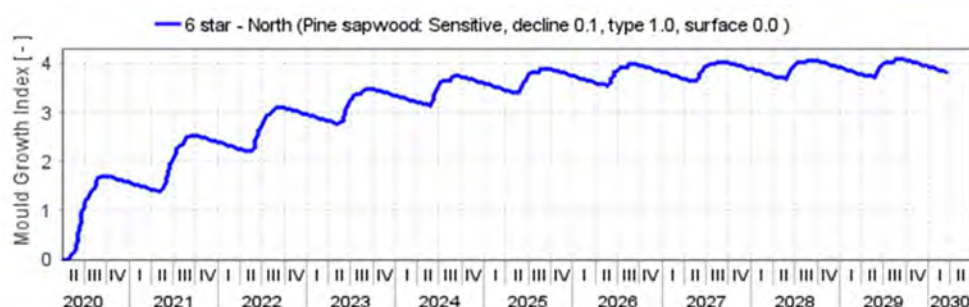


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

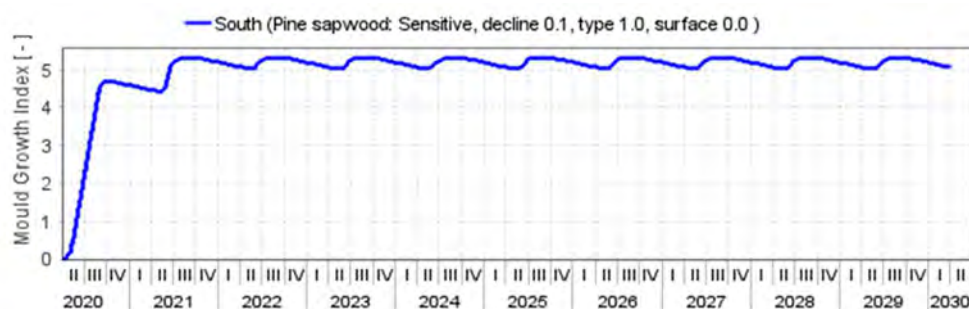


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

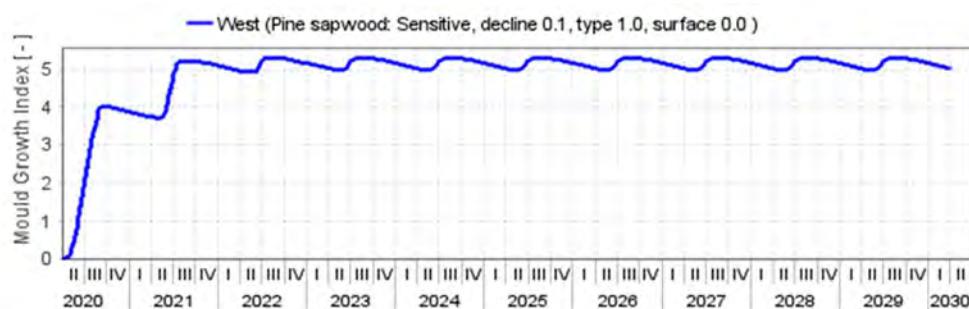


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

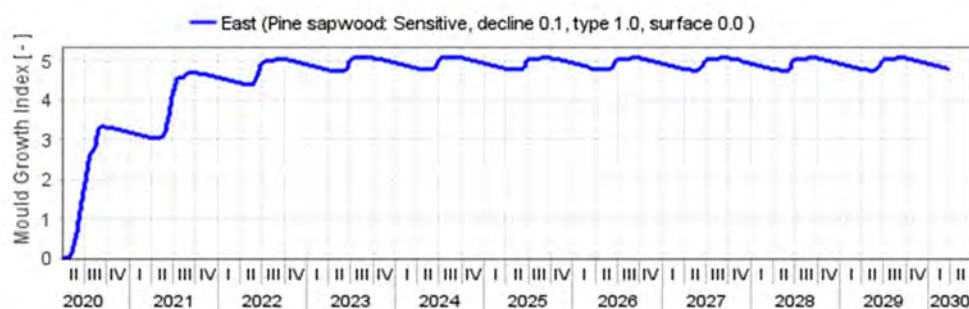


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

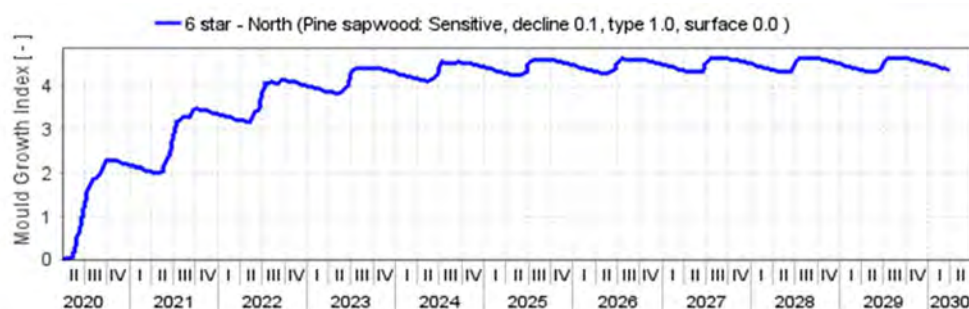


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

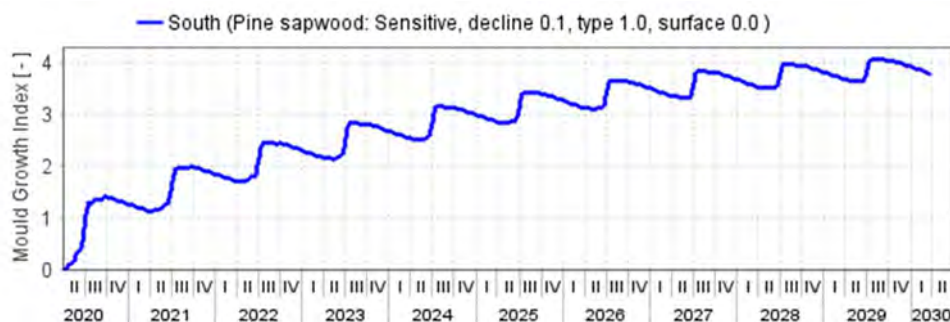


Figure 6: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

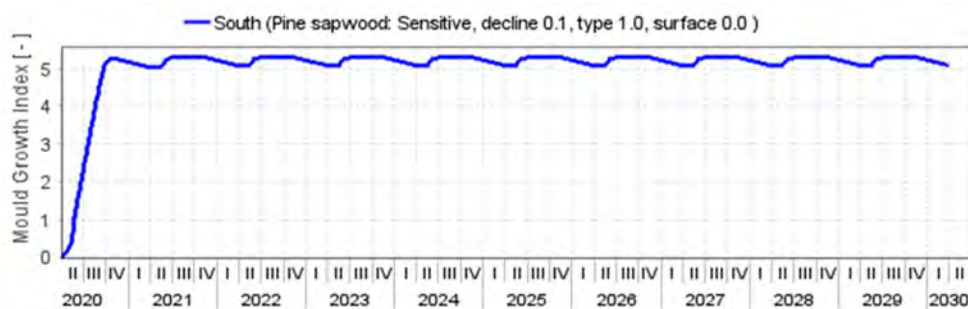


Figure 7: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5.0

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

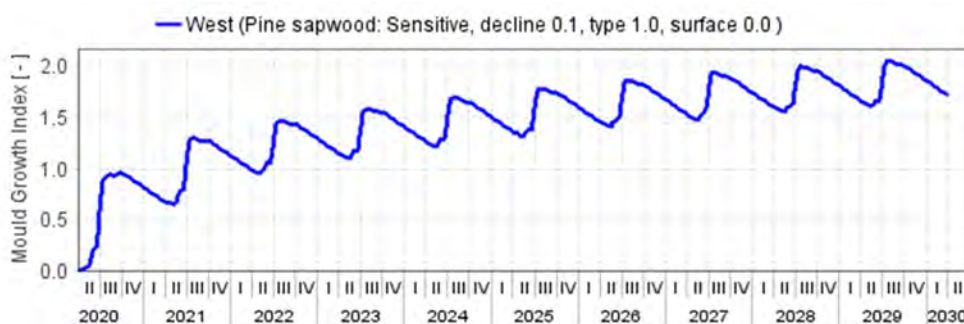


Figure 8: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

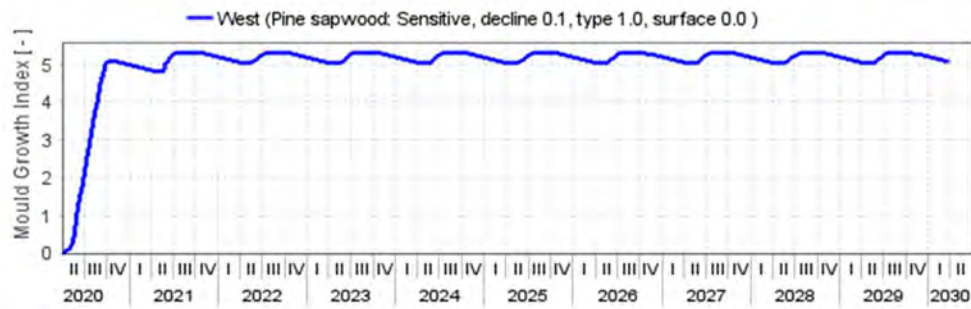


Figure 9: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

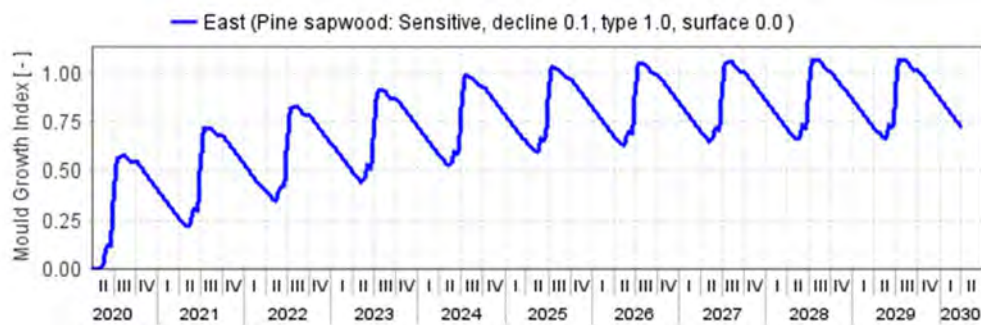


Figure 10: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

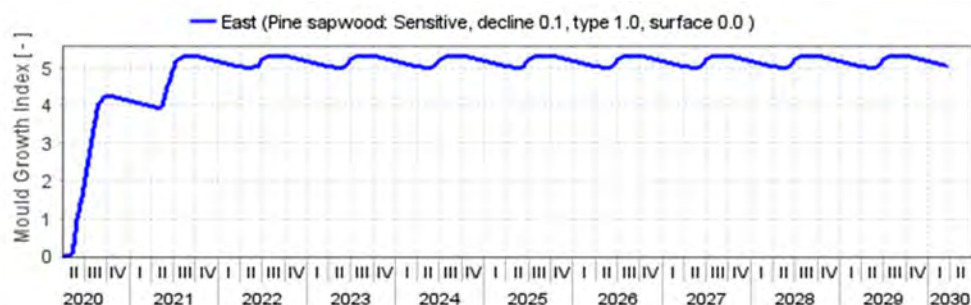


Figure 11: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

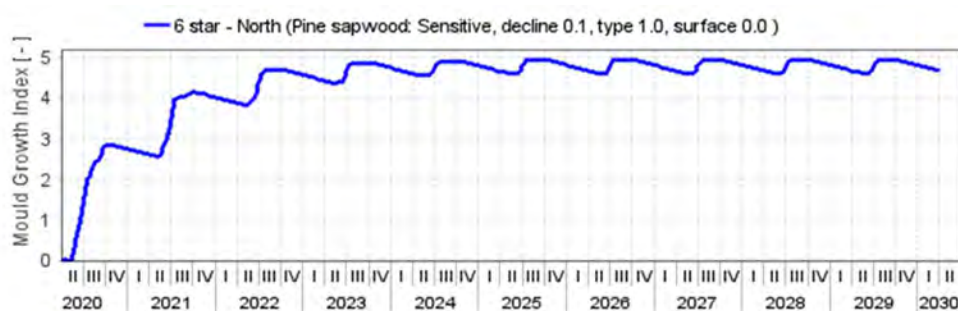


Figure 12: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

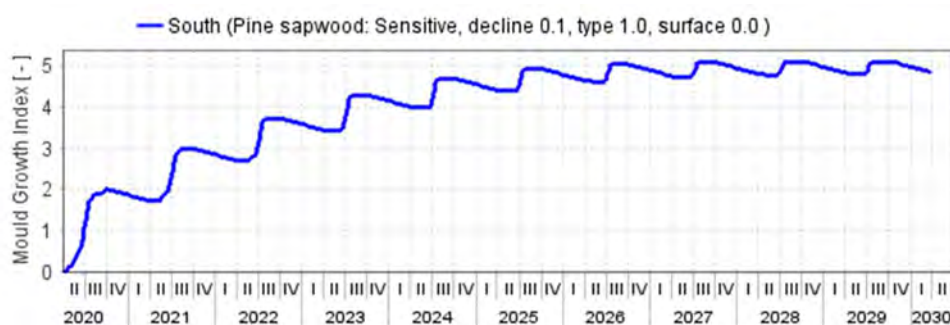


Figure 13: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

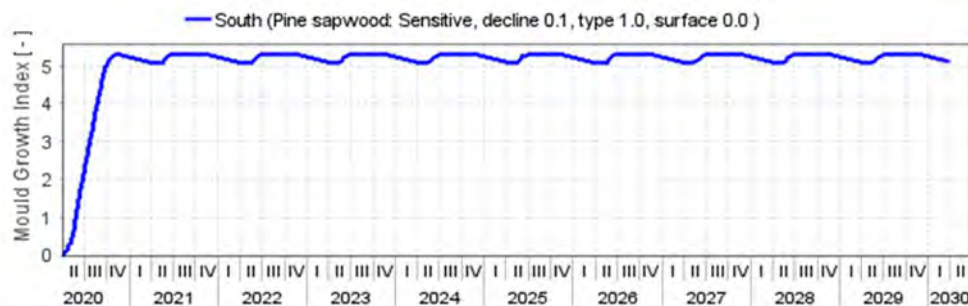


Figure 14: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

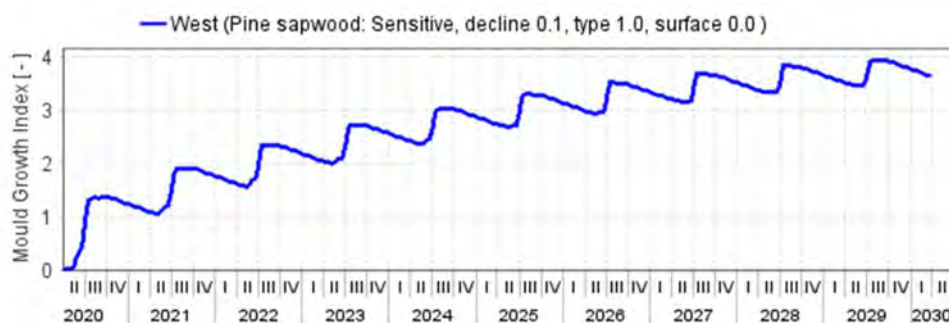


Figure 15: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

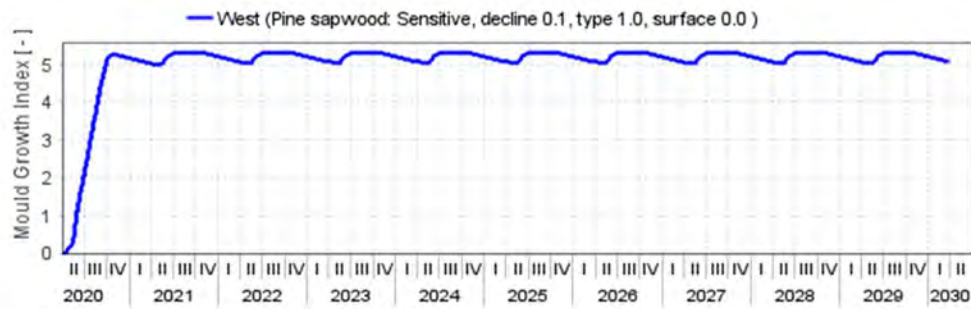


Figure 16: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

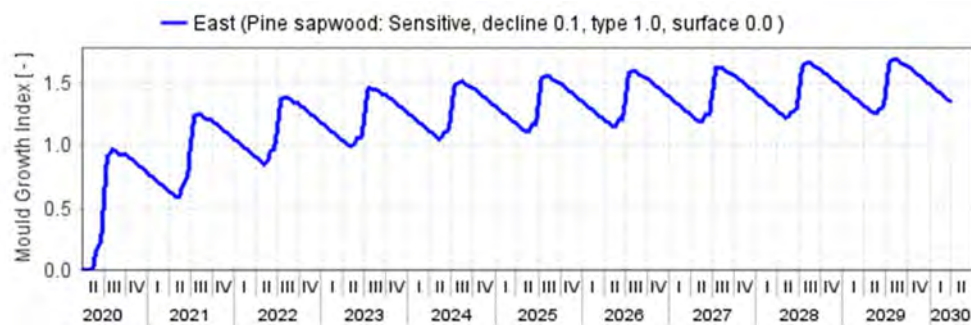


Figure 17: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

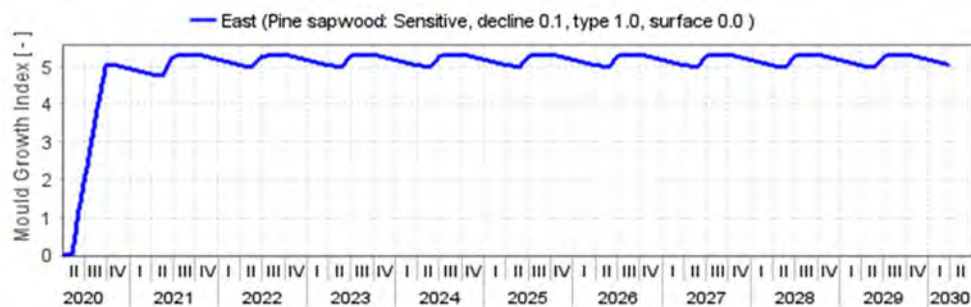


Figure 18: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

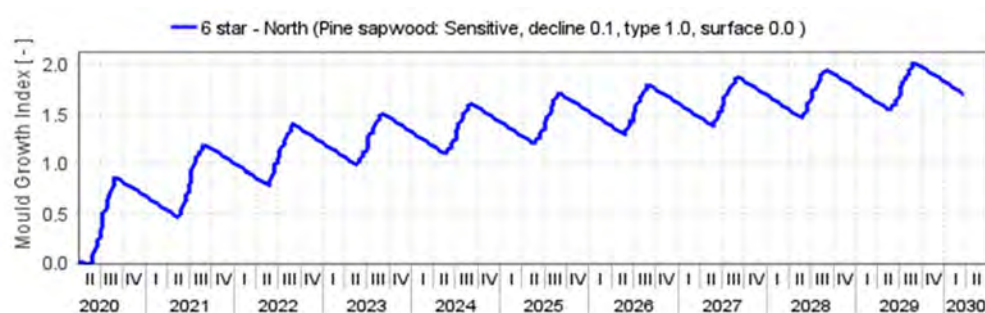


Figure 19: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

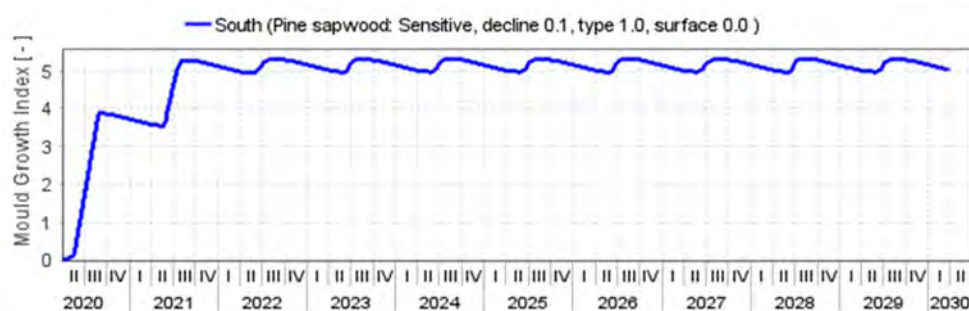


Figure 20: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

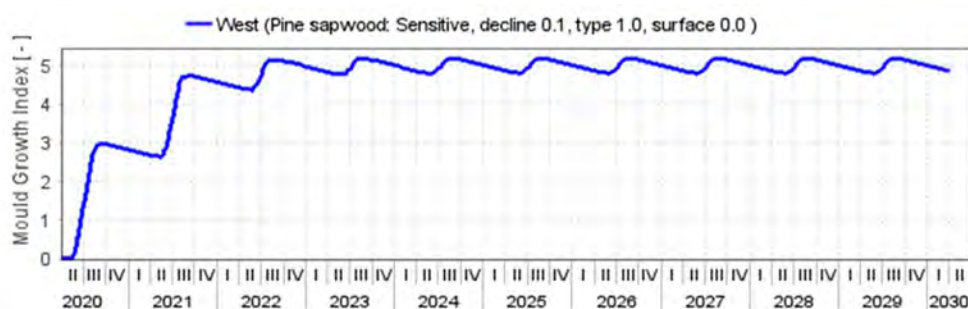


Figure 21: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

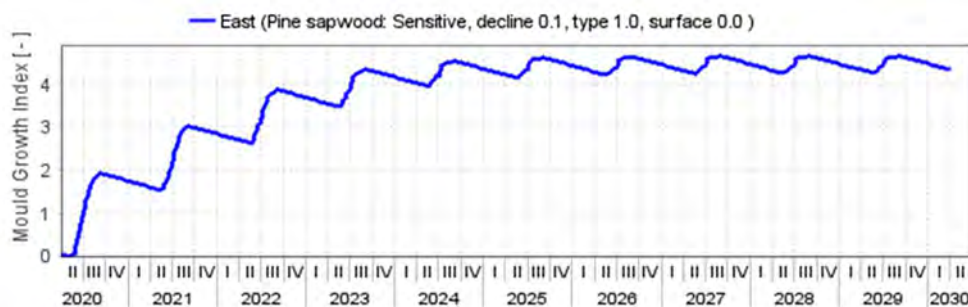


Figure22: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall system requires further investigation.

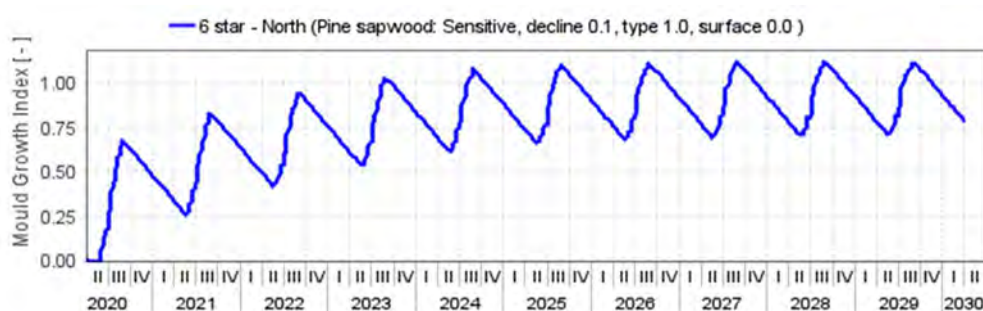


Figure 23: NatHERS CZ 27 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

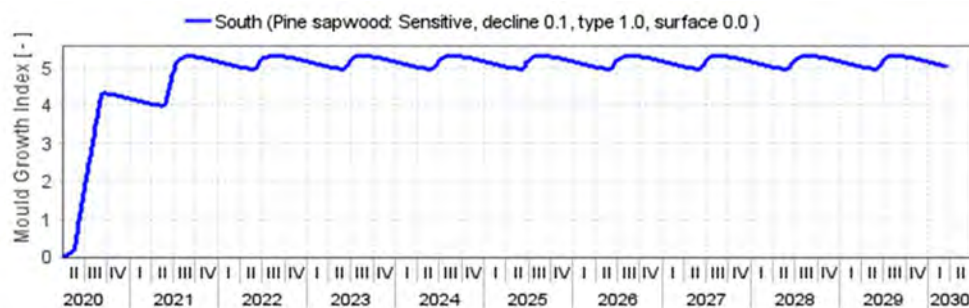


Figure 24: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

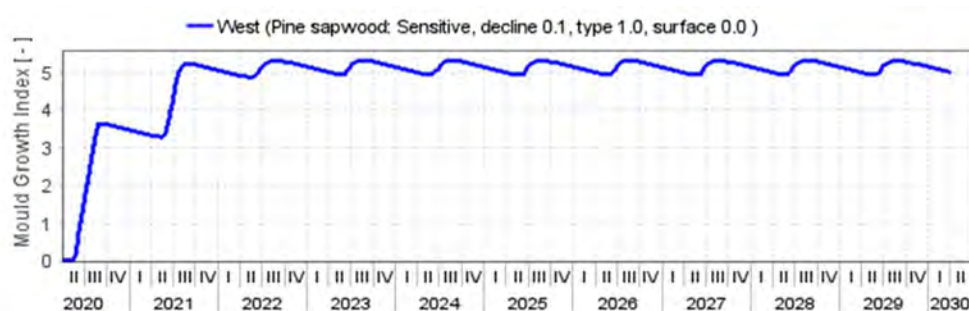


Figure 25: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

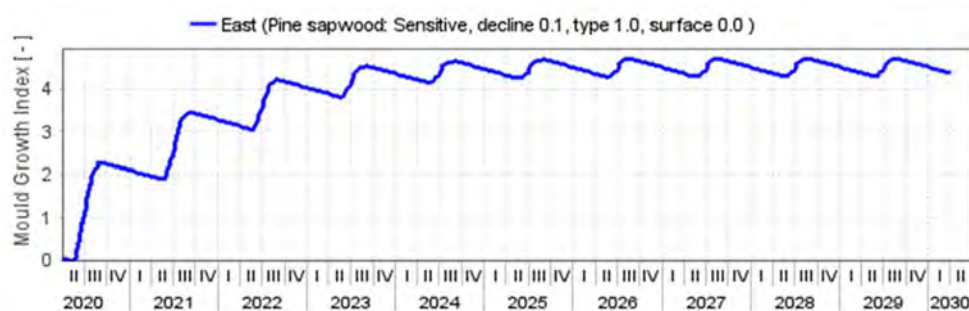


Figure 26: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

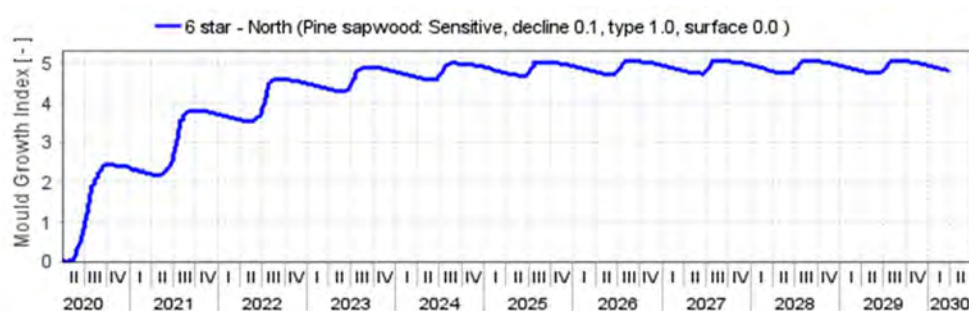


Figure 27: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

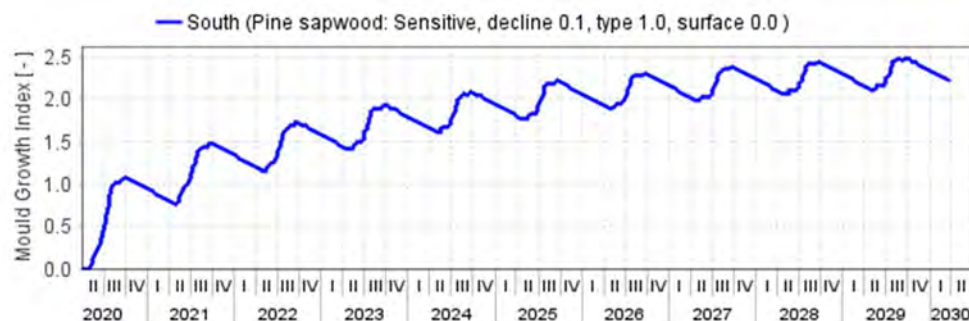


Figure 28: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

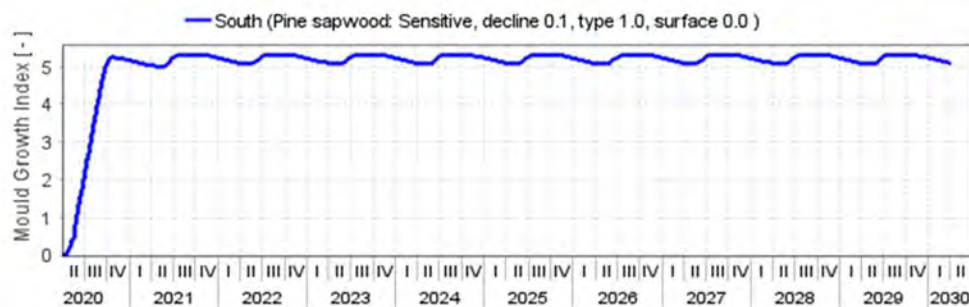


Figure 29: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

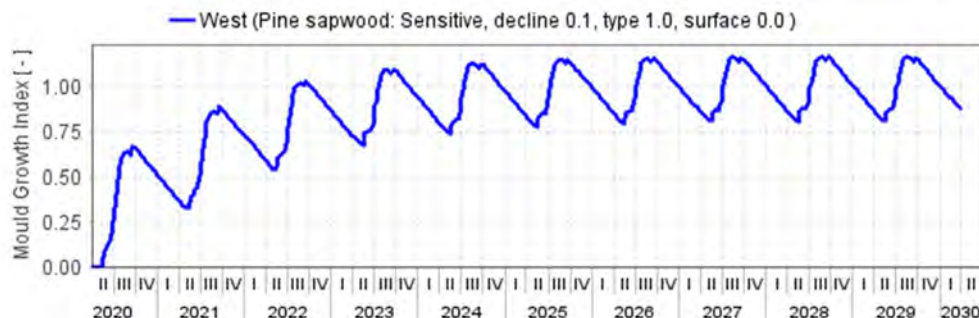


Figure 30: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

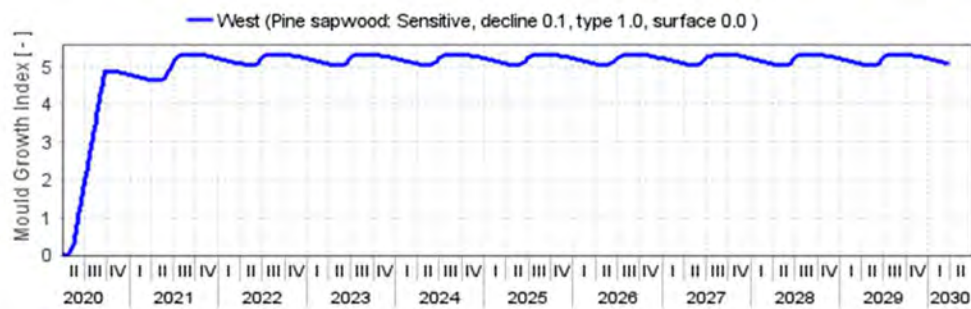


Figure 31: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

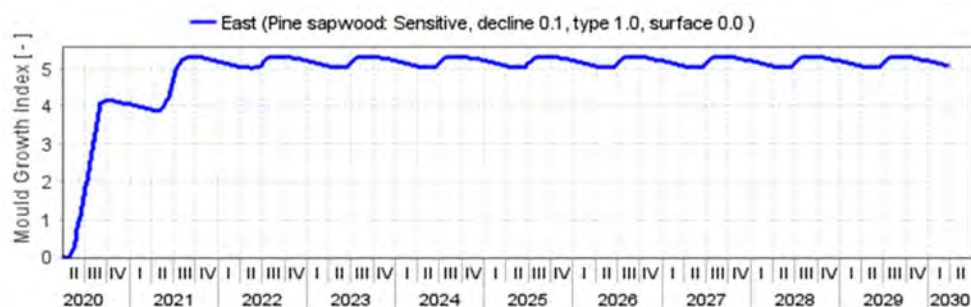


Figure 32: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

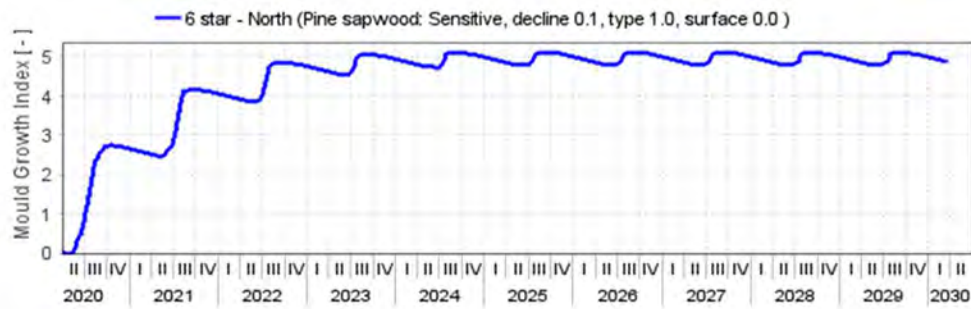


Figure 33: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall system requires further investigation.

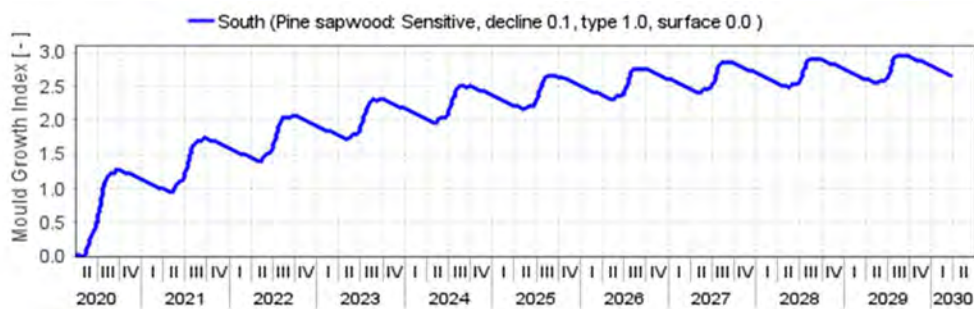


Figure 34: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

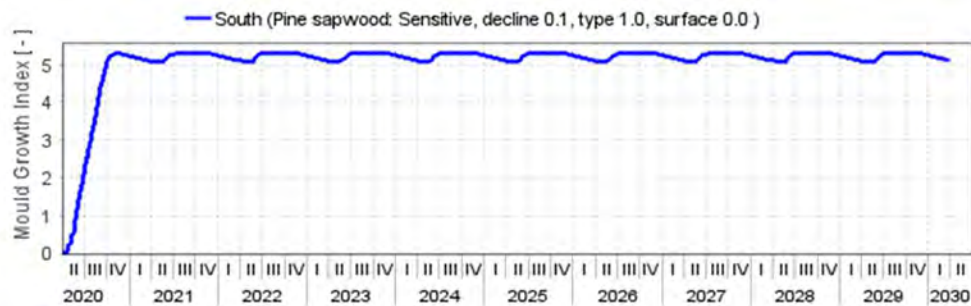


Figure 35: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

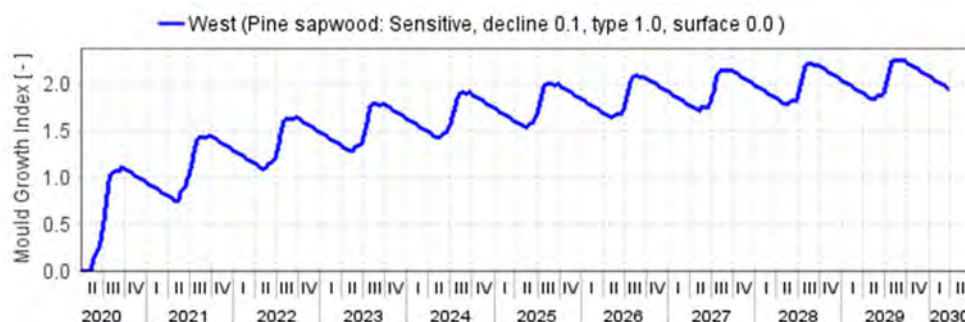


Figure 36: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

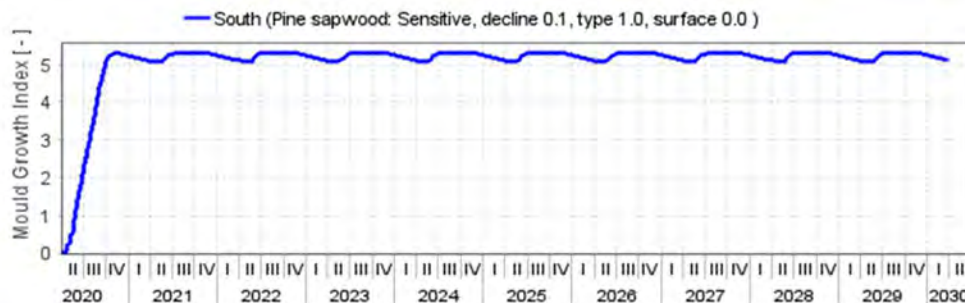


Figure 37: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

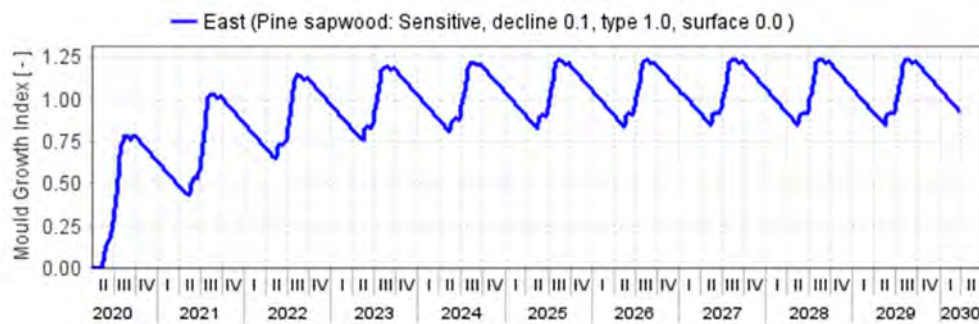


Figure 38: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

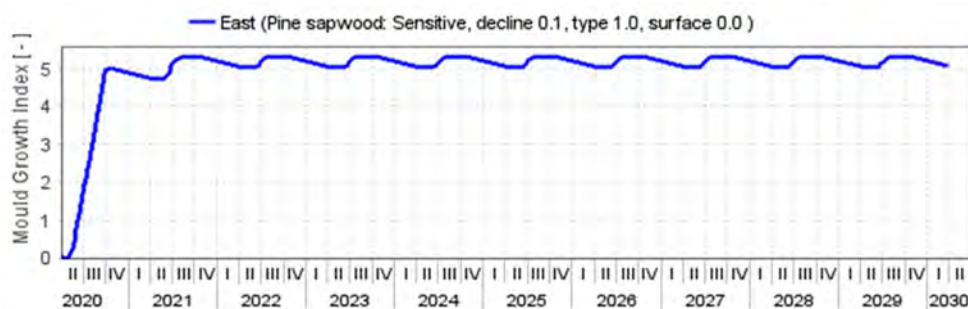


Figure 39: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

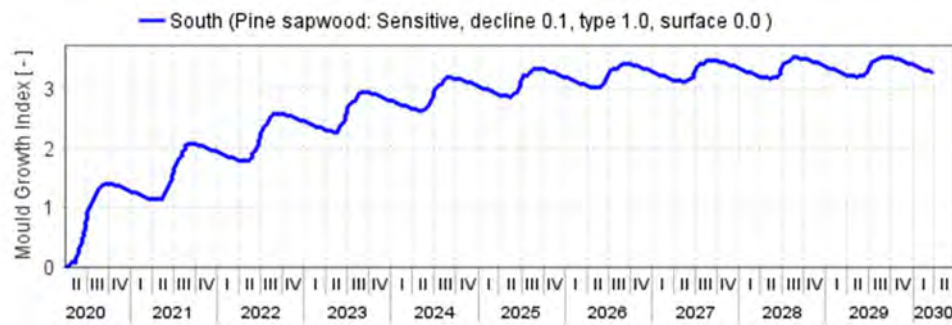


Figure 40: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

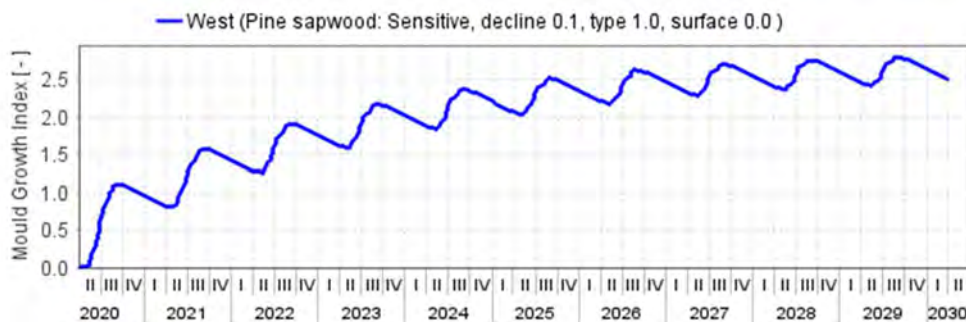


Figure 41: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

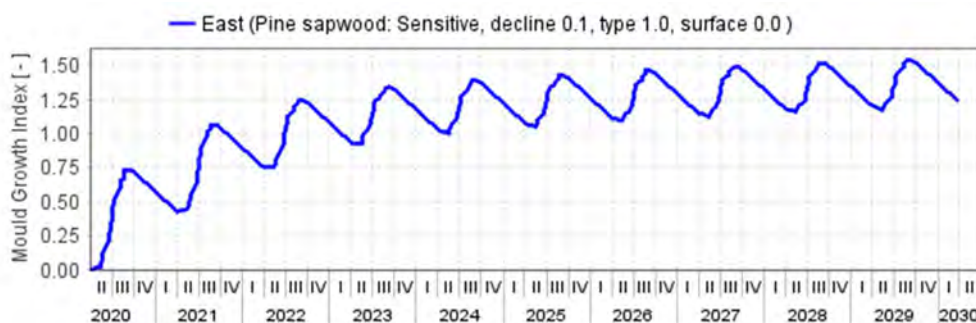


Figure 42: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

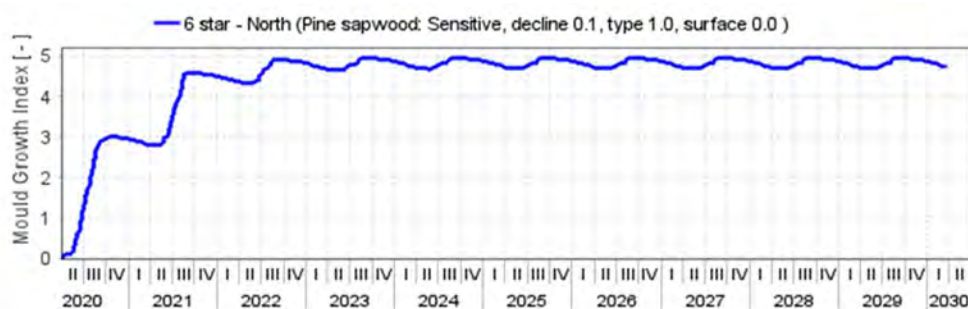


Figure 43: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

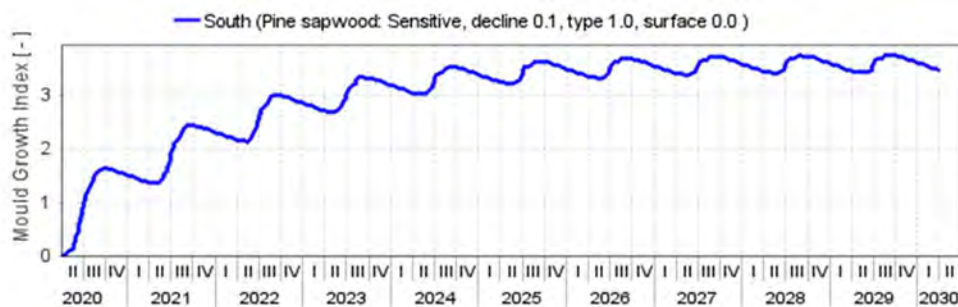


Figure 44: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

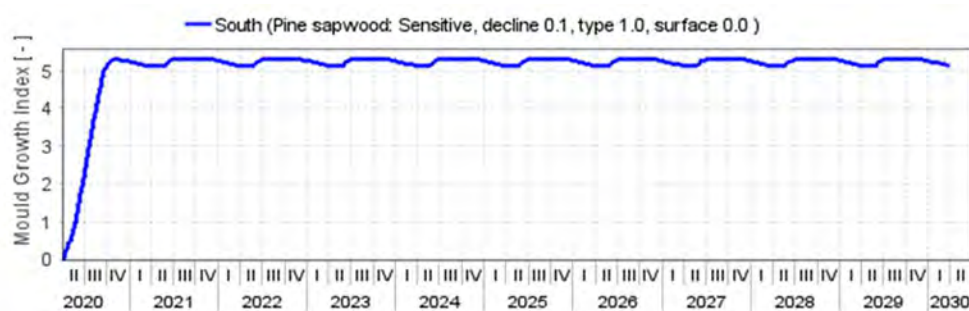


Figure 45: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

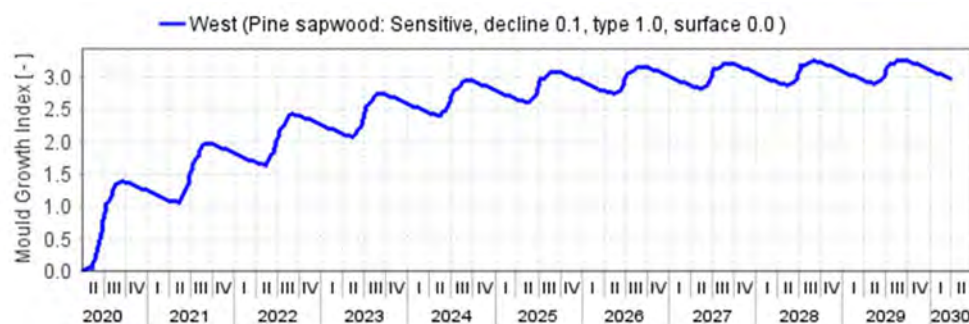


Figure 46: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

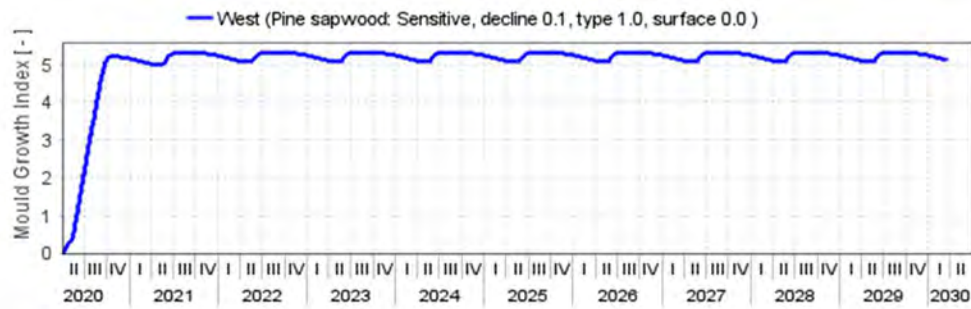


Figure 47: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

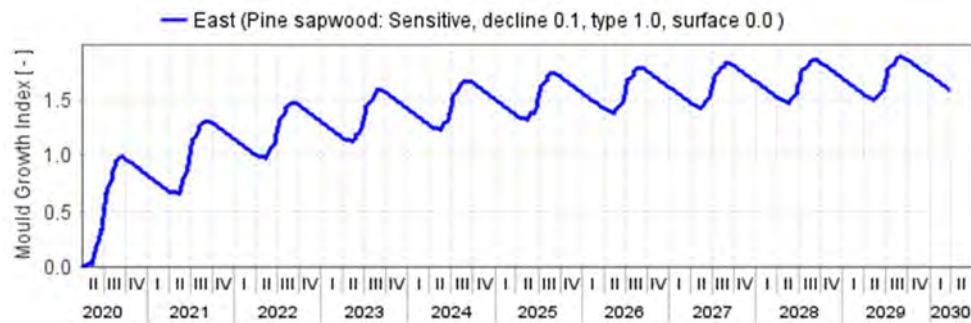


Figure 48: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

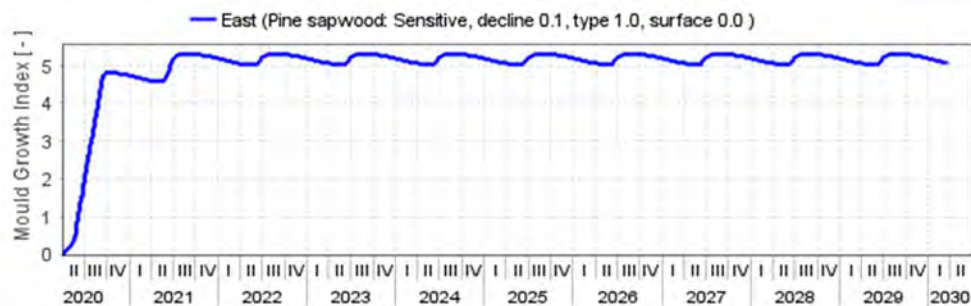


Figure 49: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

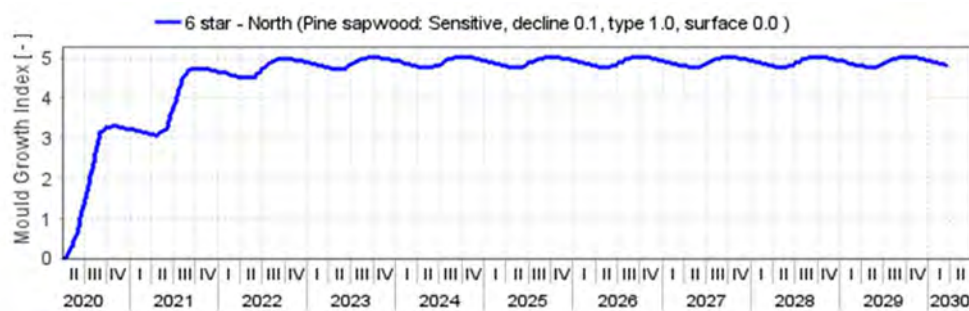


Figure 50: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

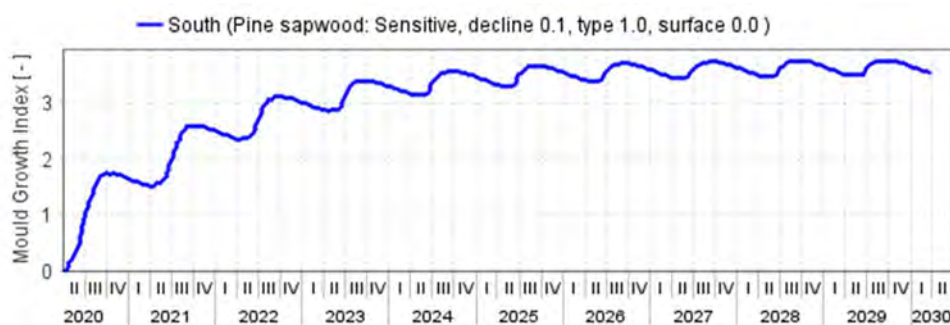


Figure 51: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

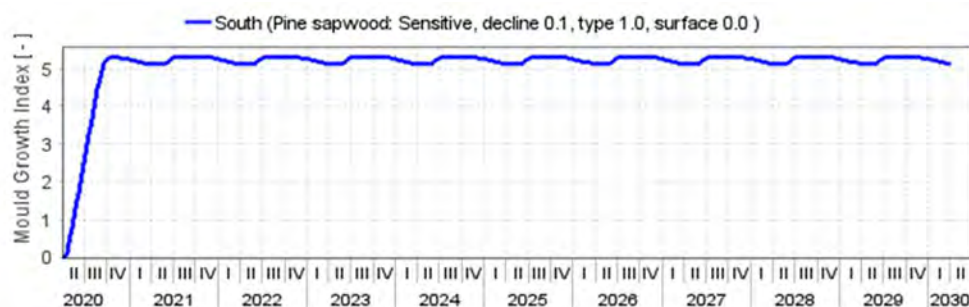


Figure 52: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

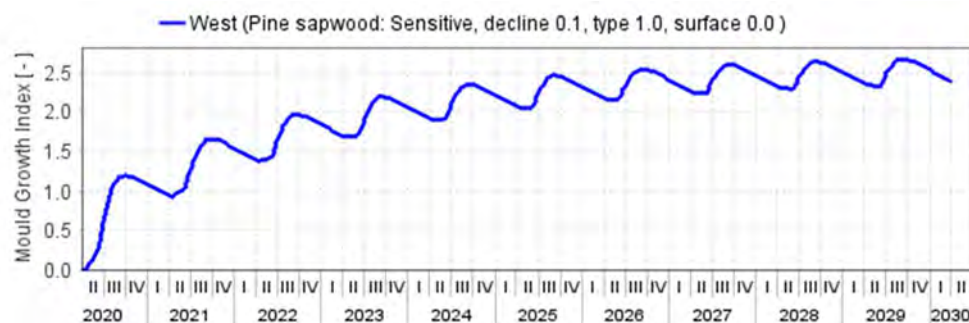


Figure 53: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

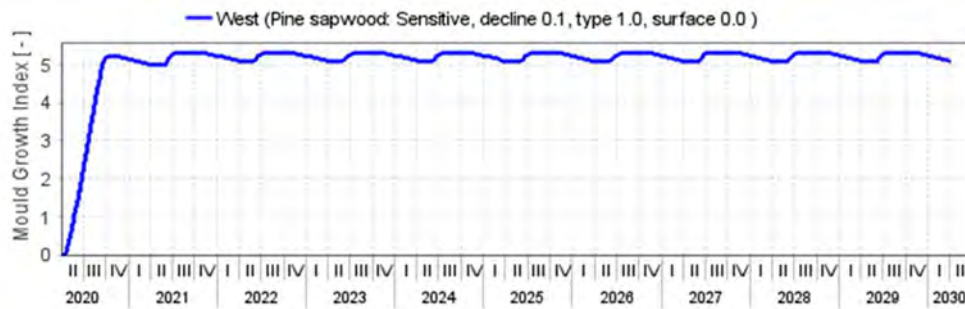


Figure 54: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

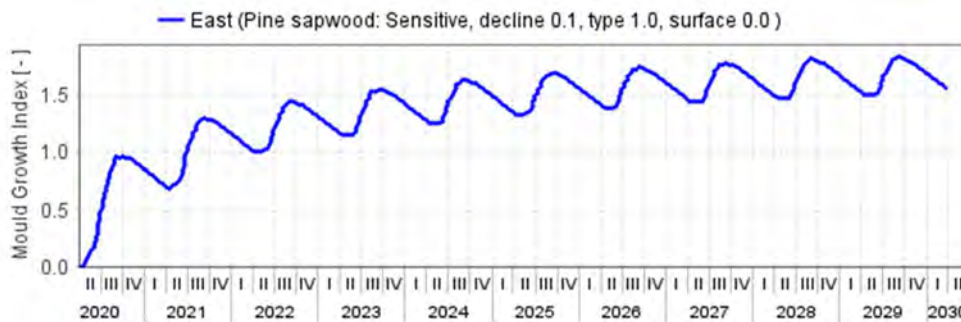


Figure 55: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

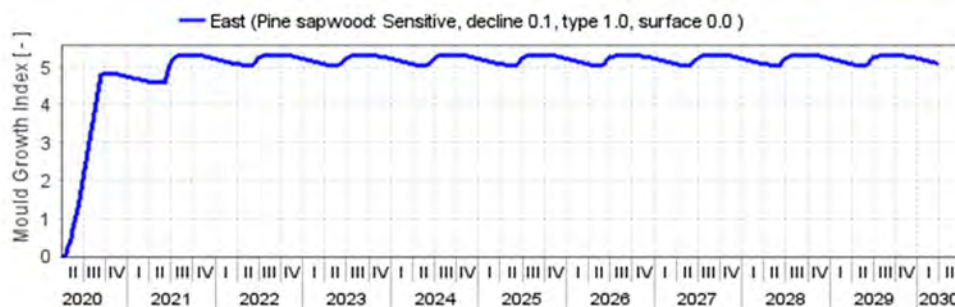


Figure 56: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

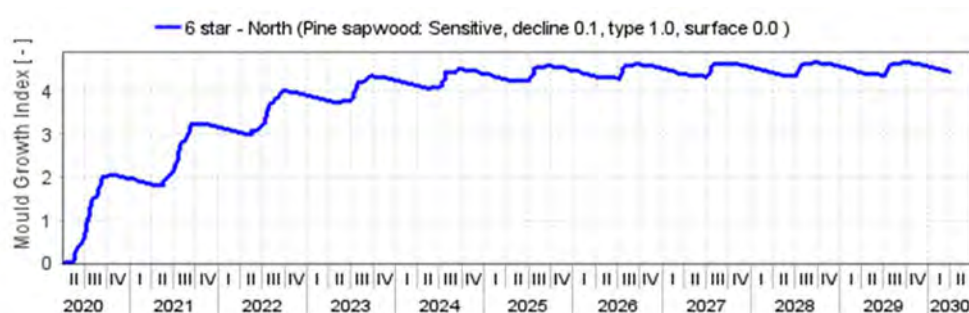


Figure 57: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

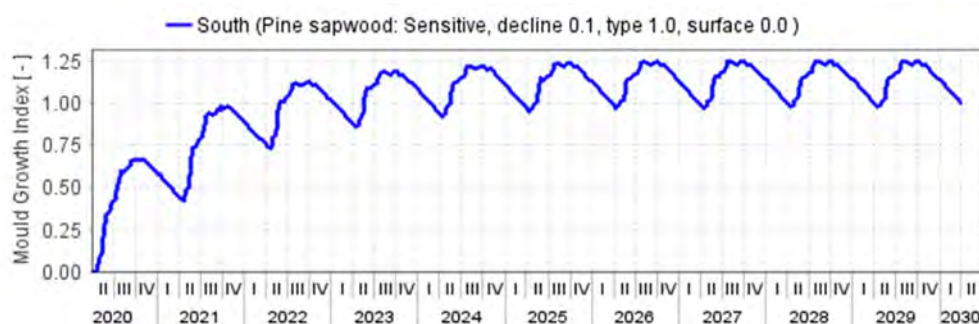


Figure 58: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

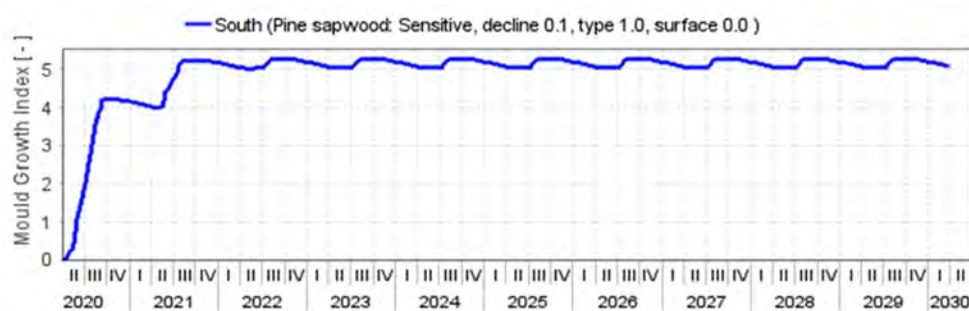


Figure 59: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

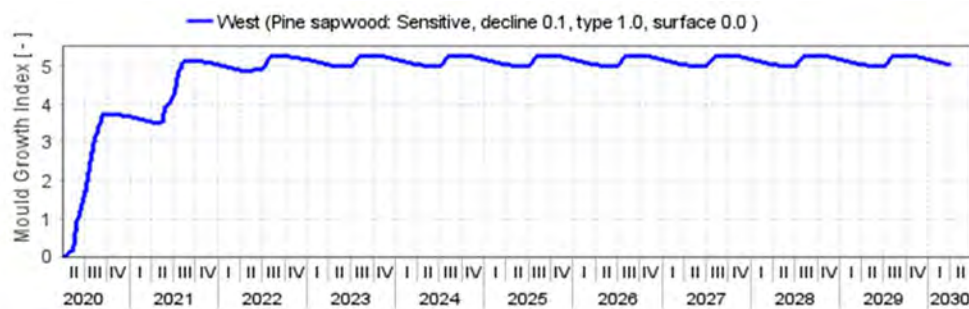


Figure 60: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

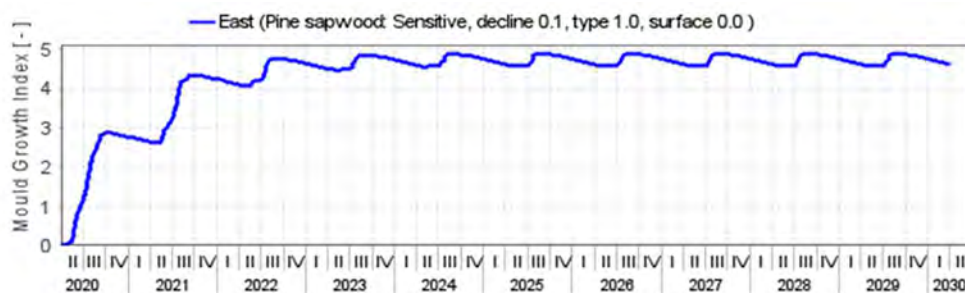


Figure 61: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Nil

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

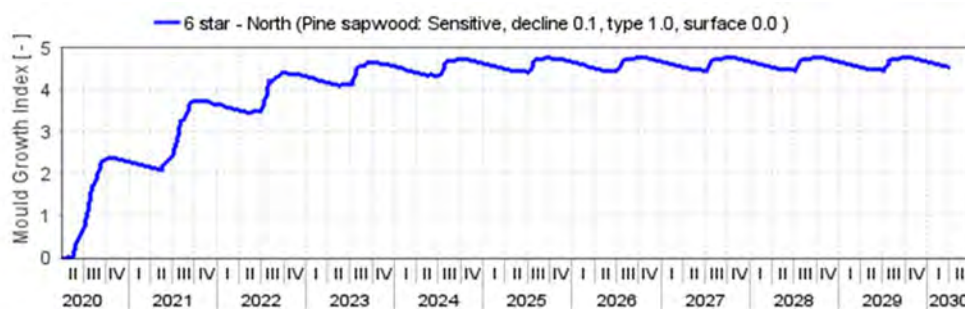


Figure 62: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

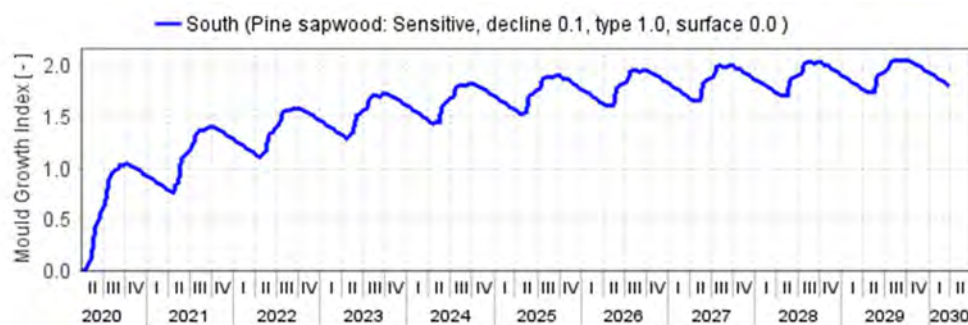


Figure 63: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

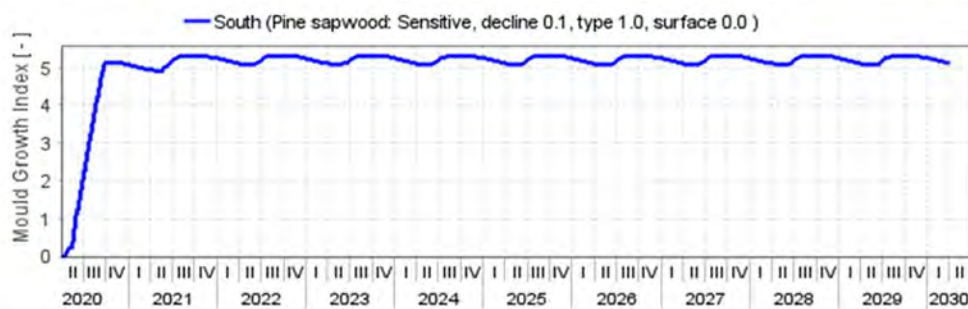


Figure 64: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

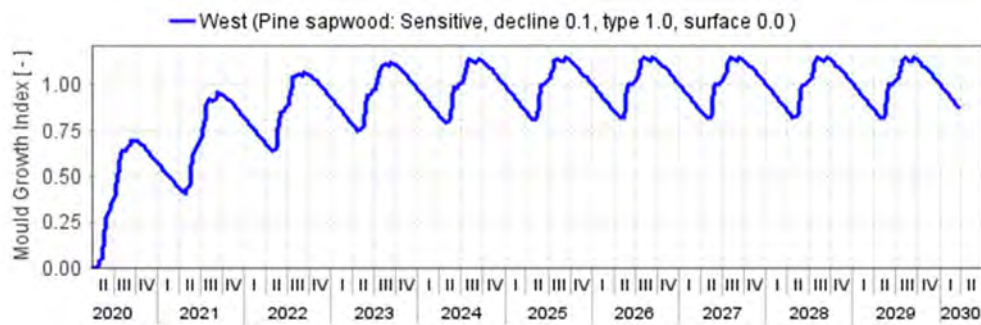


Figure 65: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

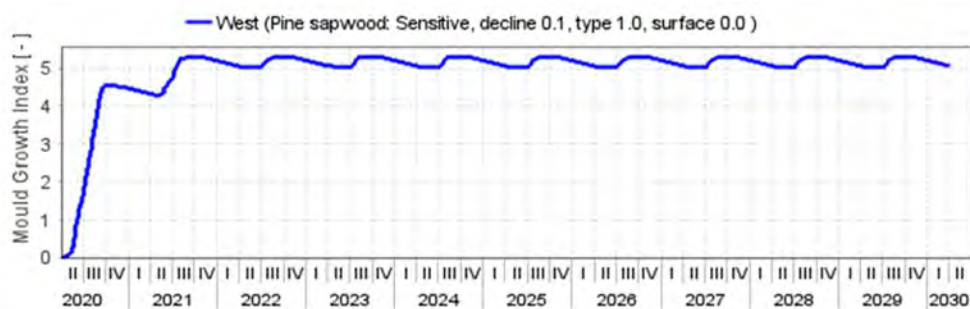


Figure 66: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

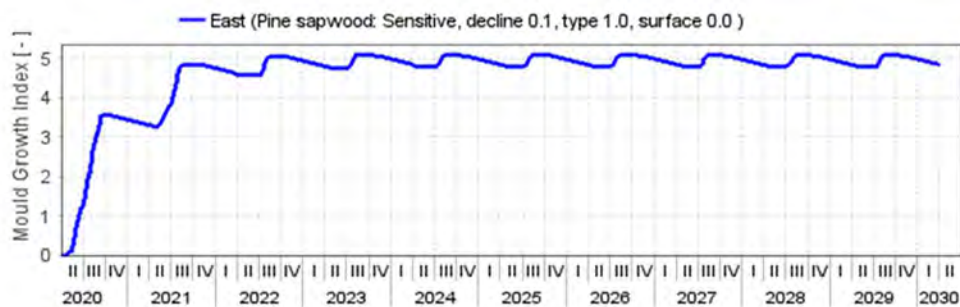


Figure 67: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

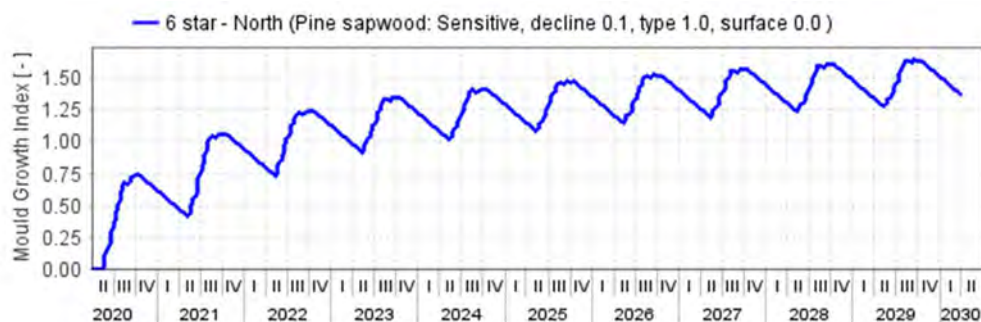


Figure 68: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

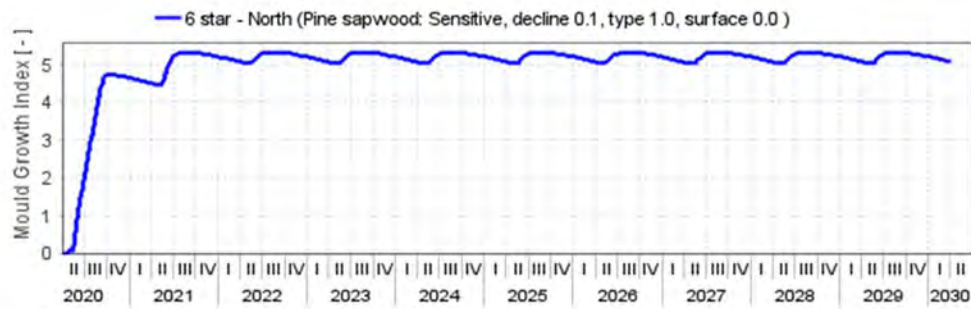


Figure 69: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

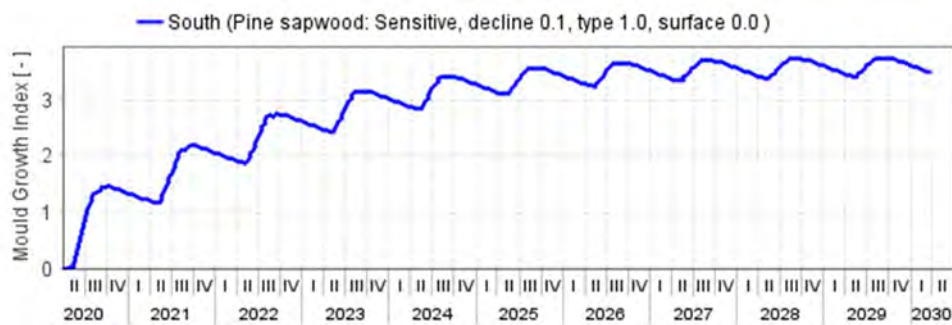


Figure 70: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

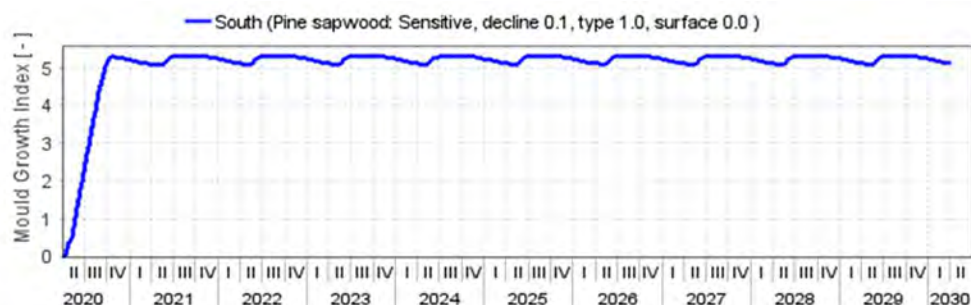


Figure 71: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

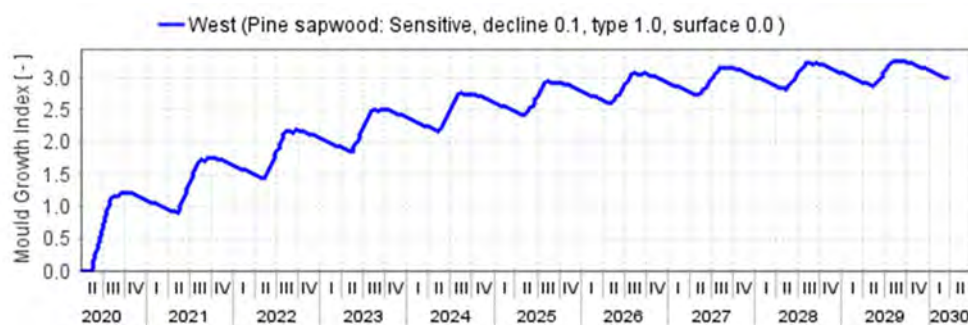


Figure 72: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

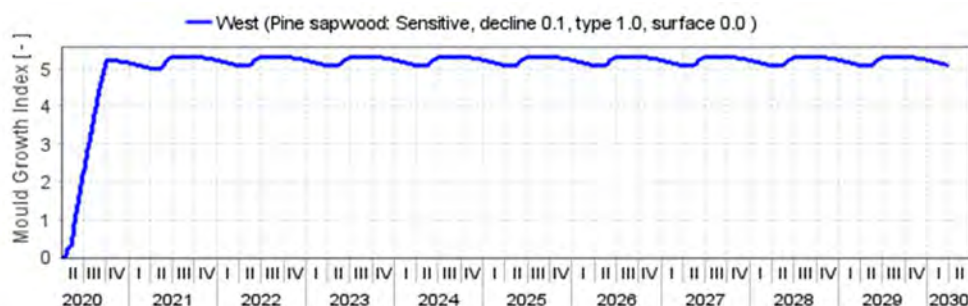


Figure 73: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

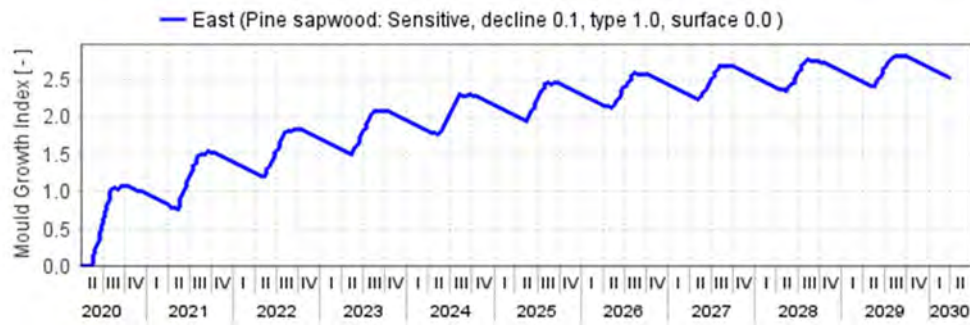


Figure 74: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

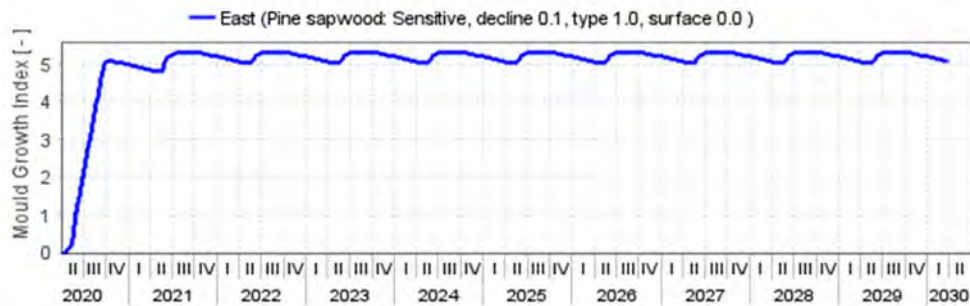


Figure 75: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

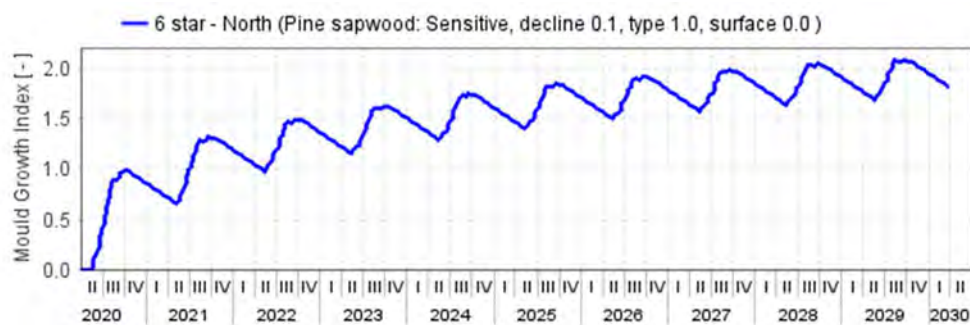


Figure 76: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

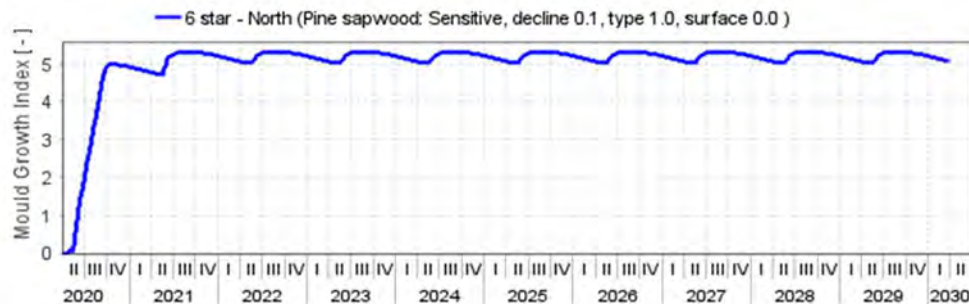


Figure 77: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5.0

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

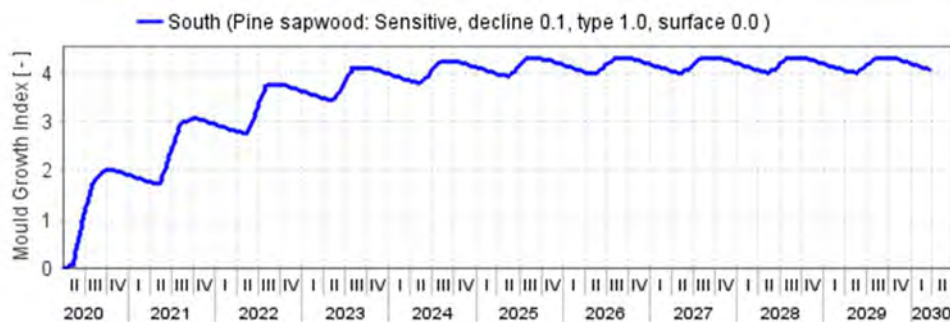


Figure 78: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5.0

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

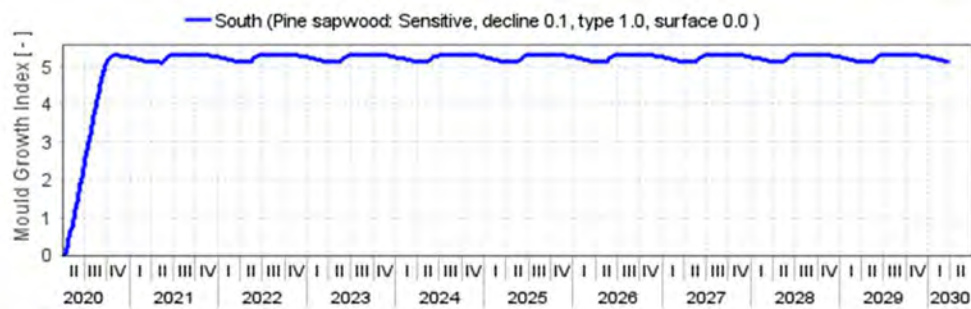


Figure 79: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5.0

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

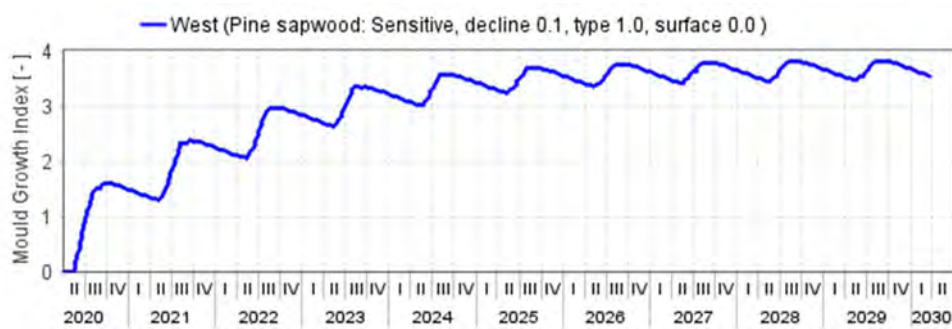


Figure 80: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

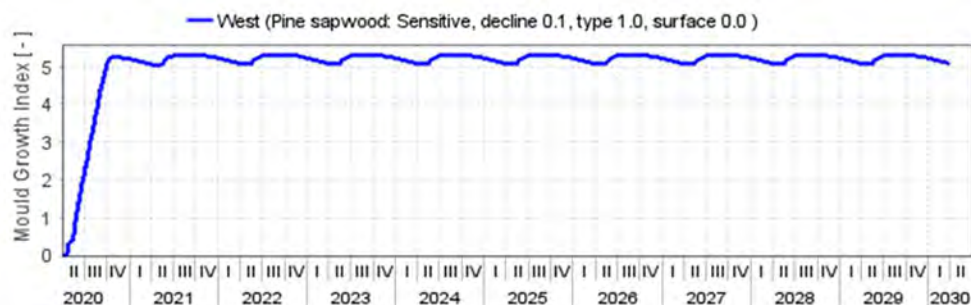


Figure 81: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

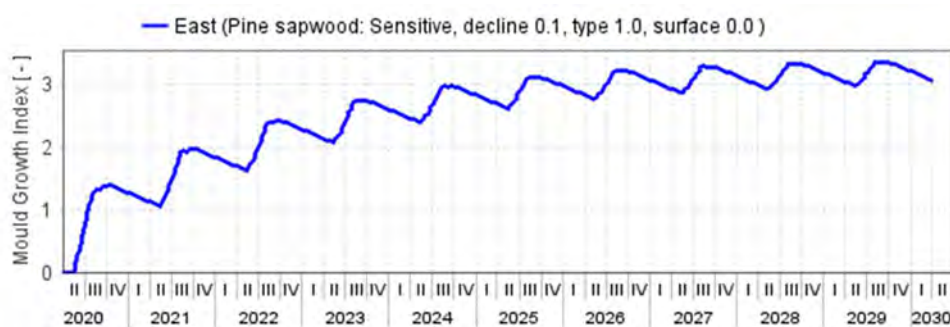


Figure 82: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

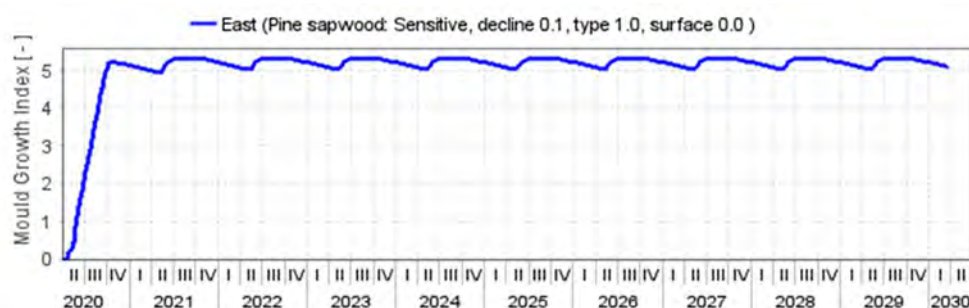


Figure 83: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

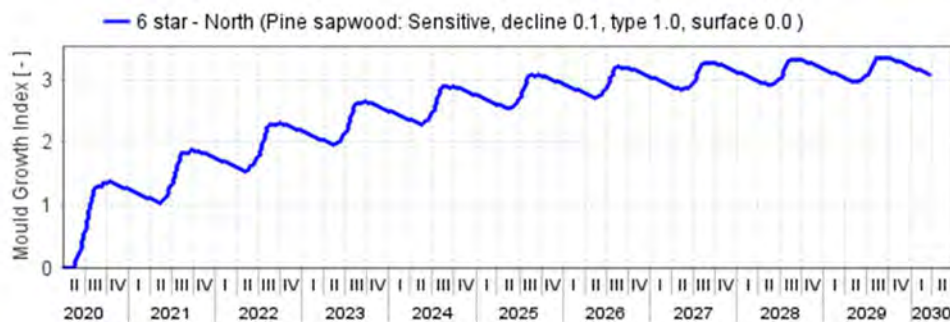


Figure 84: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

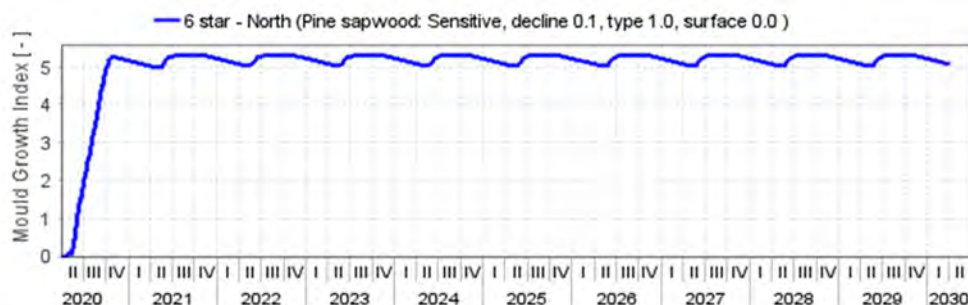


Figure 85: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

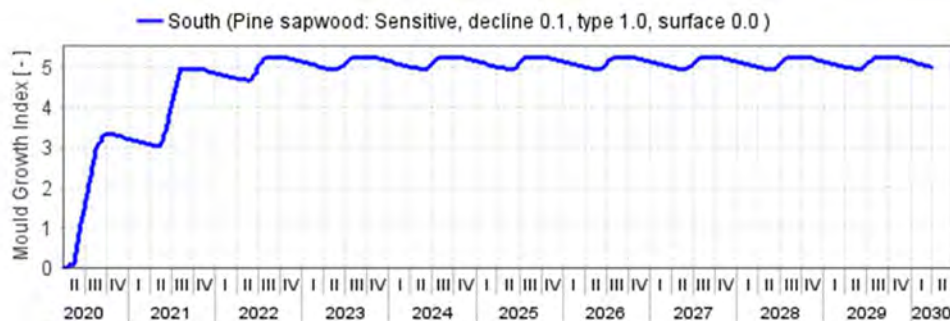


Figure 86: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

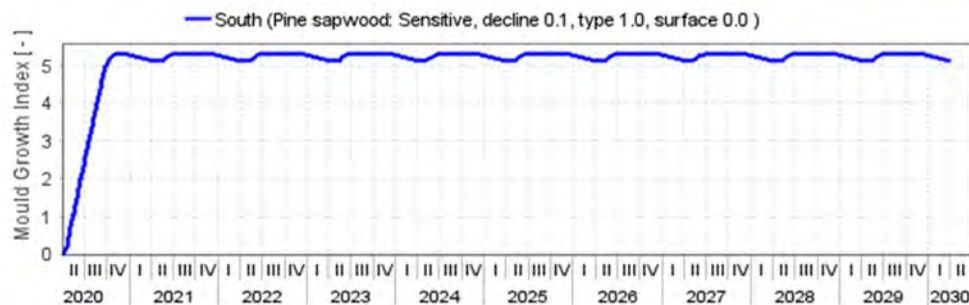


Figure 87: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

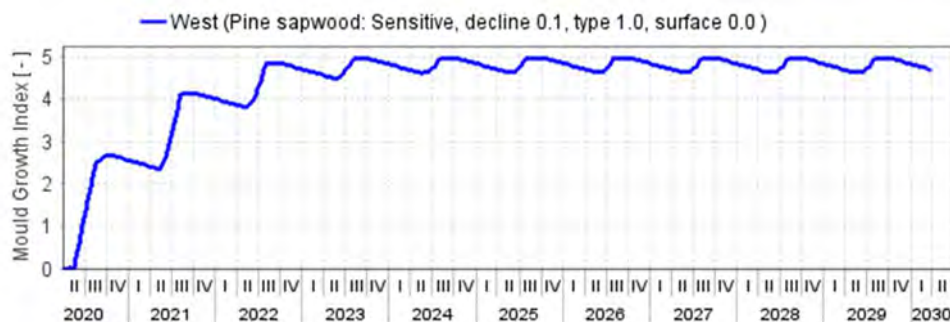


Figure 88: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

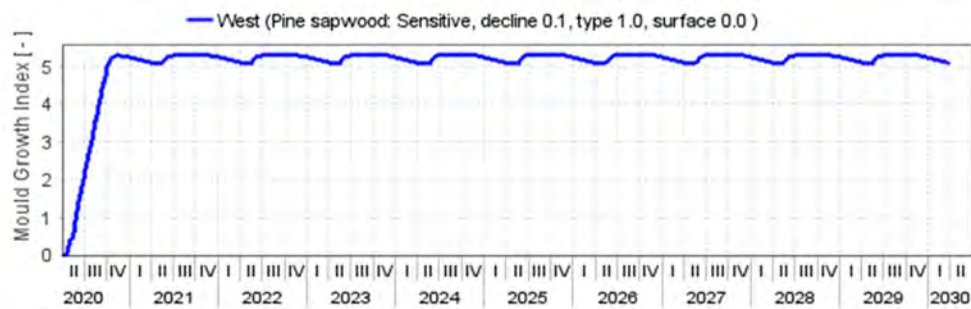


Figure 89: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5.0

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

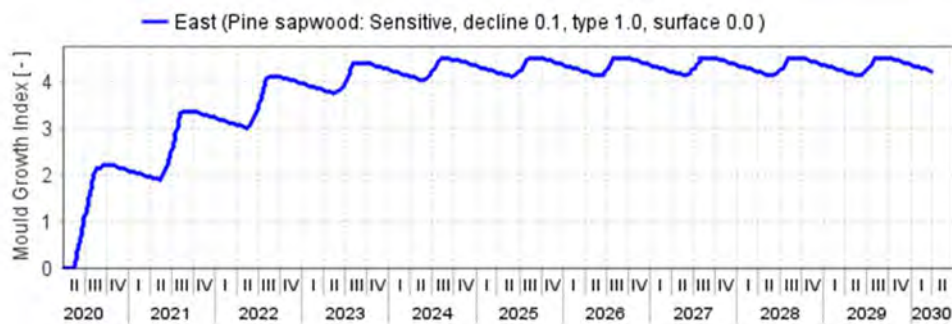


Figure 90: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

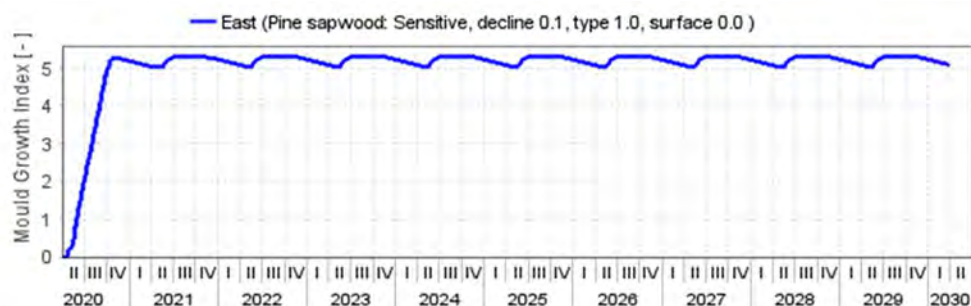


Figure 91: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 6: Hygrothermal simulation results – Externally insulated clay masonry

Revision 02 (10/03/2023)

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, due to the MI being >1.0 in year 1, this wall system is classified as requiring further investigation.

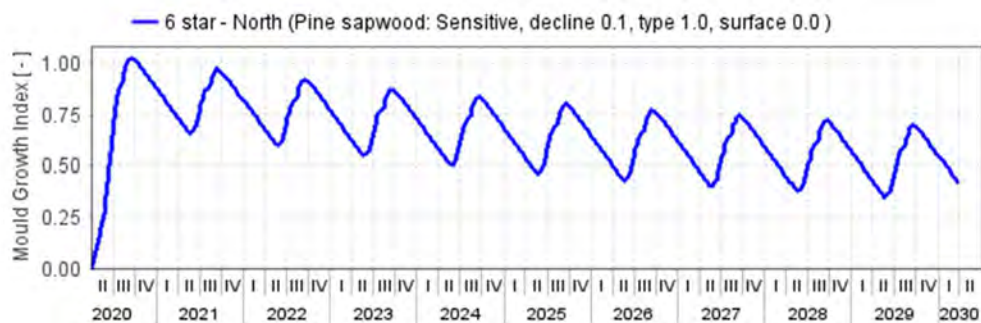


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

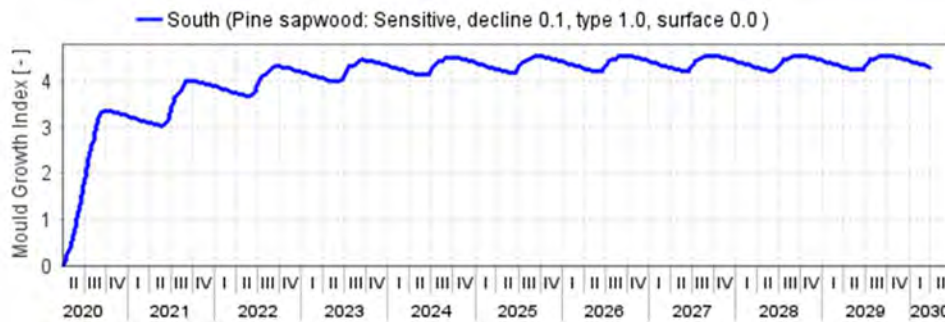


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

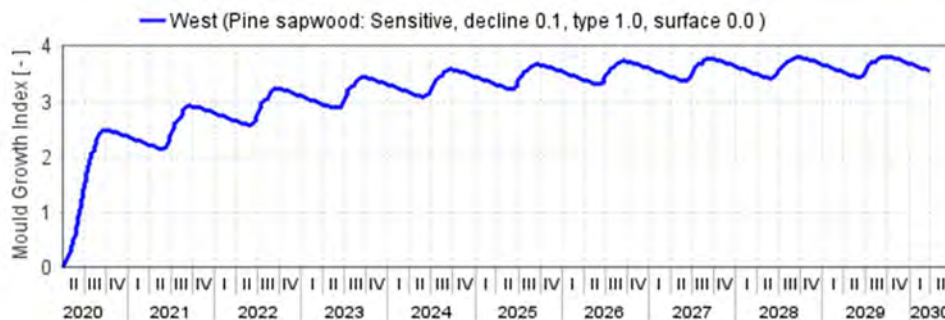


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the tenth year.

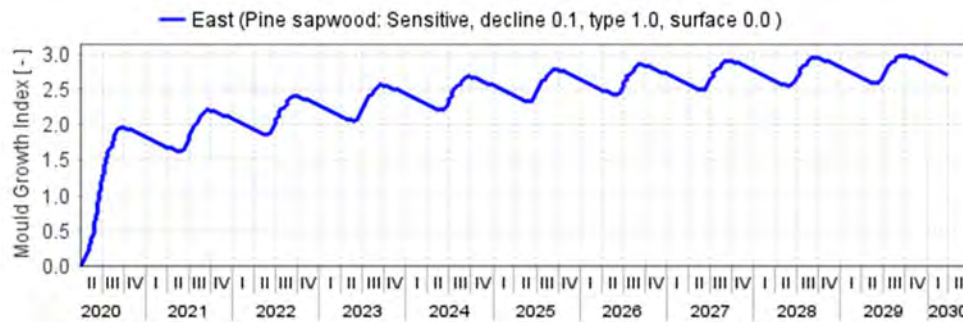


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.5 in the third year. This wall system requires further investigation.

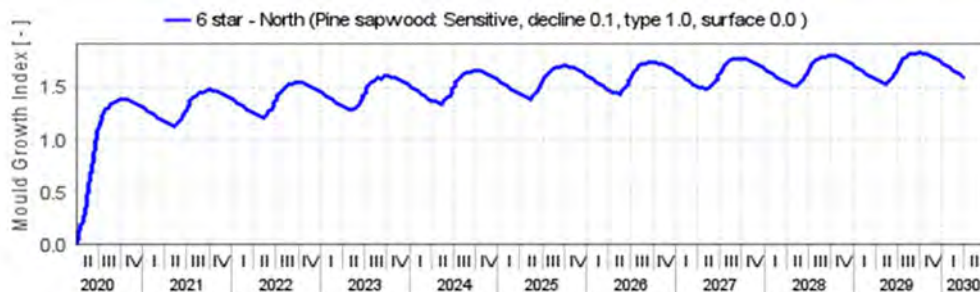


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.5 in the first year. This wall system requires further investigation.

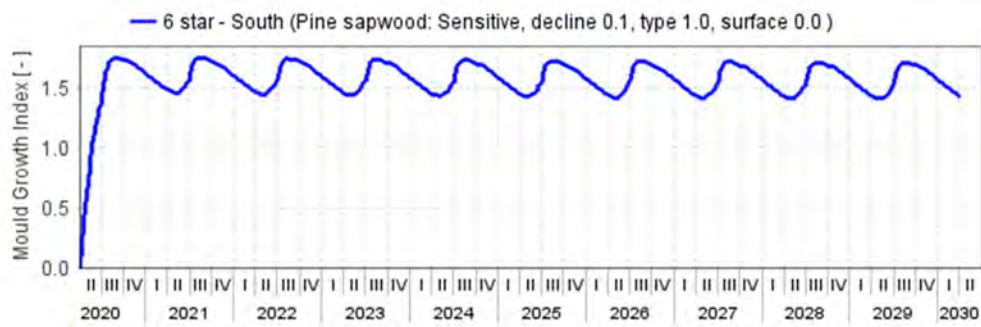


Figure 6: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

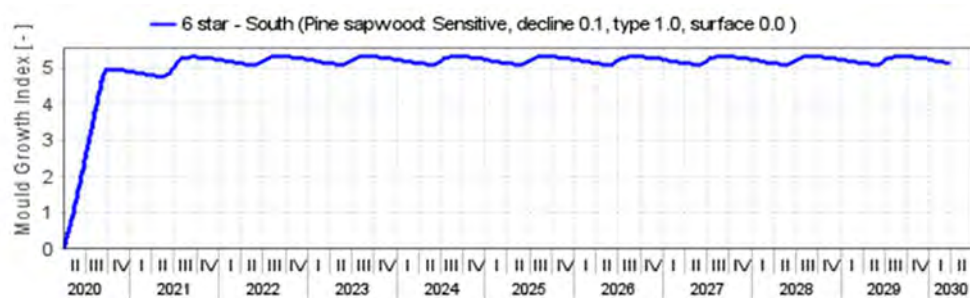


Figure 7: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

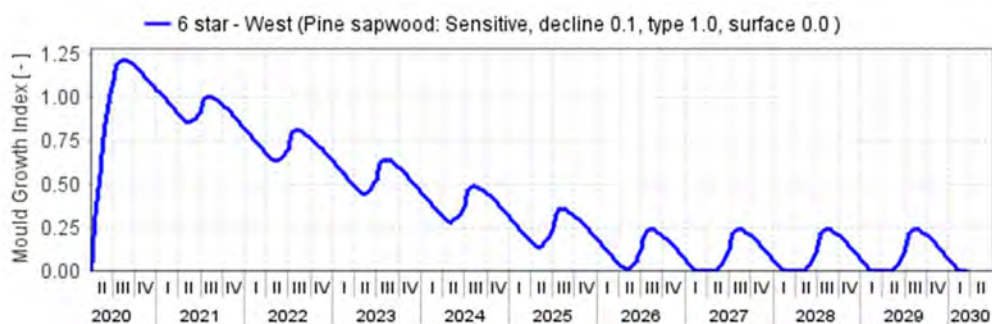


Figure 8: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

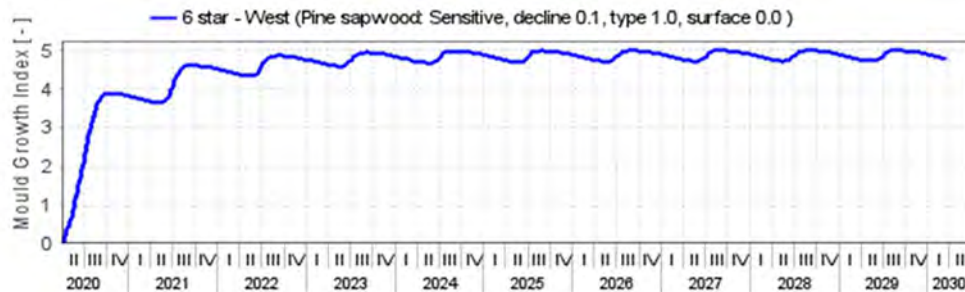


Figure 9: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

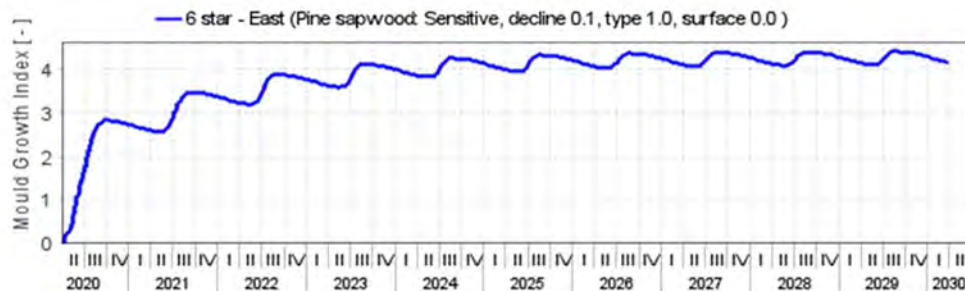


Figure 10: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, the software has identified this wall system as requiring further investigation.

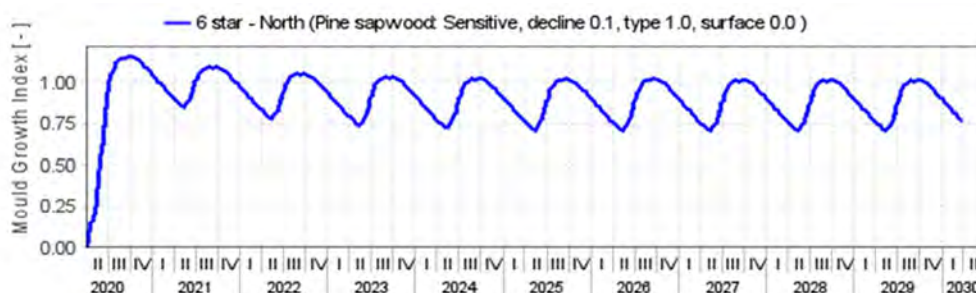


Figure 11: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, the software has identified this wall system as requiring further investigation.

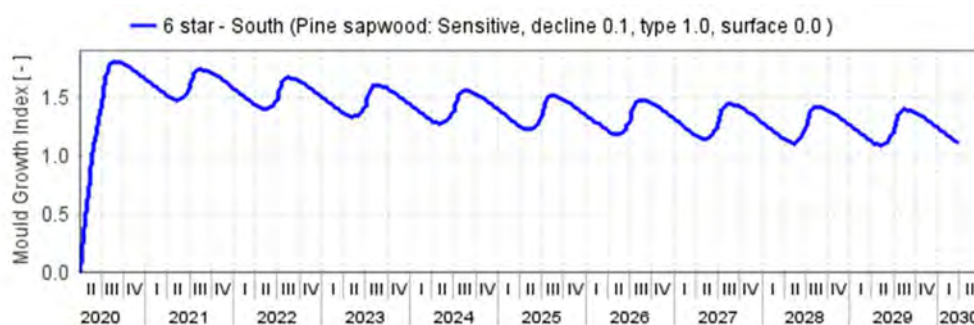


Figure 12: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

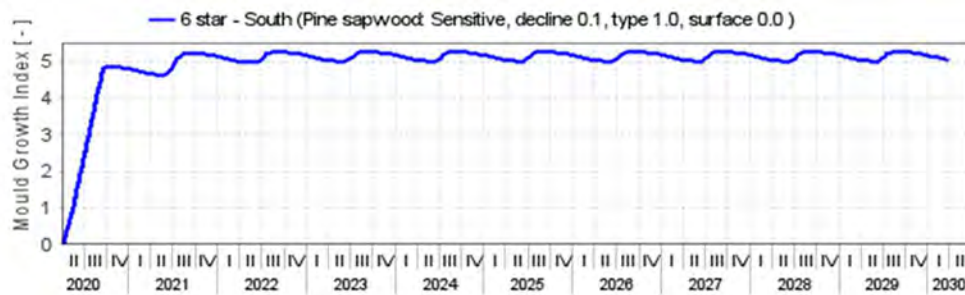


Figure 13: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

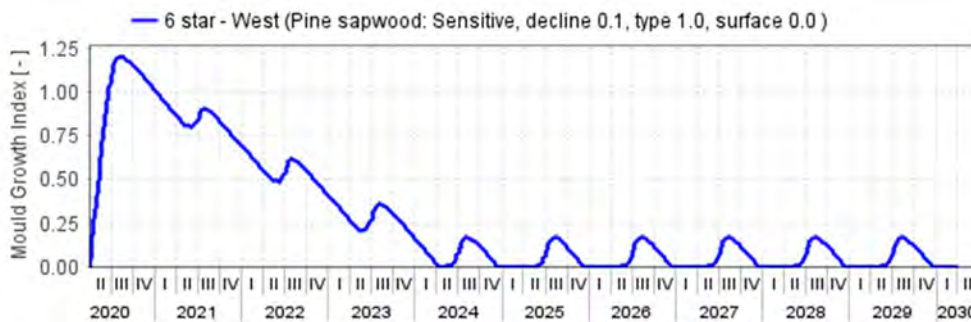


Figure 14: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

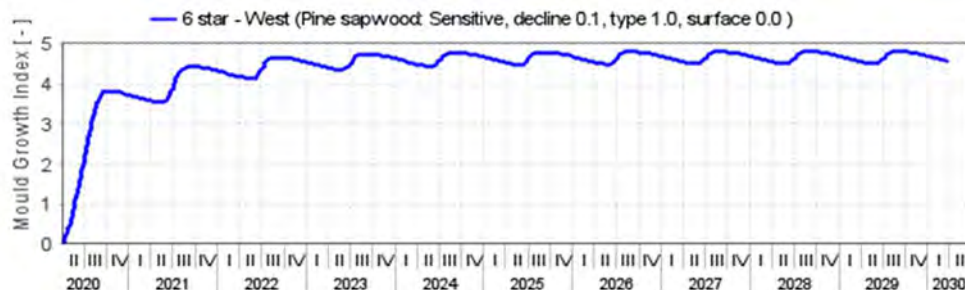


Figure 15: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

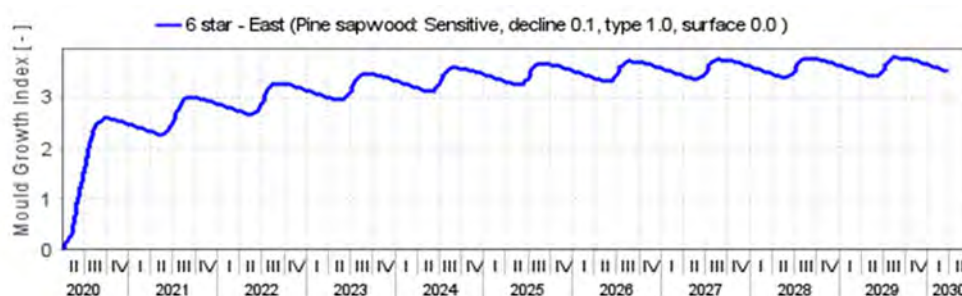


Figure 16: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the fourth year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

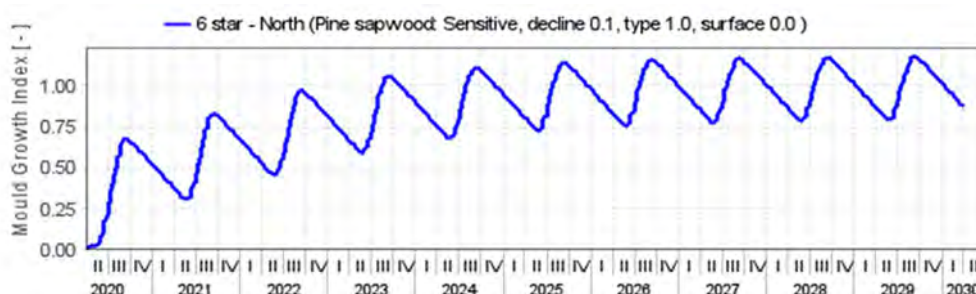


Figure 17: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

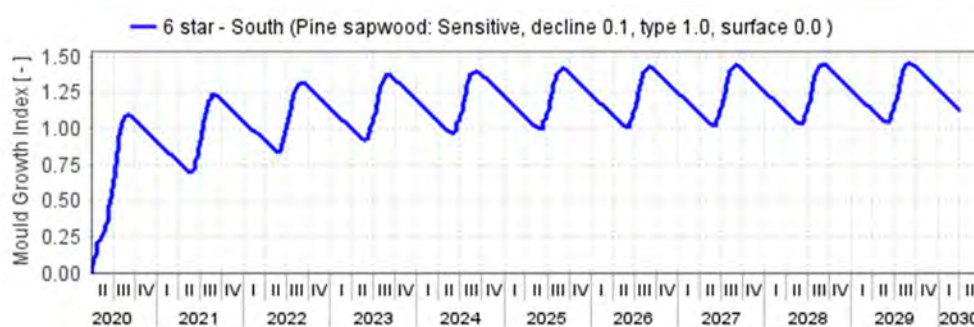


Figure 18: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

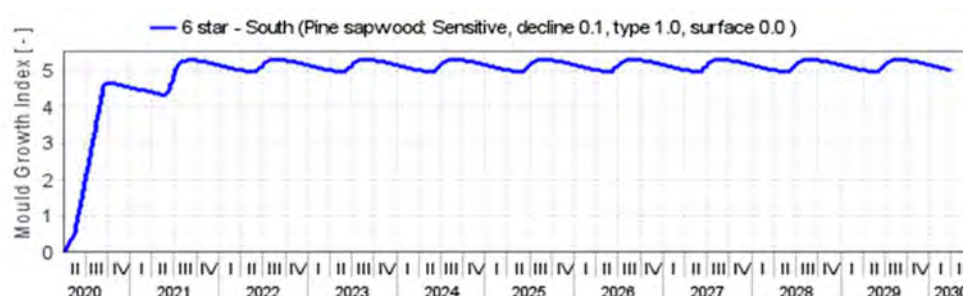


Figure 19: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

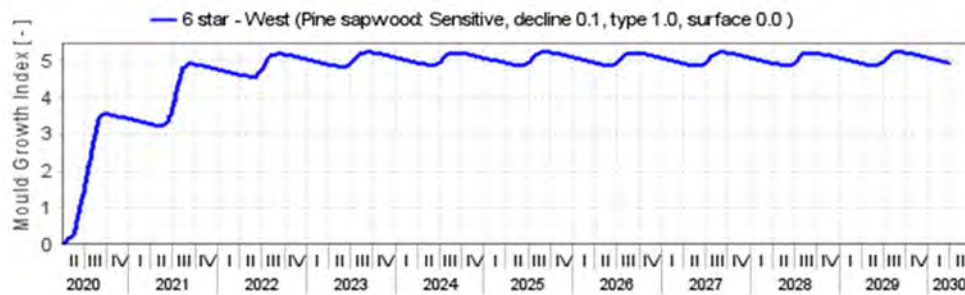


Figure 20: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

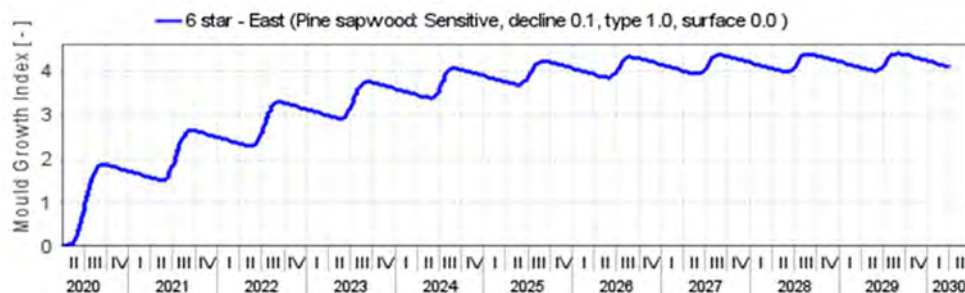


Figure 21: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

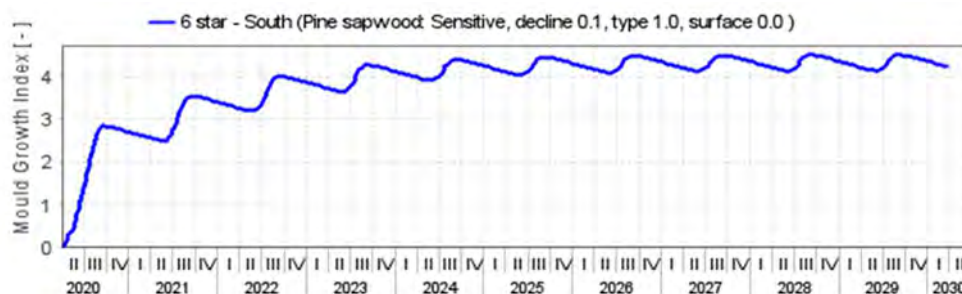


Figure 22: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

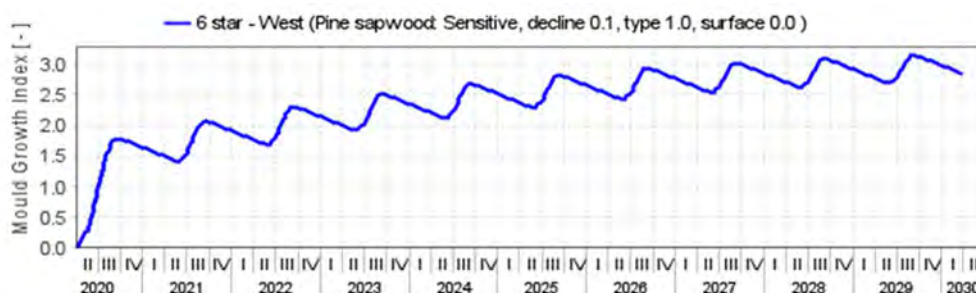


Figure 23: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

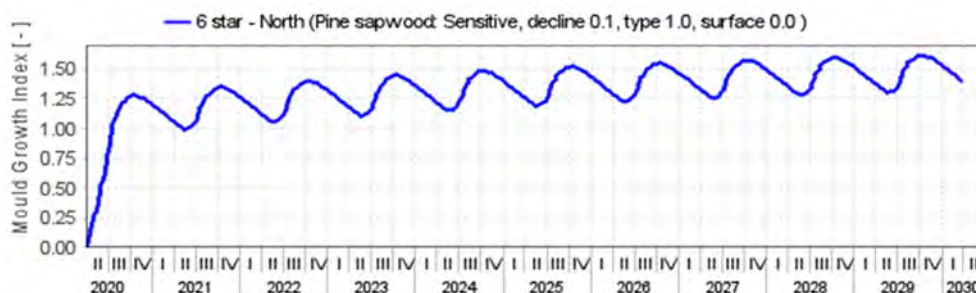


Figure 24: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first year this wall system as requiring further investigation.

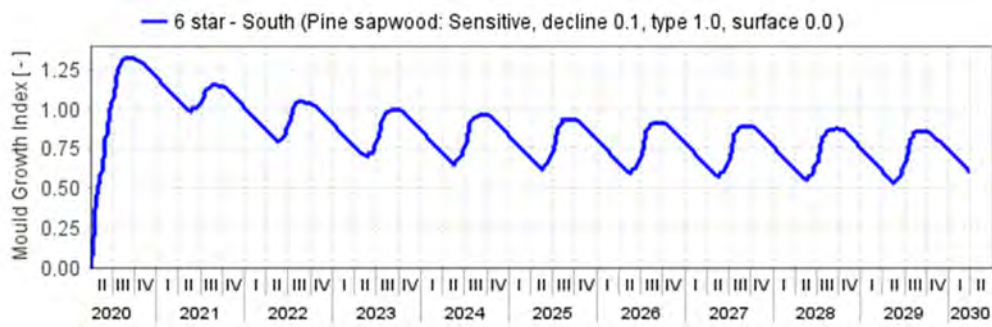


Figure 25: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

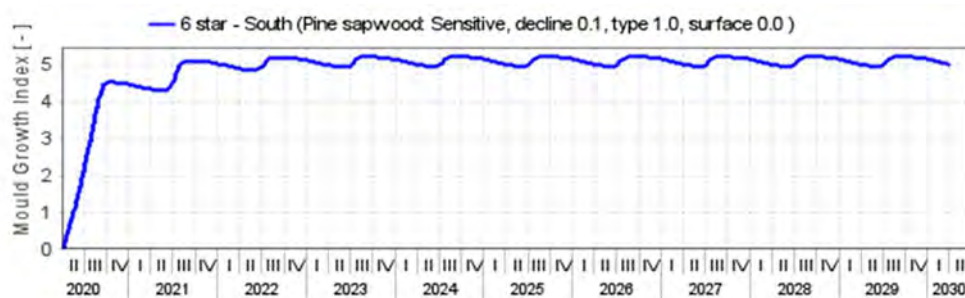


Figure 26: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

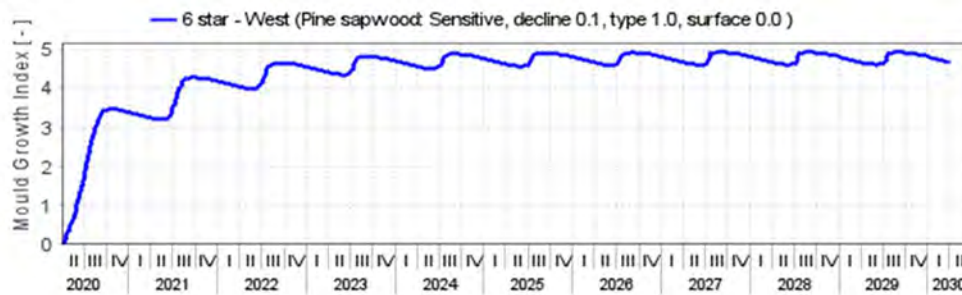


Figure 27: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

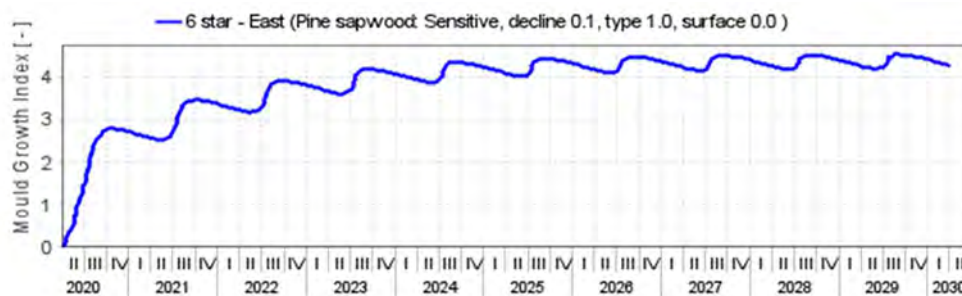


Figure 28: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the first year. The MI then seems to decrease. However, the software has identified this wall system as requiring further investigation.

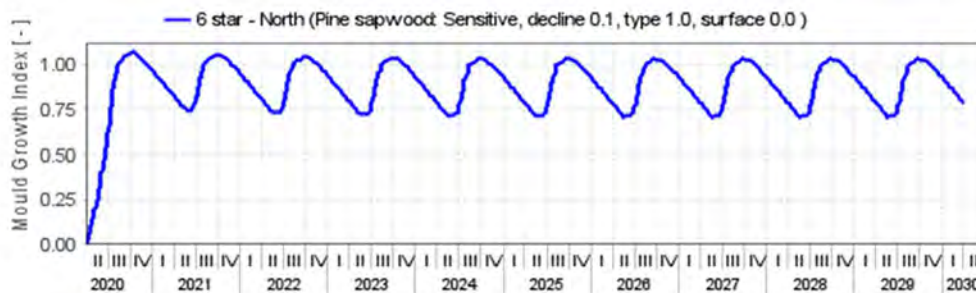


Figure 29: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system reaches an MI beyond 1 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first year this wall system as requiring further investigation.

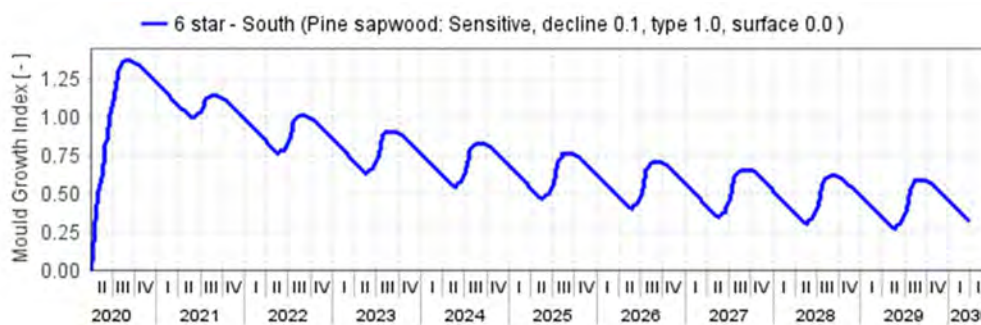


Figure 30: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

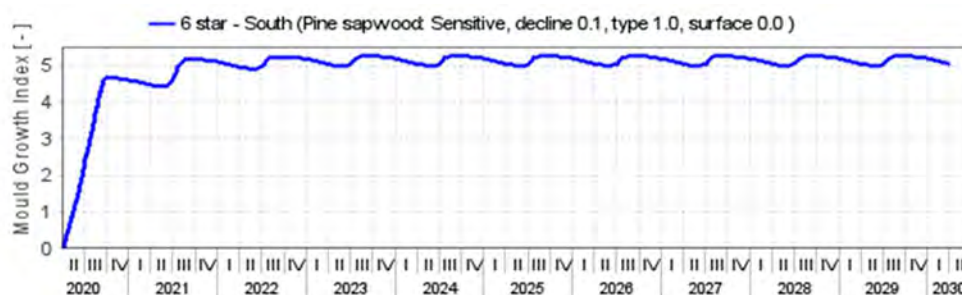


Figure 31: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

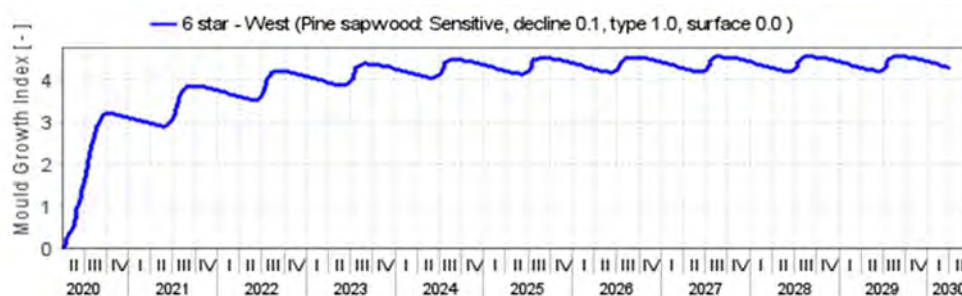


Figure 32: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

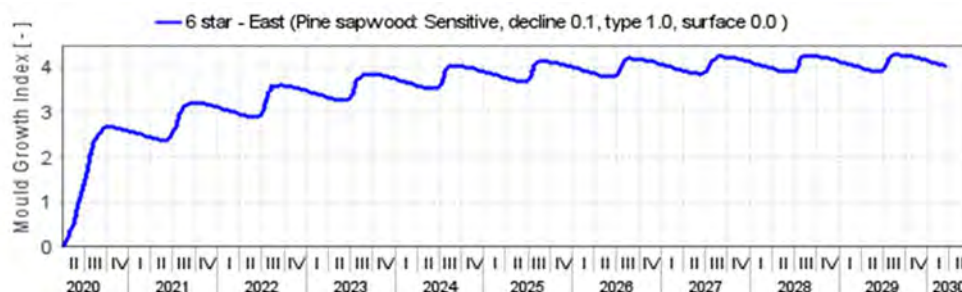


Figure 33: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

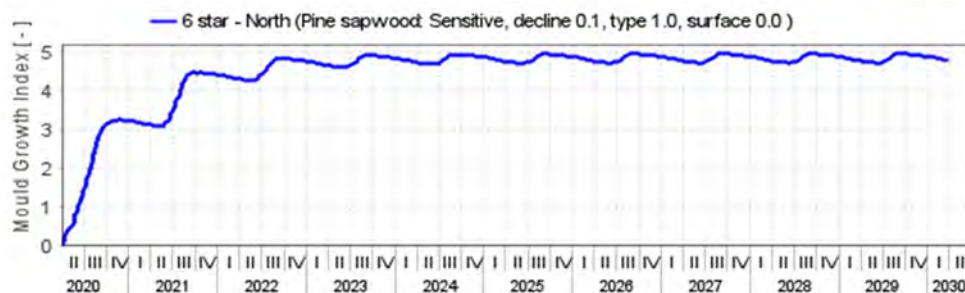


Figure 34: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

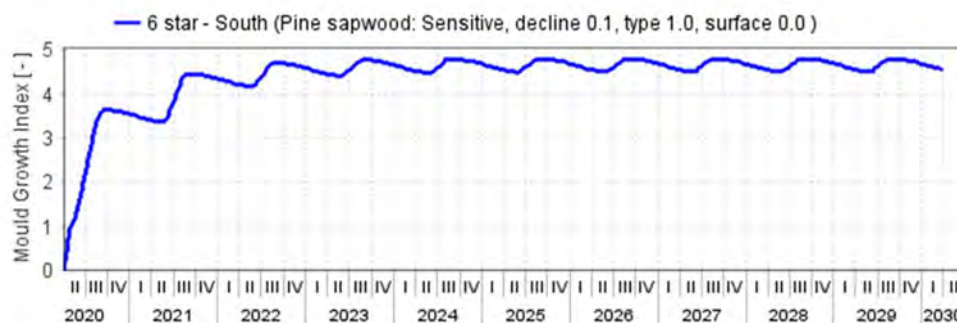


Figure 35: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

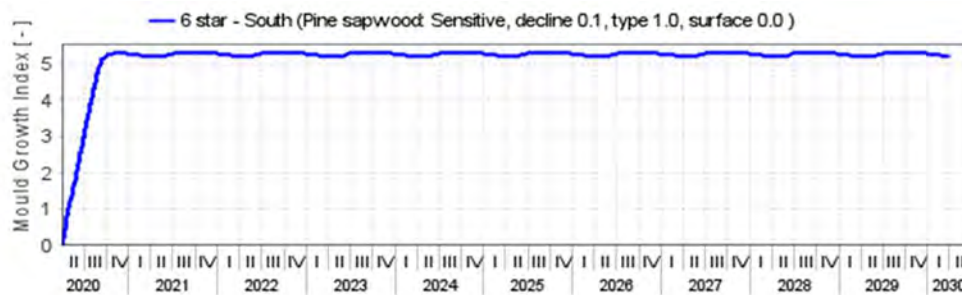


Figure 36: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

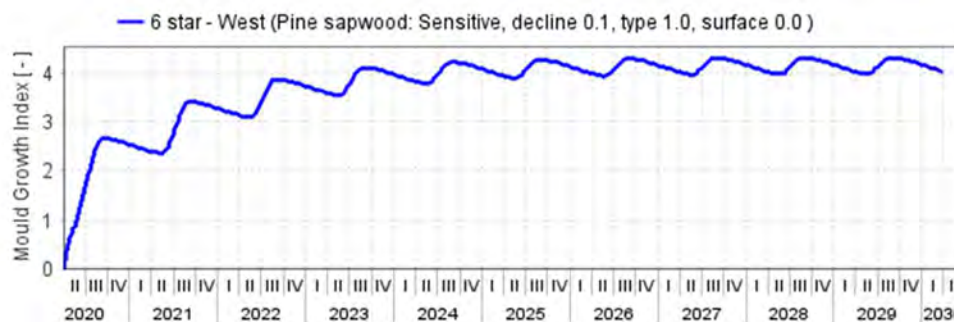


Figure 37: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

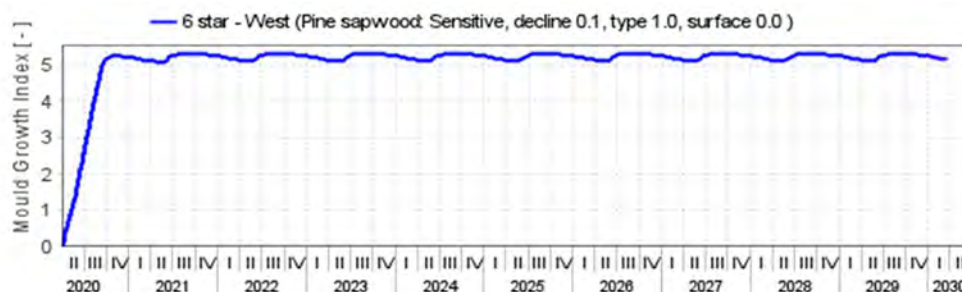


Figure 38: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

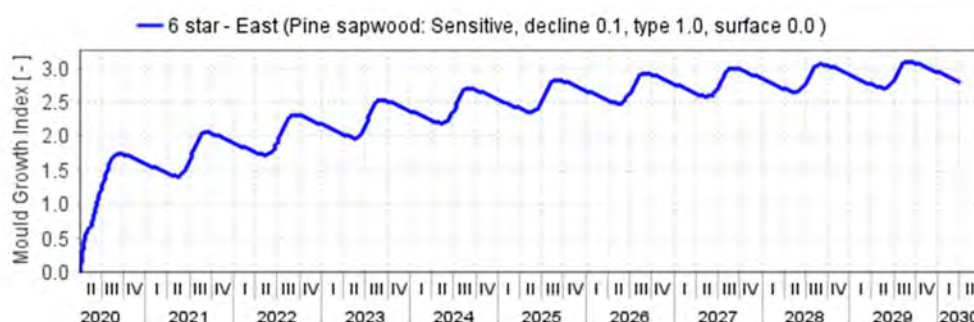


Figure 39: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

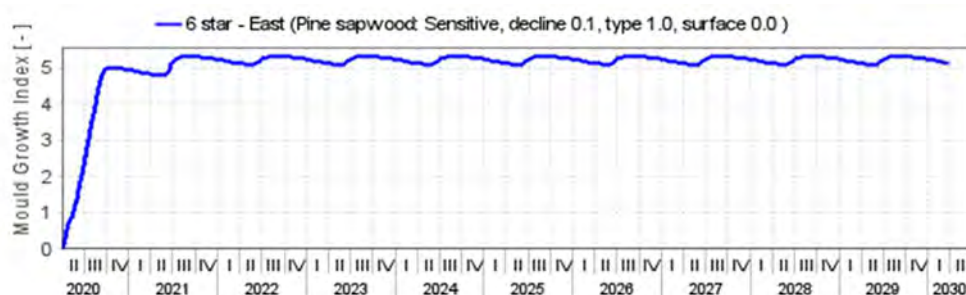


Figure 40: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.5 in the fifth year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

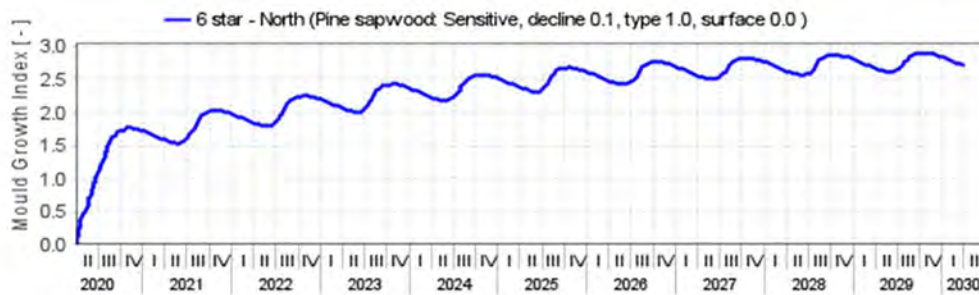


Figure 41: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

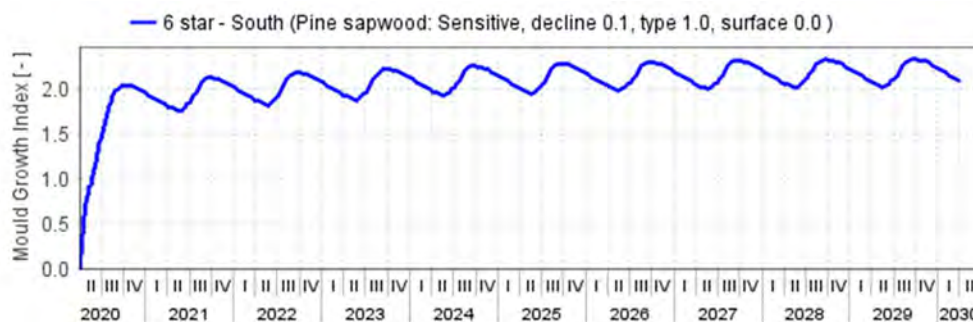


Figure 42: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

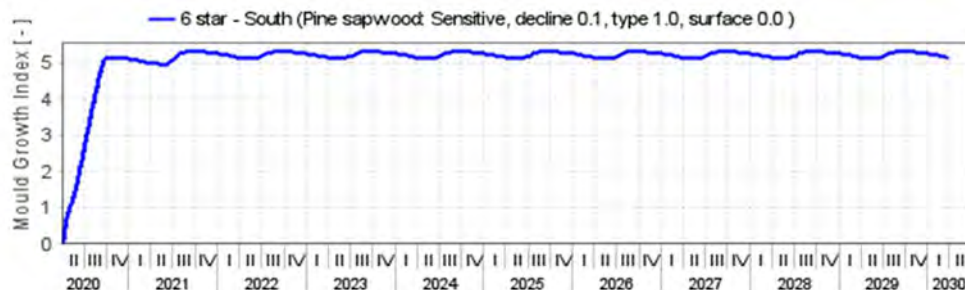


Figure 43: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.5 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

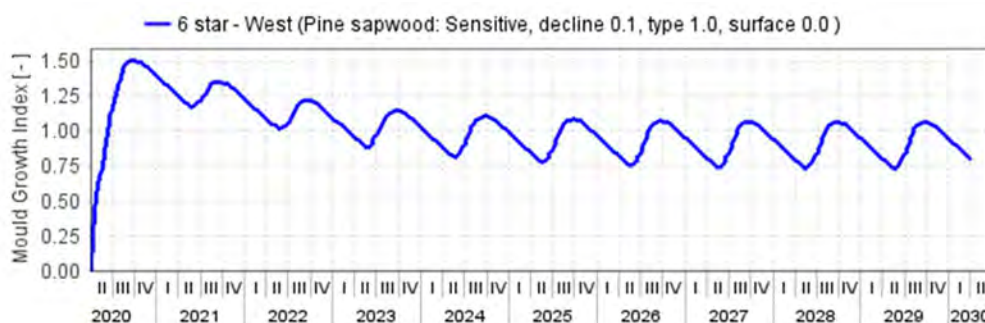


Figure 44: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

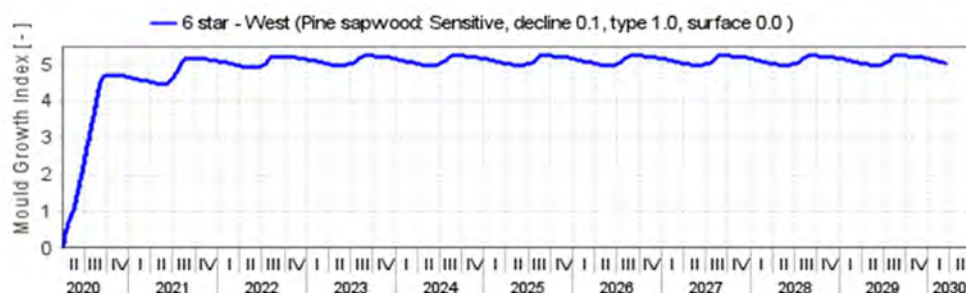


Figure 45: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system has its highest MI value during year one and may then have a decreasing mould risk. However, due to the MI being >1.0 in year 1, this wall system is classified as requiring further investigation.

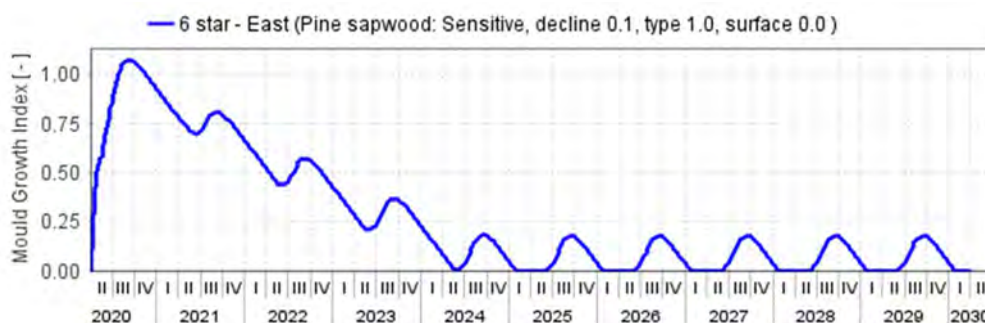


Figure 46: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

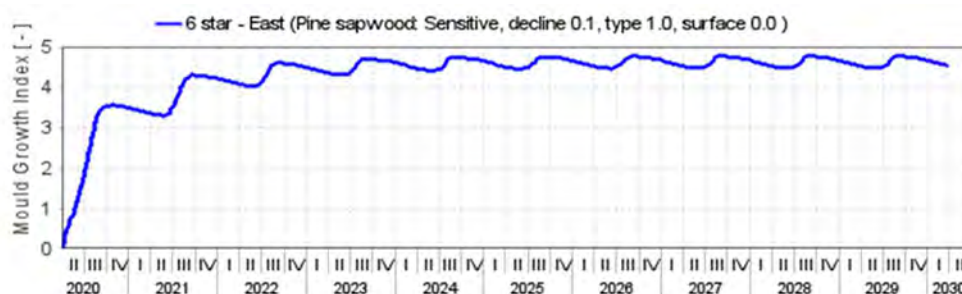


Figure 47: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

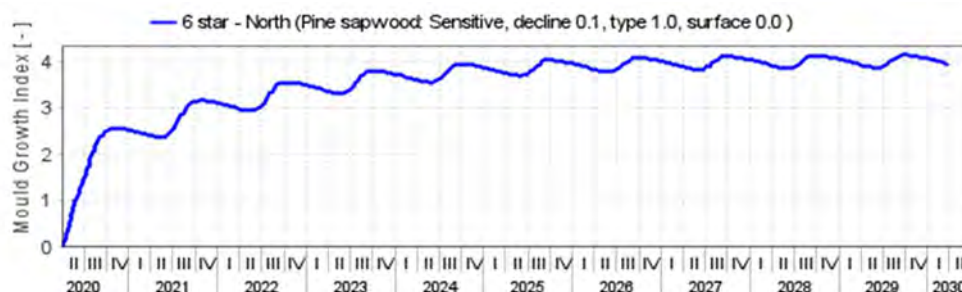


Figure 48: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.5 in the fifth year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

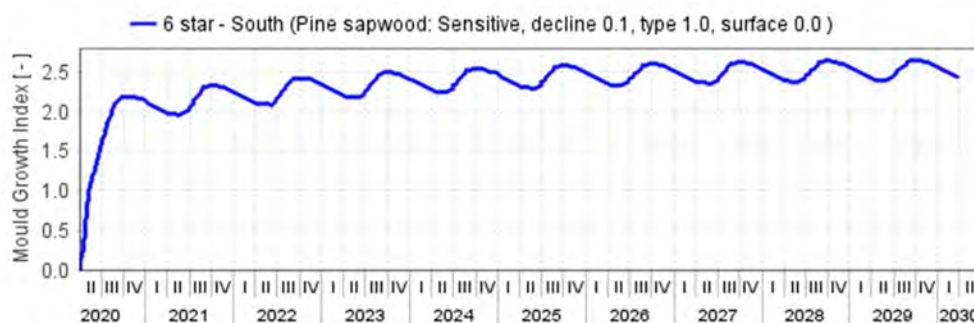


Figure 49: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

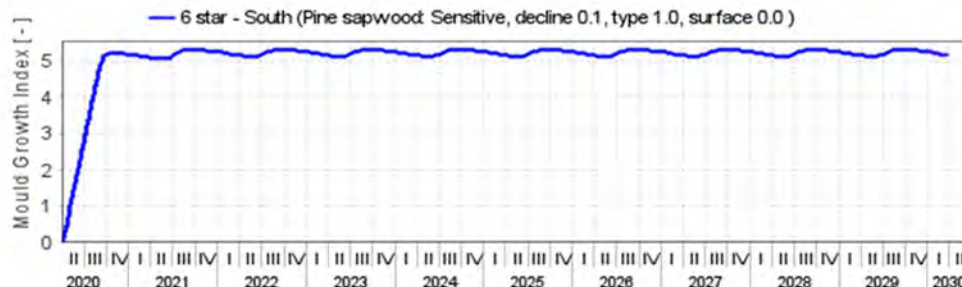


Figure 50: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.5 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

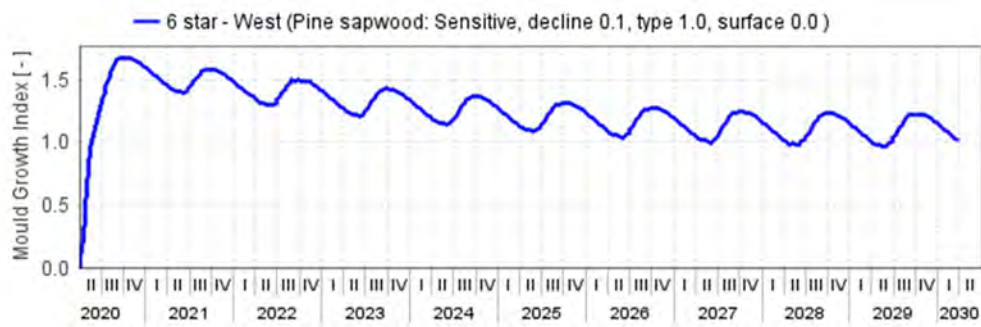


Figure 51: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

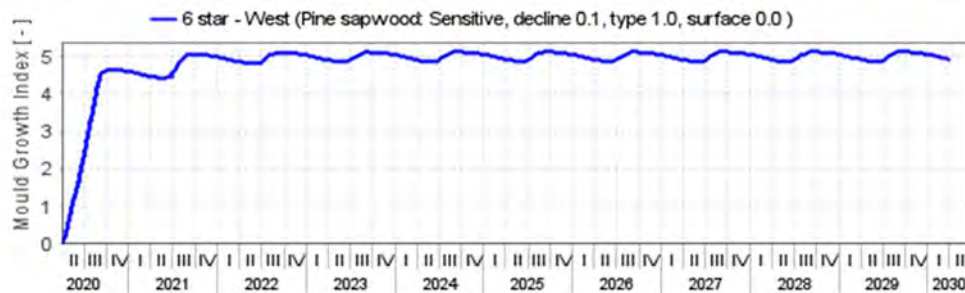


Figure 52: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.25 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

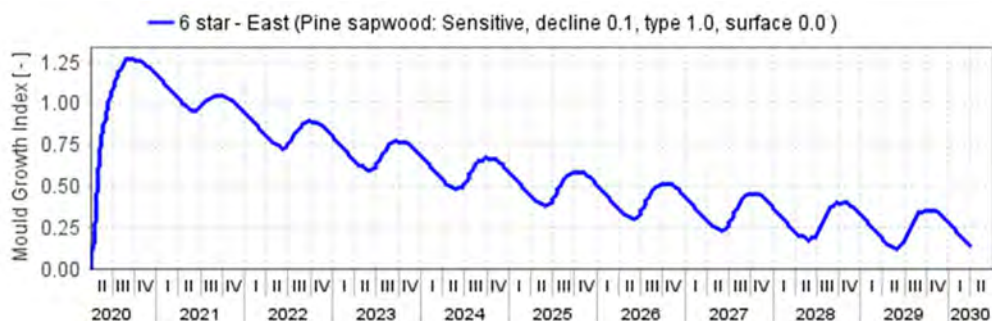


Figure 53: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

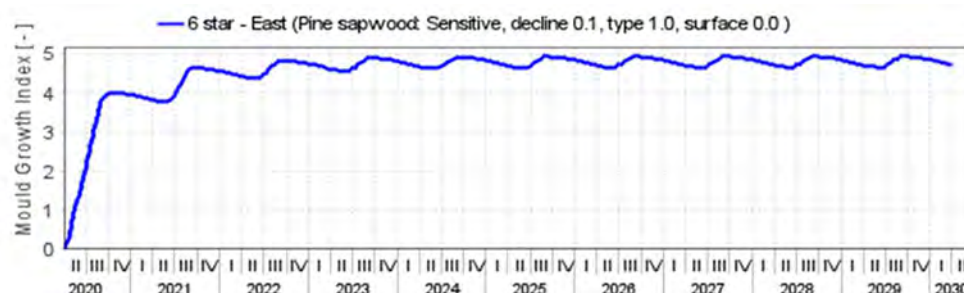


Figure 54: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.0 in the fourth year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

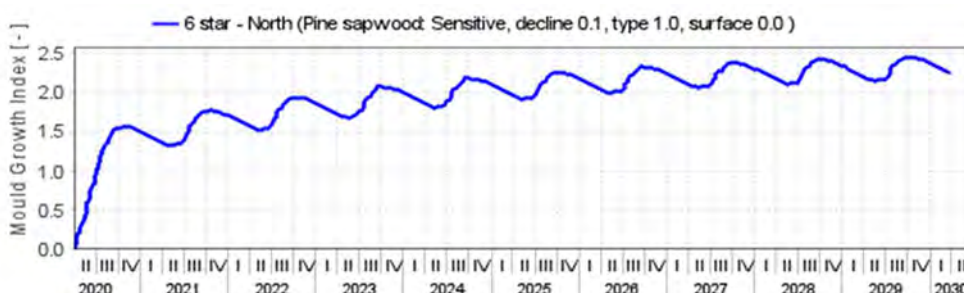


Figure 55: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.0 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

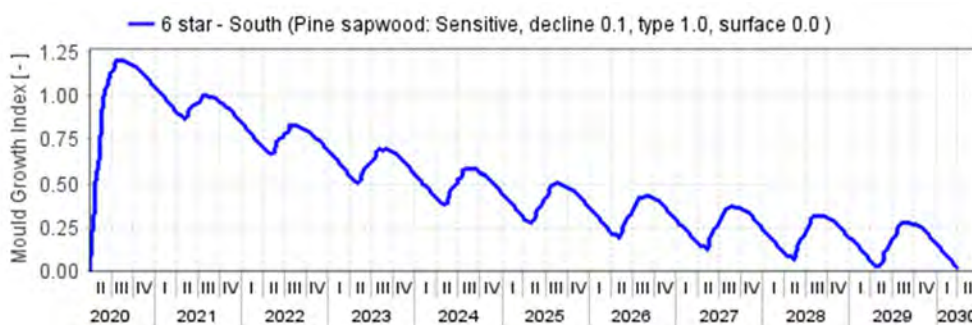


Figure 56: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

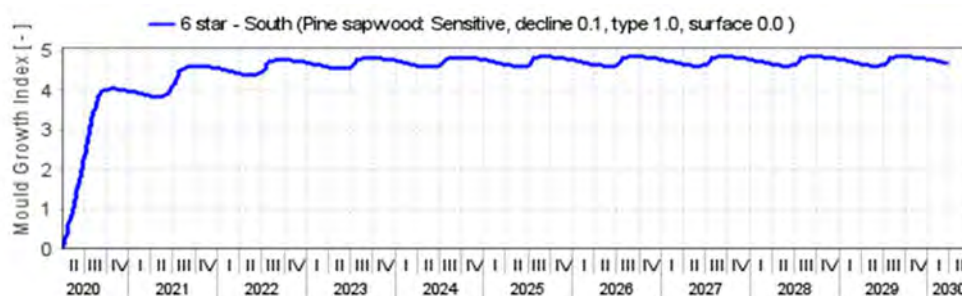


Figure 57: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

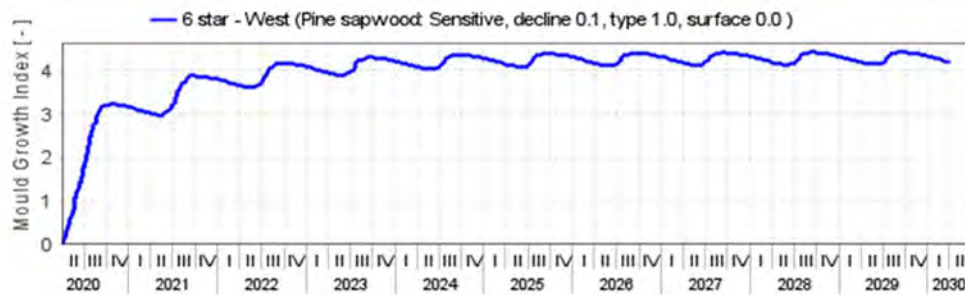


Figure 58: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

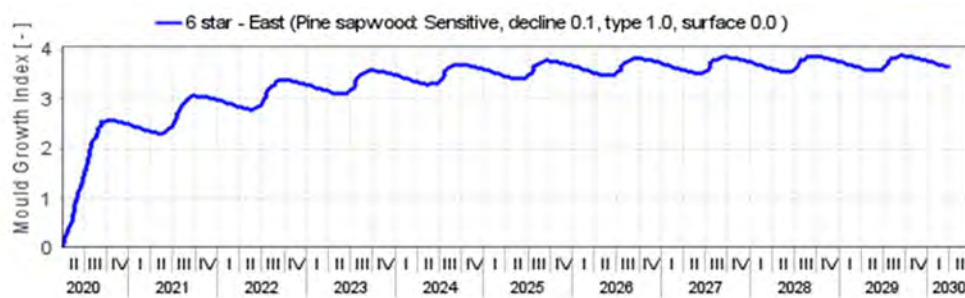


Figure 59: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 1.25 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

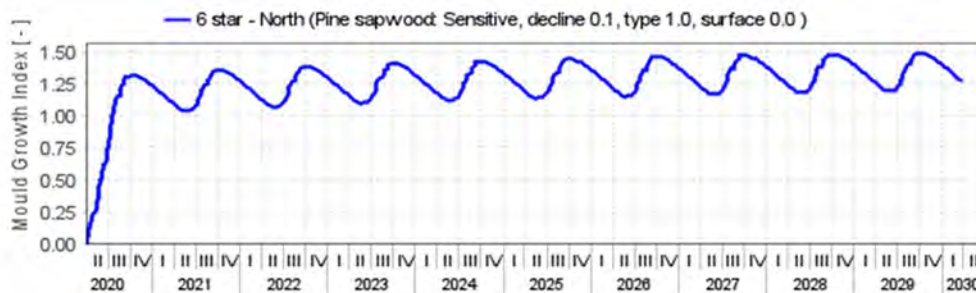


Figure 60: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.25 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

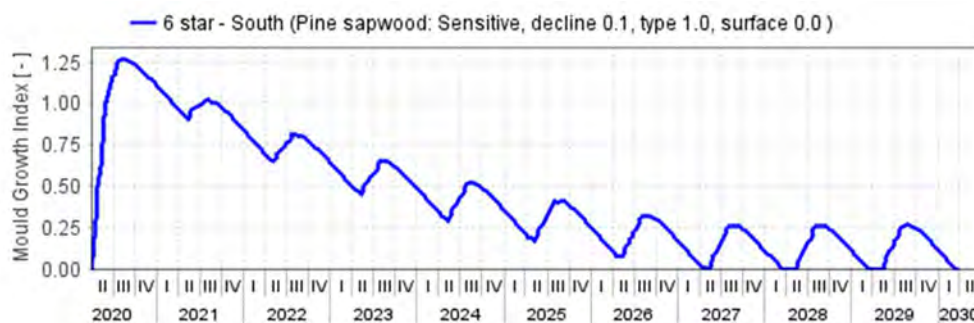


Figure 61: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

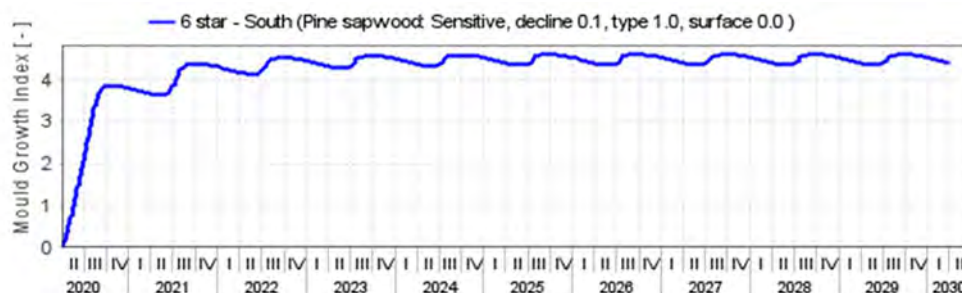


Figure 62: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

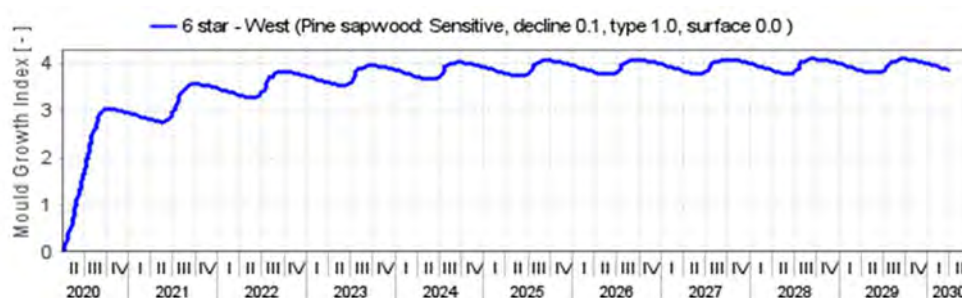


Figure 63: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

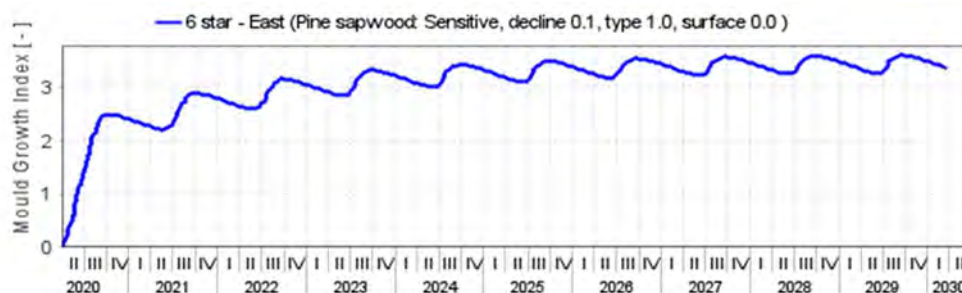


Figure 64: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.5 in the eighth year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

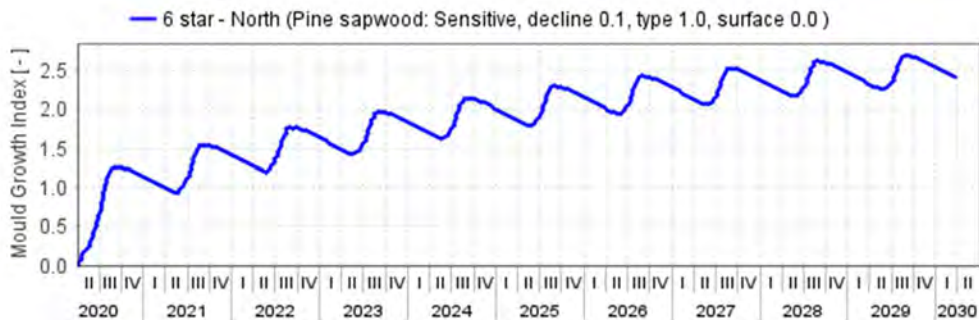


Figure 65: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

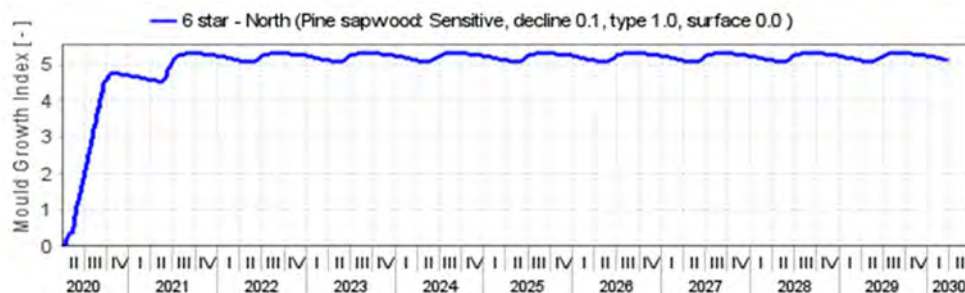


Figure 66: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

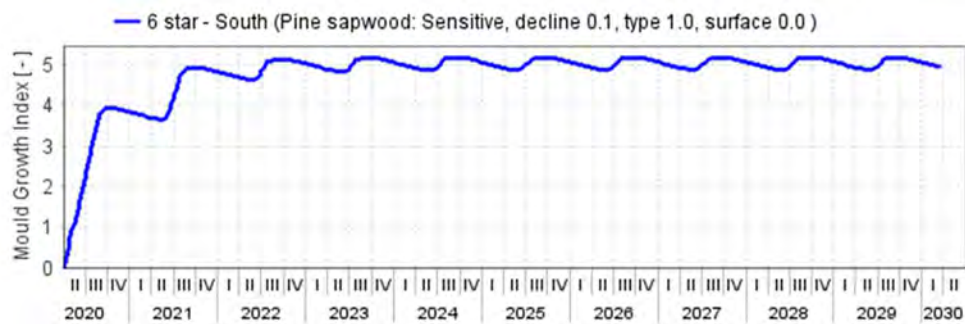


Figure 67: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

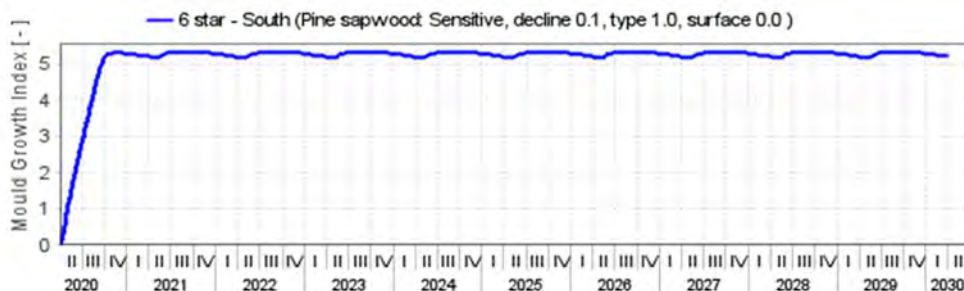


Figure 68: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

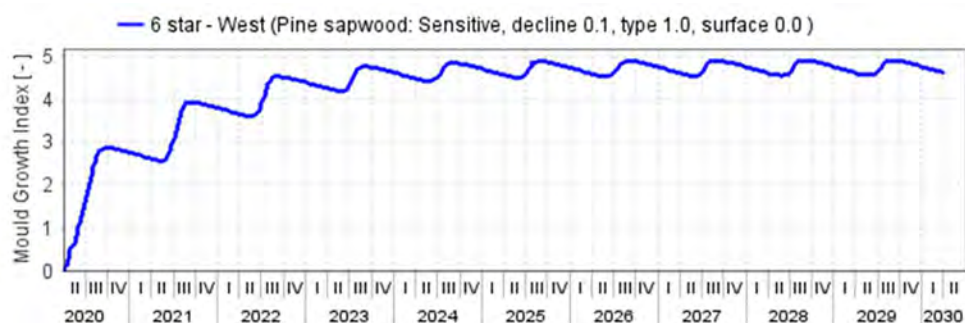


Figure 69: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

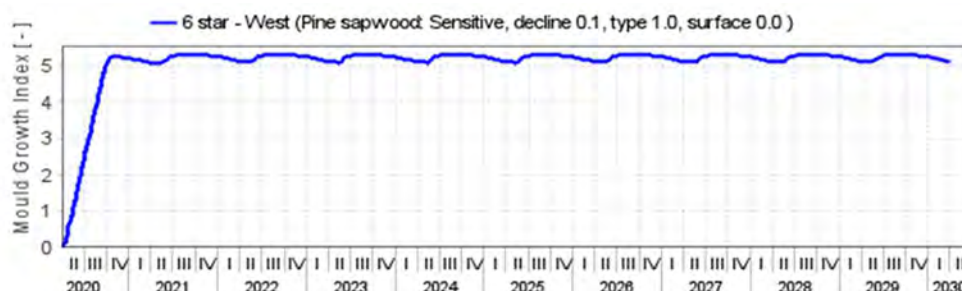


Figure 70: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

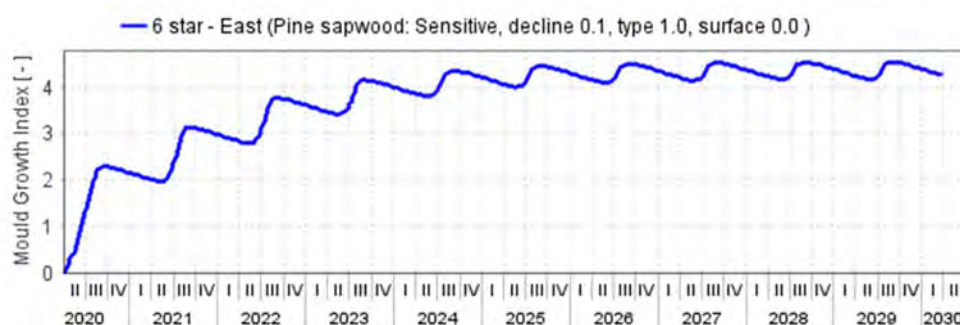


Figure 71: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

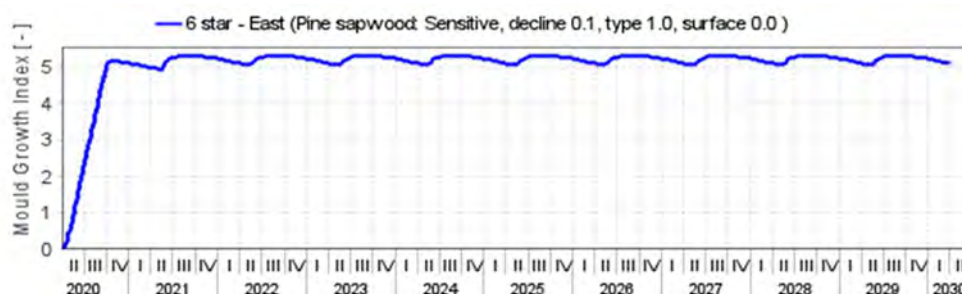


Figure 72: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

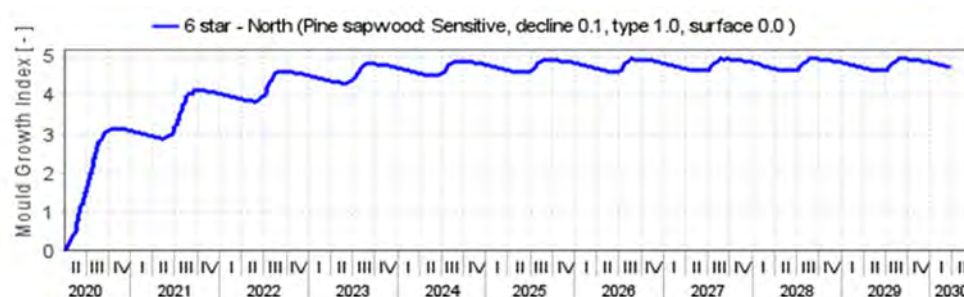


Figure 73: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.0 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

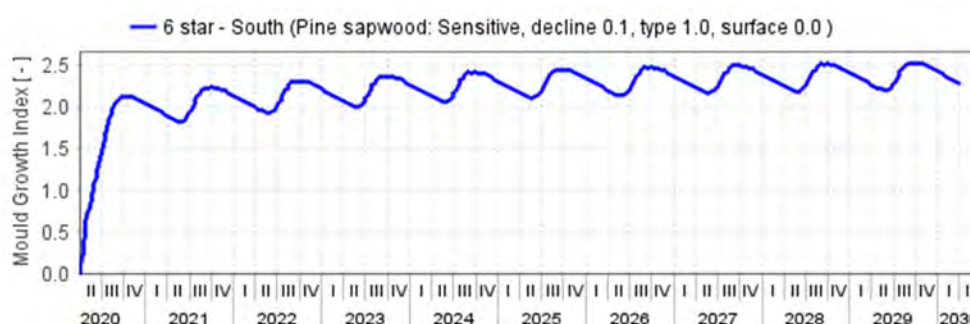


Figure 74: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

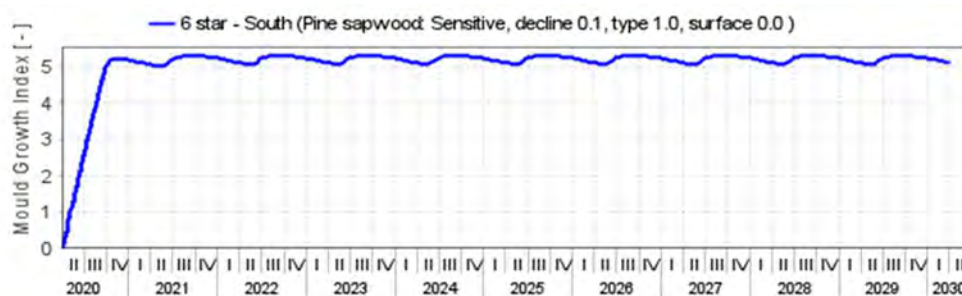


Figure 75: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.5 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

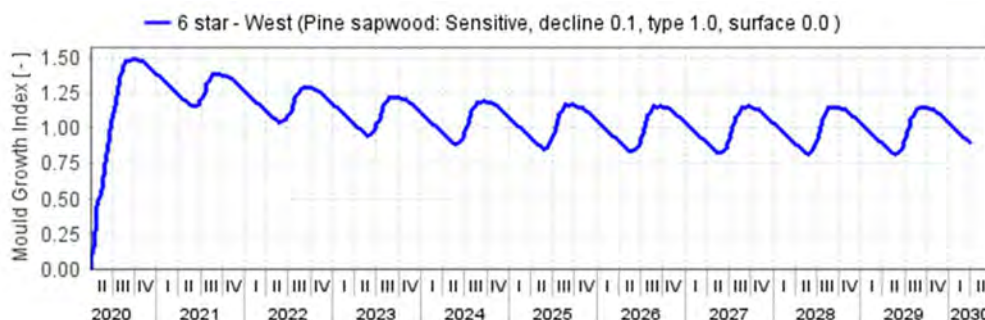


Figure 76: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

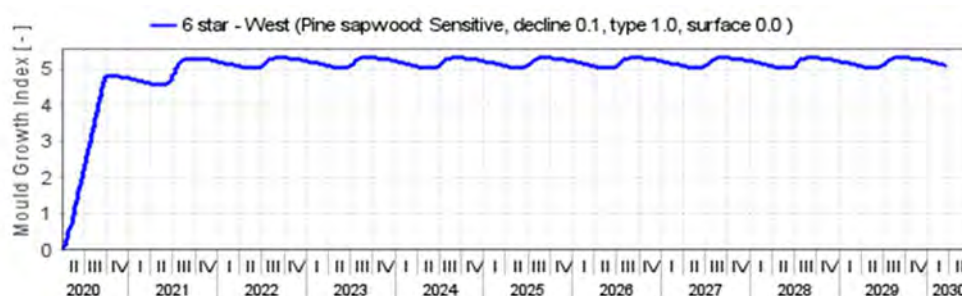


Figure 77: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.0 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

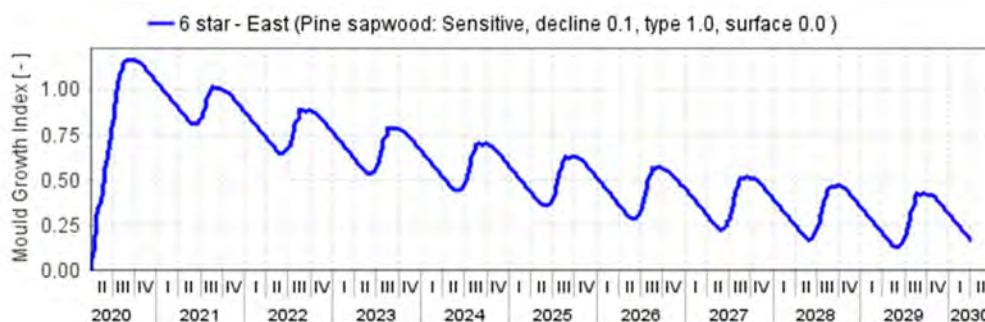


Figure 78: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

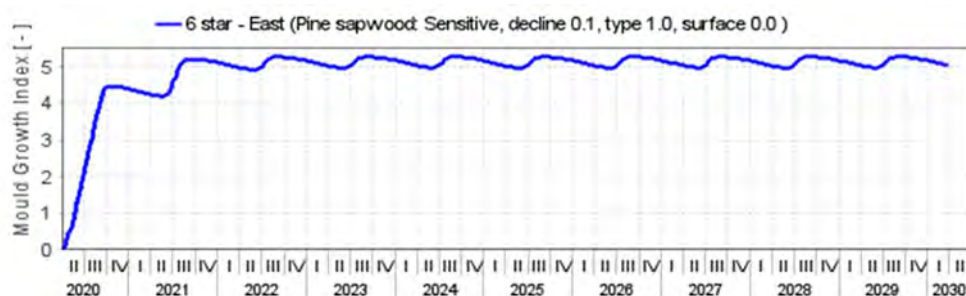


Figure 79: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

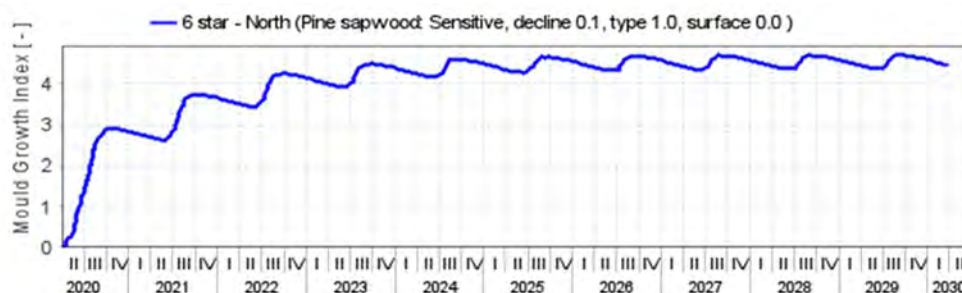


Figure 80: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI of 2.0 in the first year. The MI continues to increase for the full ten years of simulation. The software has identified this wall system as requiring further investigation.

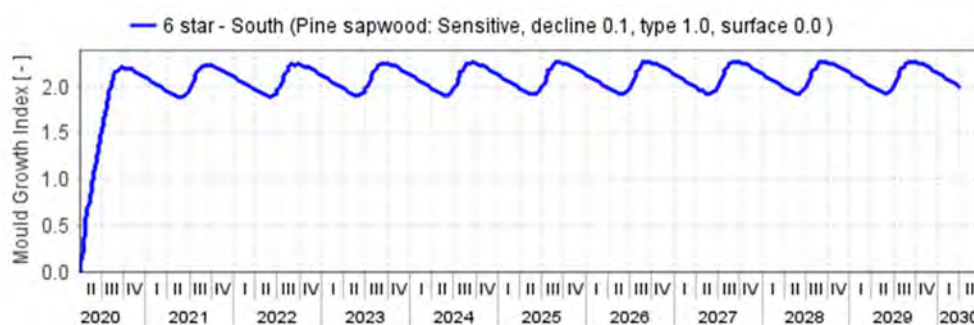


Figure 81: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

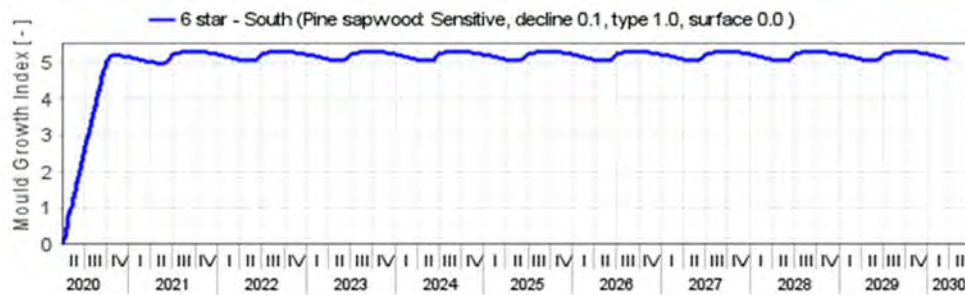


Figure 82: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.5 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

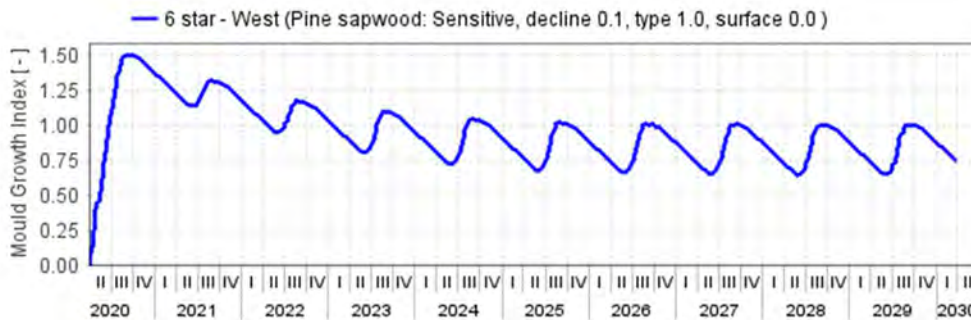


Figure 83: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

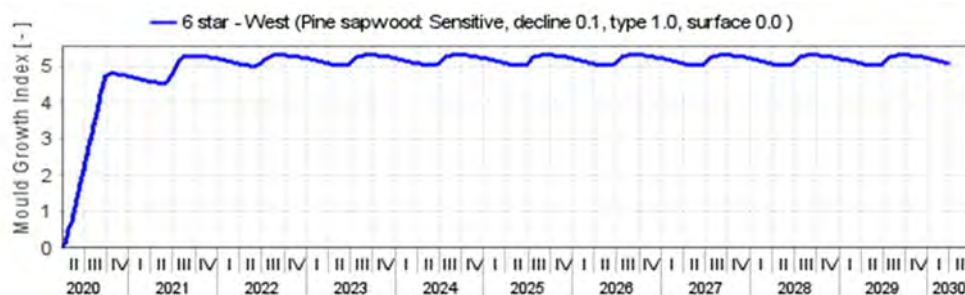


Figure 84: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: This wall system exceeds an MI beyond 1.0 in the first year. The MI then seems to decrease. However, due to the high mould growth index value for the first few years this wall system as requiring further investigation.

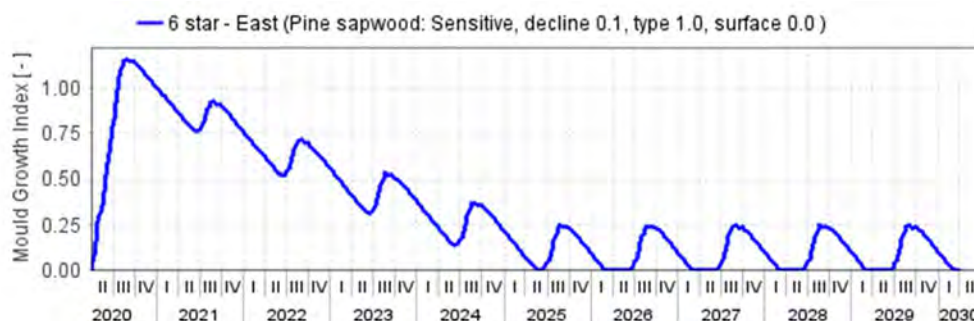


Figure 85: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

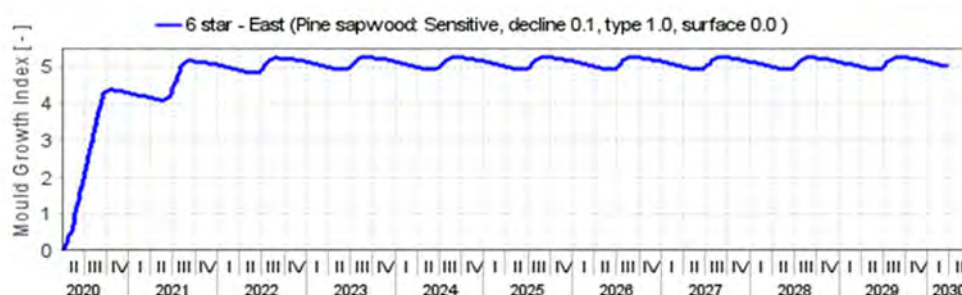


Figure 86: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

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Appendix 7: Hygrothermal simulation results – Extruded polystyrene (XPS) cladding

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

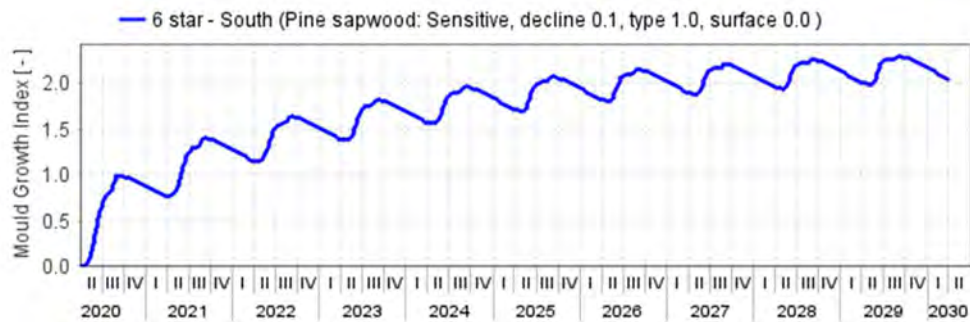


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

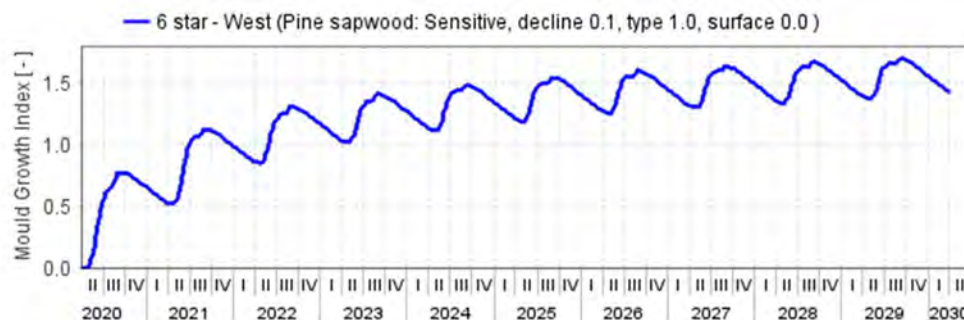


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

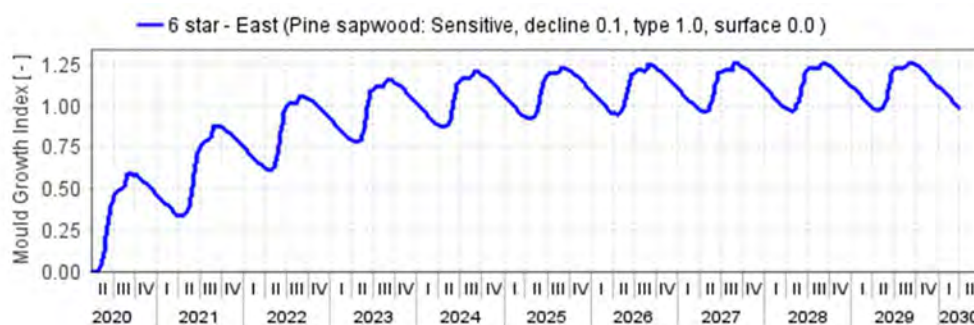


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall system requires further investigation.

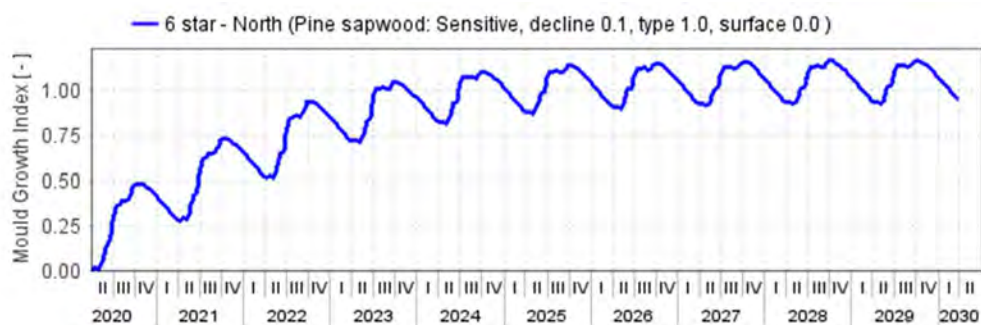


Figure 4: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

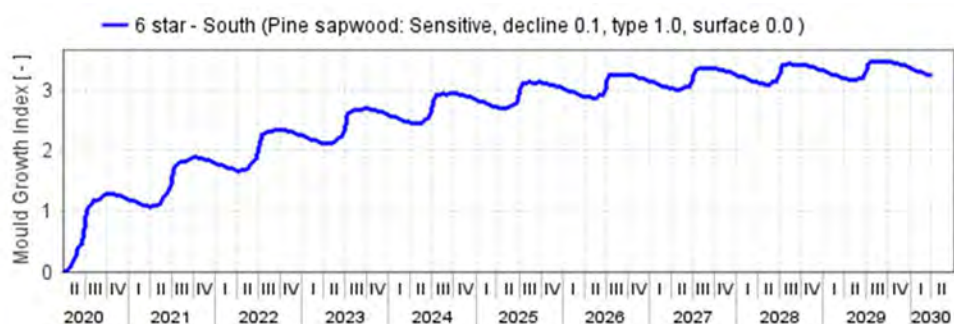


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

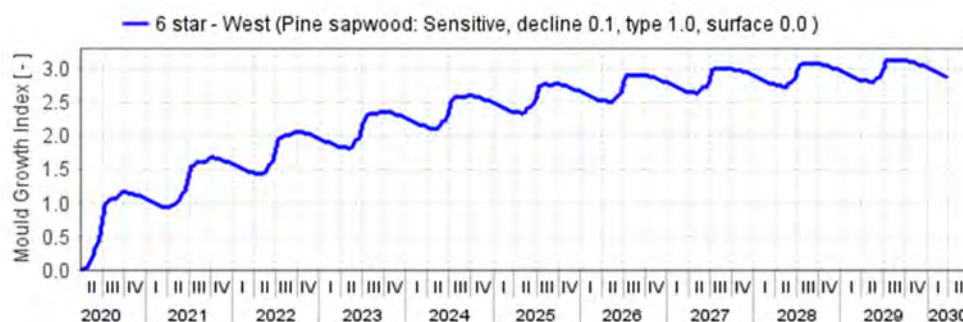


Figure 6: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

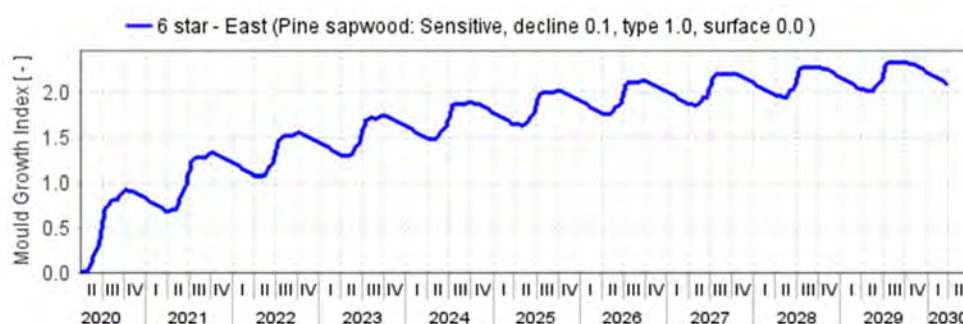


Figure 7: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year.

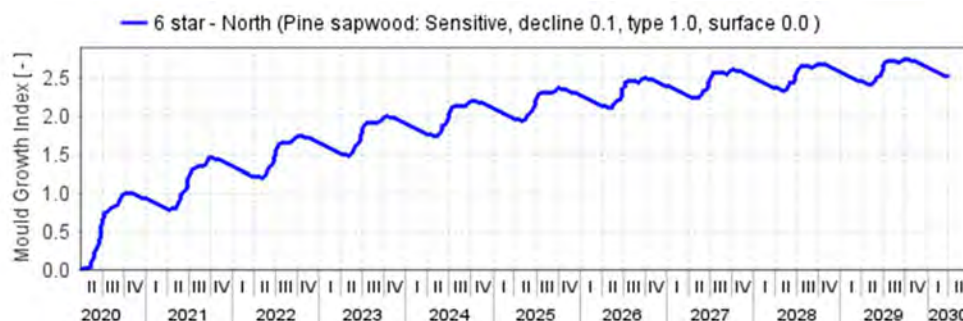


Figure 8: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 9, with a Mould Growth Index that exceeds 3.0 in the fourth year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).

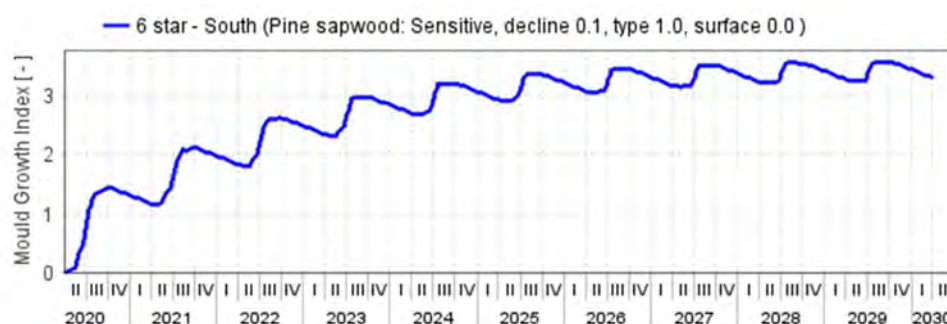


Figure 9: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth at junction of XPS and membrane ACR 5

The second, as shown in Figure 10, with a Mould Growth Index that exceeds 3.0 in the fourth year, is within the insulated timber frame.

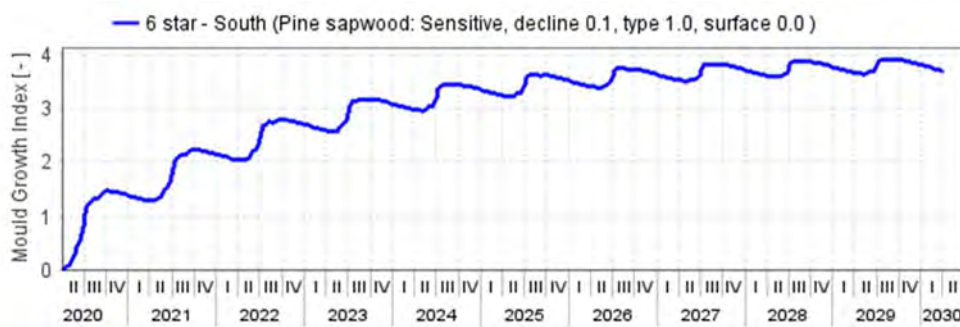


Figure 10: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

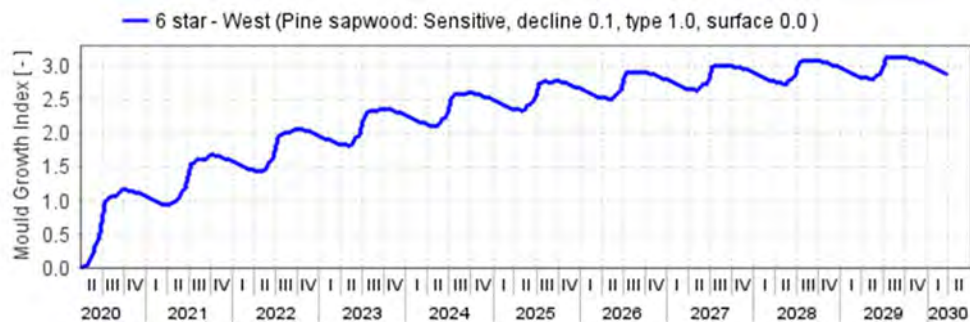


Figure 11: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

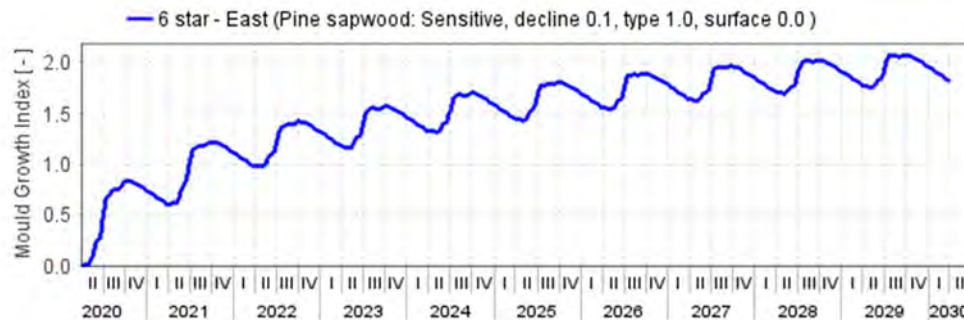


Figure 12: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

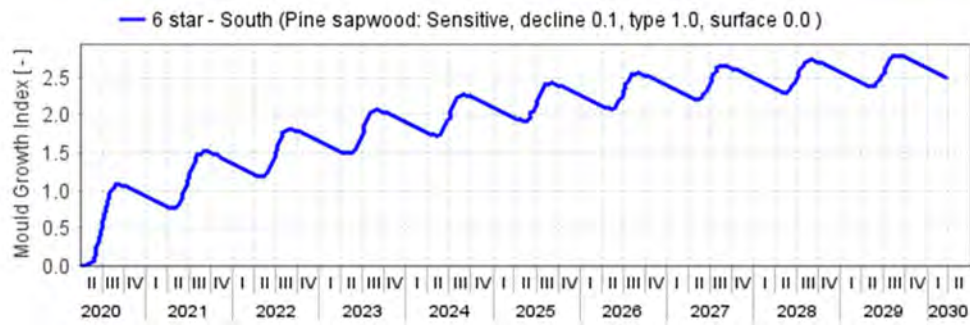


Figure 13: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

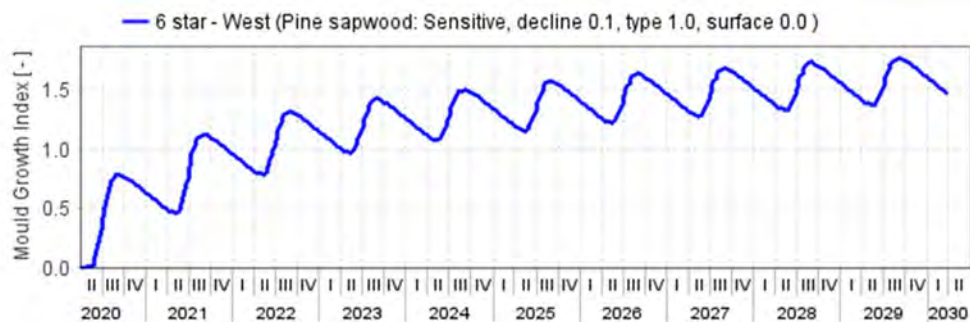


Figure 14: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

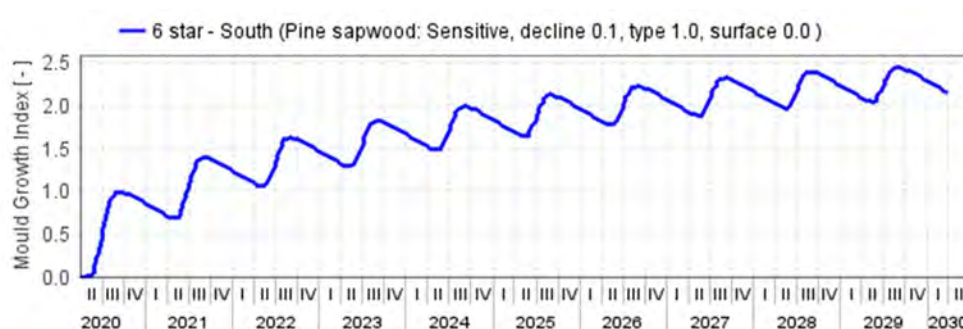


Figure 15: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

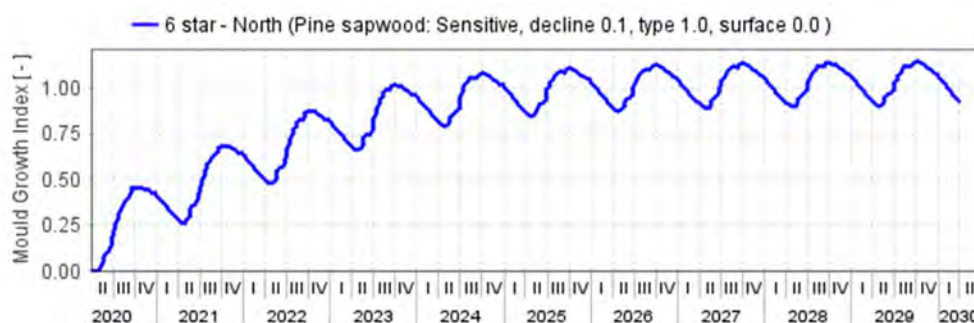


Figure 16: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 17, with a Mould Growth Index that exceeds 3.0 in the fifth year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the

mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).

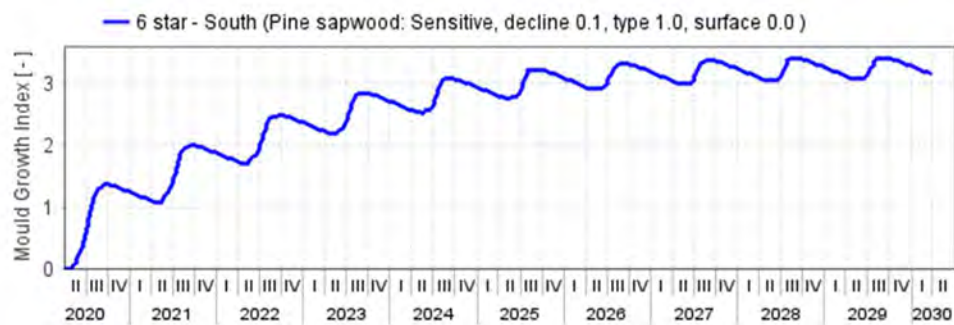


Figure 17: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth between XPS and membrane ACR 5

The second area of simulated mould growth, as shown in Figure 18, with a Mould Growth Index that exceeds 3.0 in the seventh year, is within the insulated timber frame

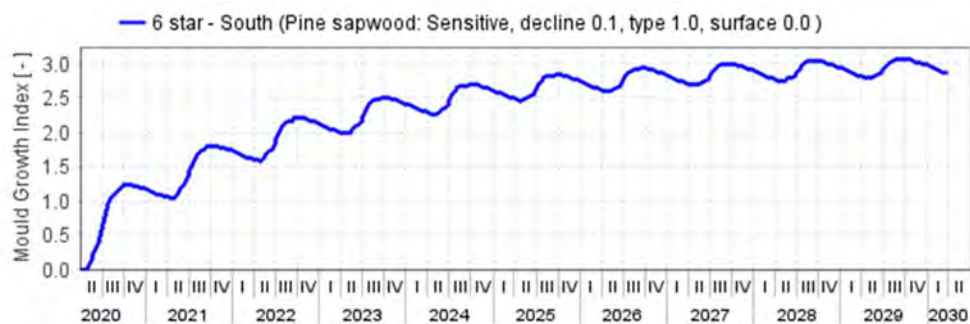


Figure 18: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

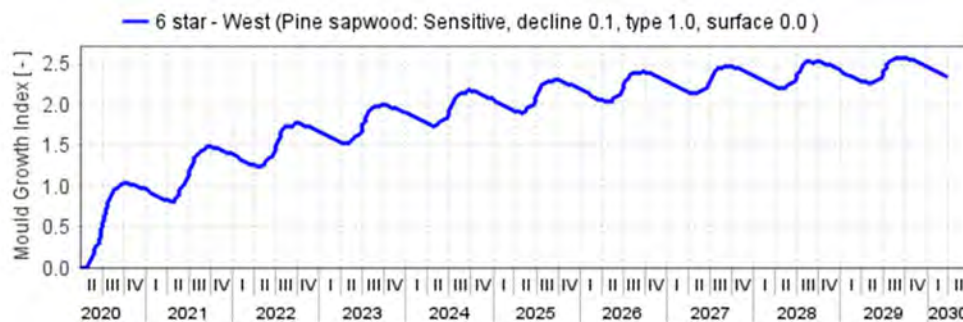
Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.



East

Air change rate variable 10.0

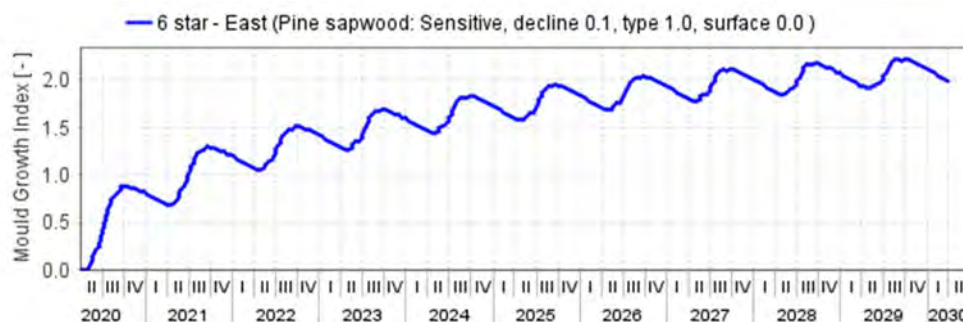
Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.



NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

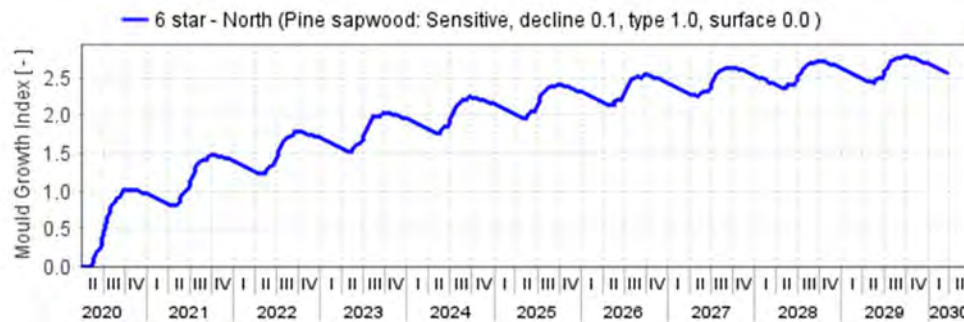


Figure 21: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 22, with a Mould Growth Index that exceeds 1.0 in the third year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

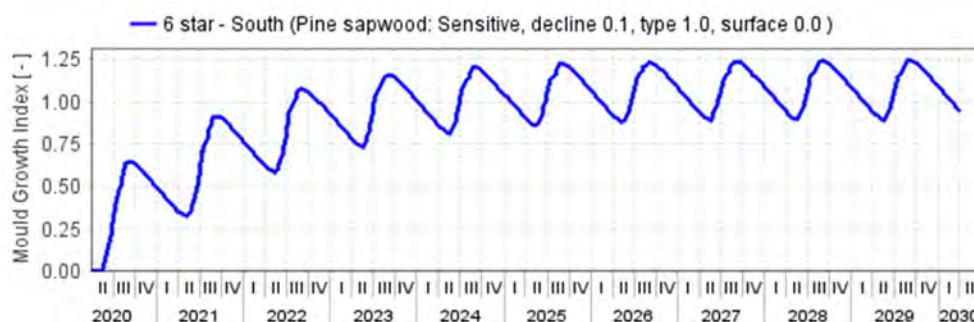


Figure 22: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth between XPS and membrane ACR 5

The second area of simulated mould growth, as shown in Figure 23, with a Mould Growth Index that exceeds 3.0 in the first year, is within the insulated timber frame

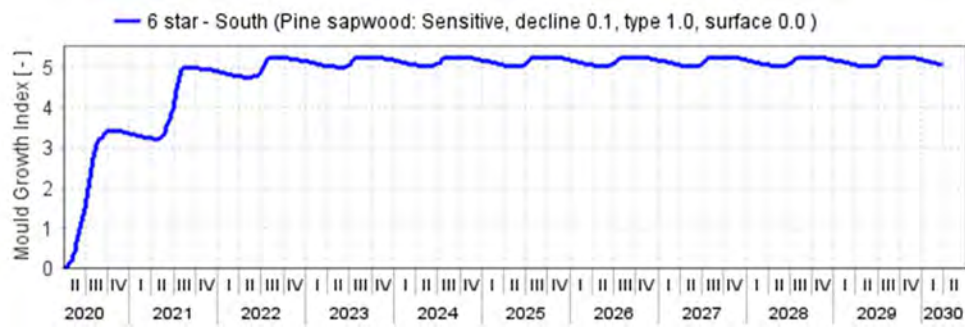


Figure 23: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

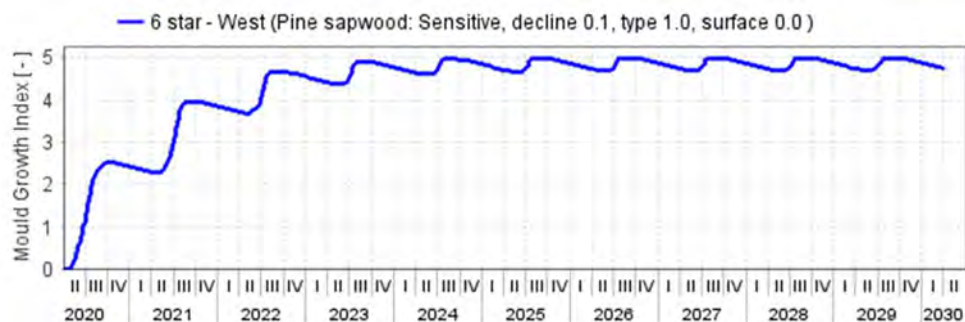


Figure 24: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

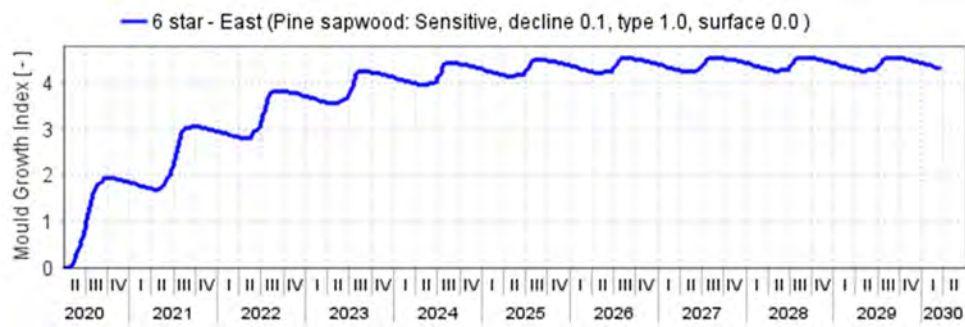


Figure 25: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

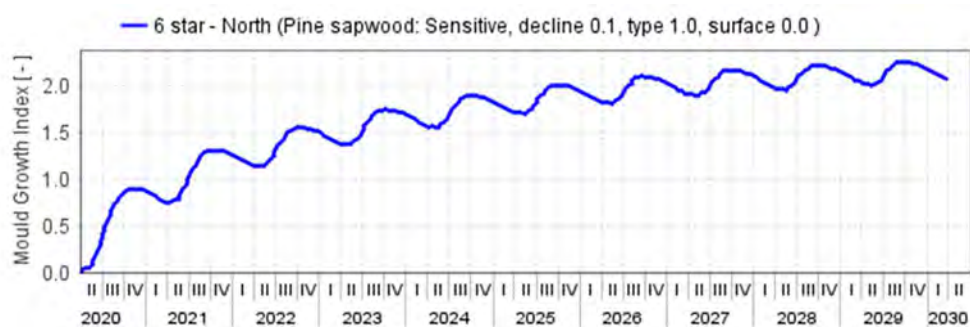


Figure 26: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

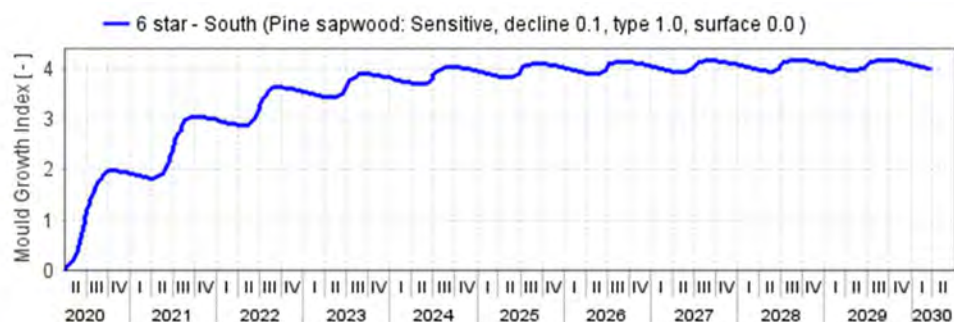


Figure 27: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

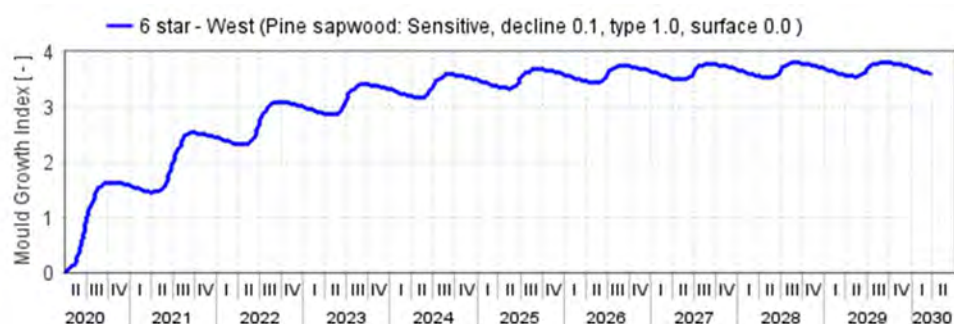


Figure 28: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

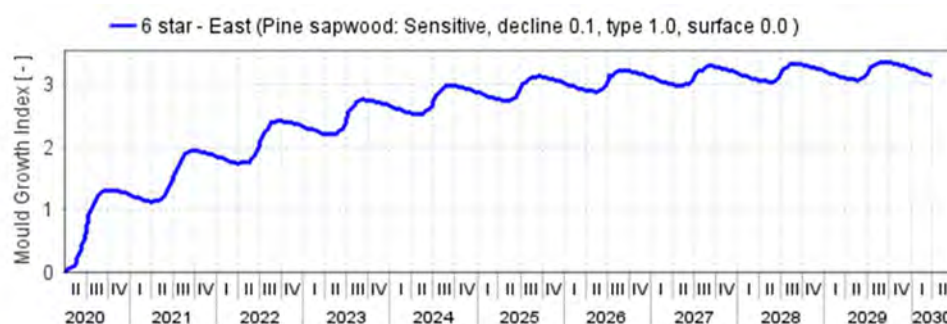


Figure 29: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5)

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

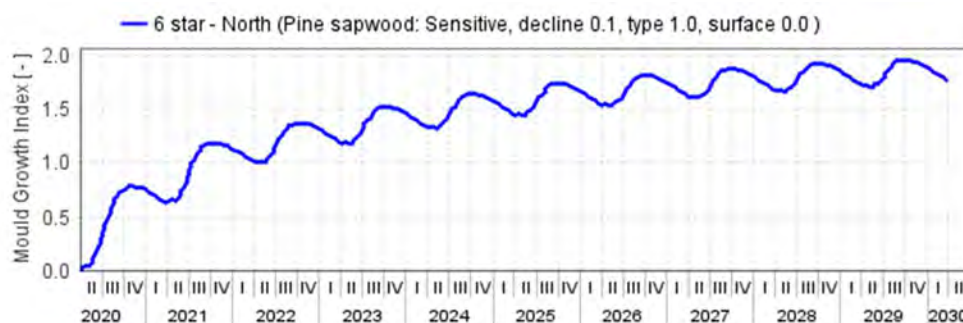


Figure 30: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

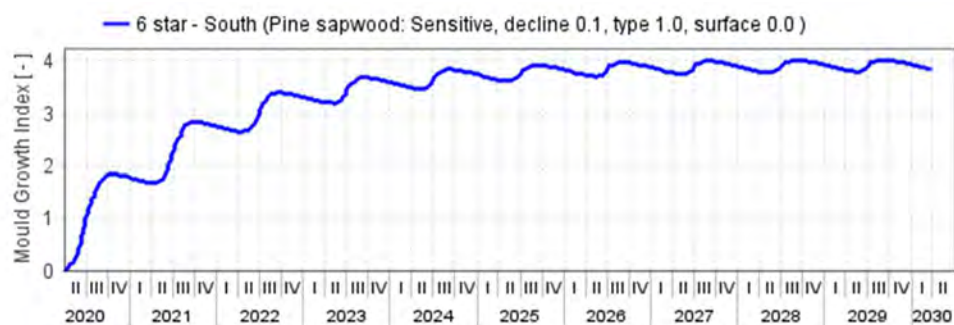


Figure 31: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

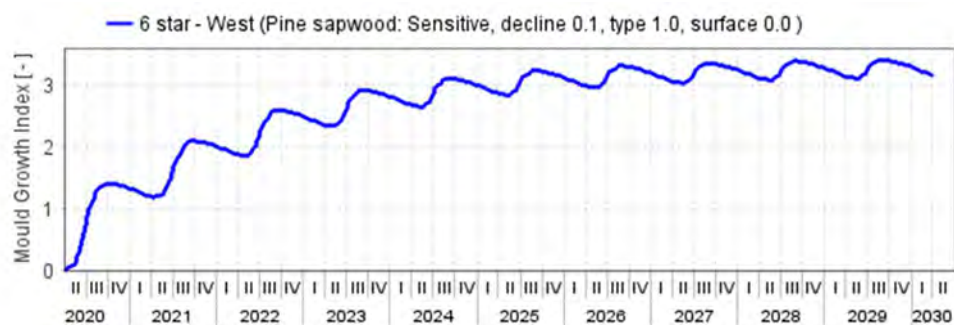


Figure 32: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

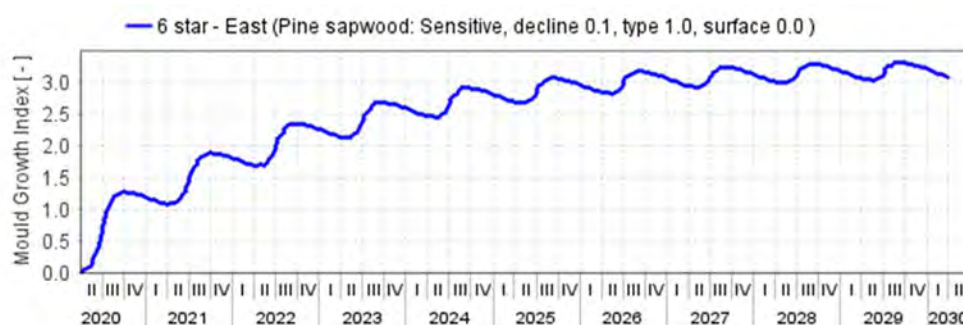


Figure 33: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

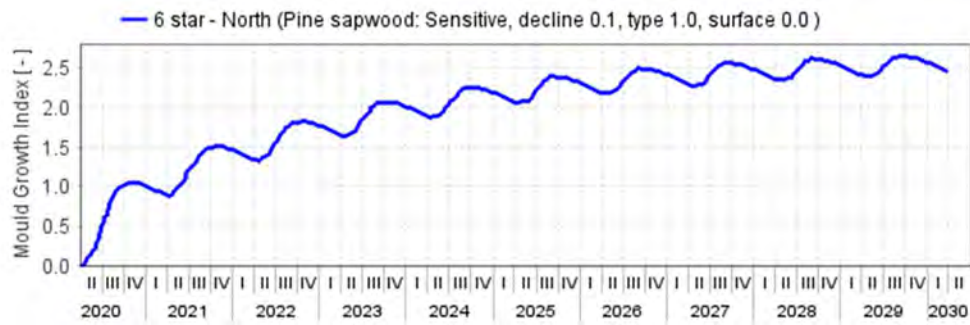


Figure 34: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 35, with a Mould Growth Index that exceeds 1.0 in the third year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 36, with a Mould Growth Index that exceeds 3.0 in the third year, is within the insulated timber frame.

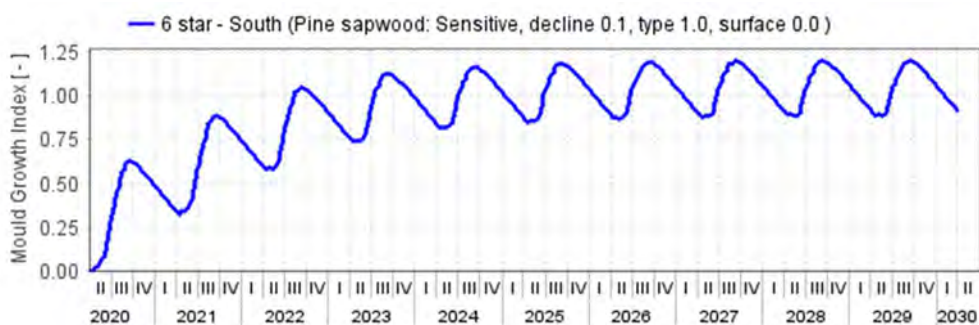


Figure 35: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth between XPS and membrane ACR 5

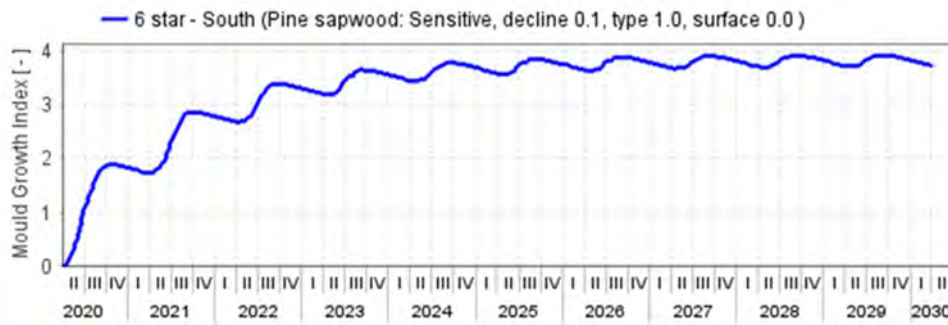


Figure 36: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

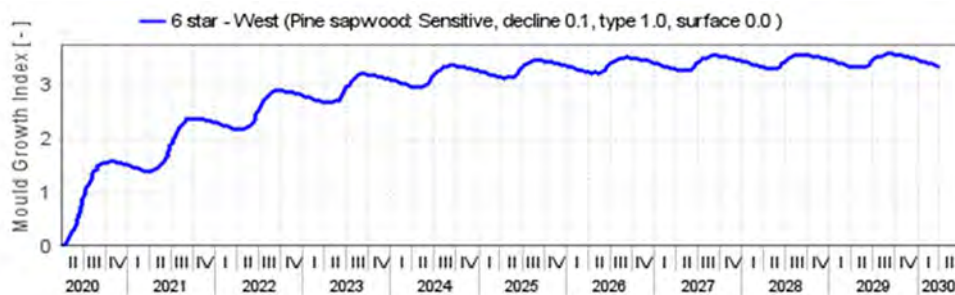


Figure 37: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

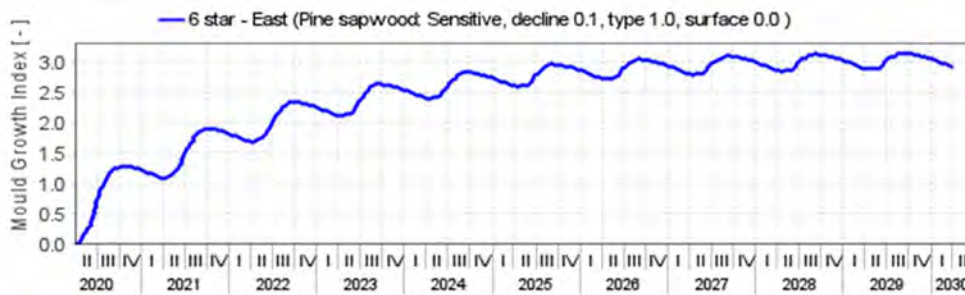


Figure 38: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

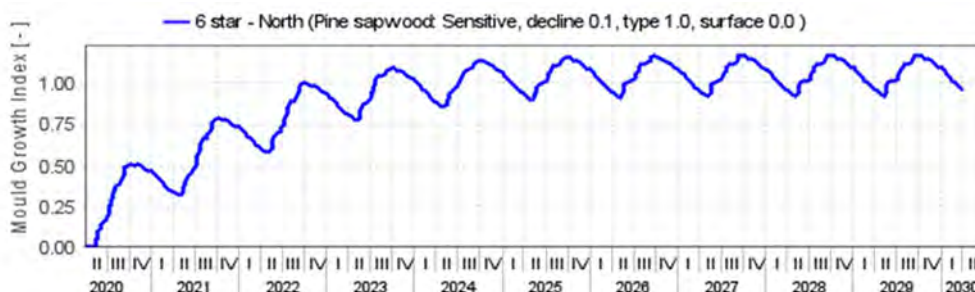


Figure 39: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

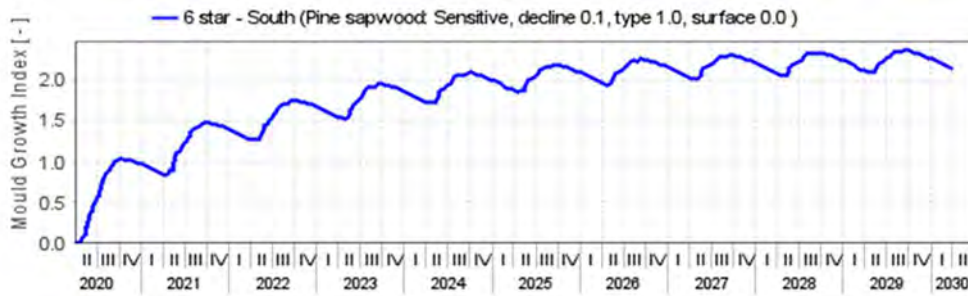


Figure 40: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

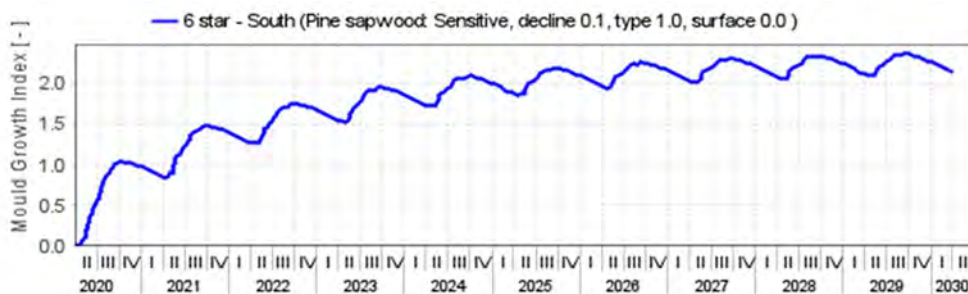


Figure 41: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

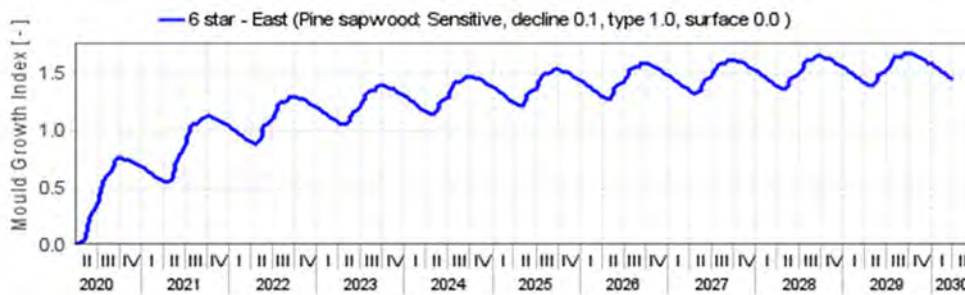


Figure 42: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

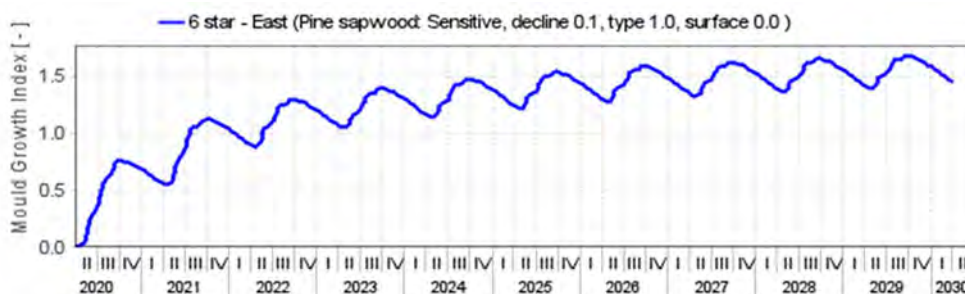


Figure 43: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 44, with a Mould Growth Index that exceeds 1.0 in the second year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the

mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 45, with a Mould Growth Index that exceeds 3.0 in the second year, is within the insulated timber frame.

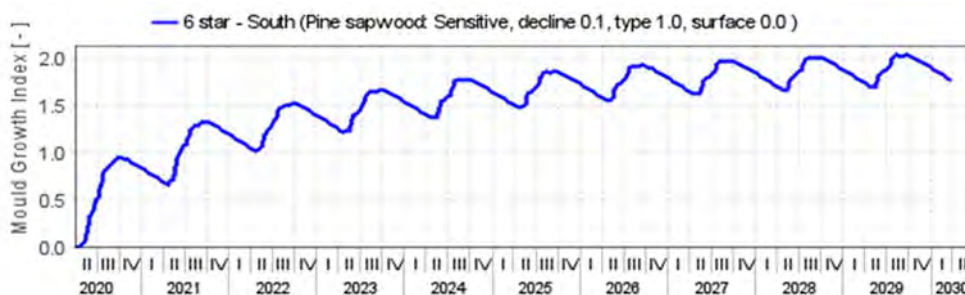


Figure 44: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth between XPS and membrane ACR 5

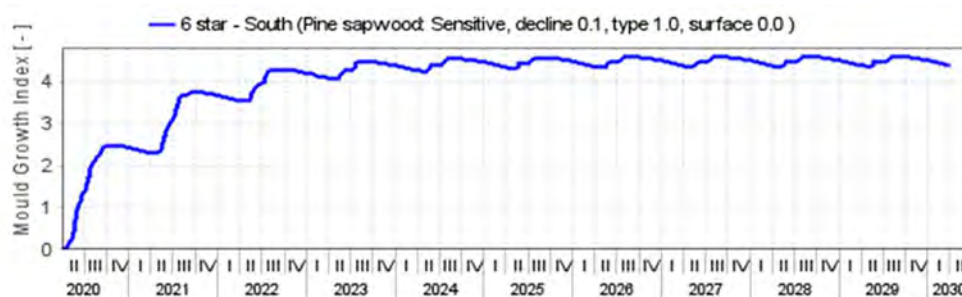


Figure 45: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 46, with a Mould Growth Index that exceeds 1.0 in the second year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 47, with a Mould Growth Index that exceeds 3.0 in the third year, is within the insulated timber frame.

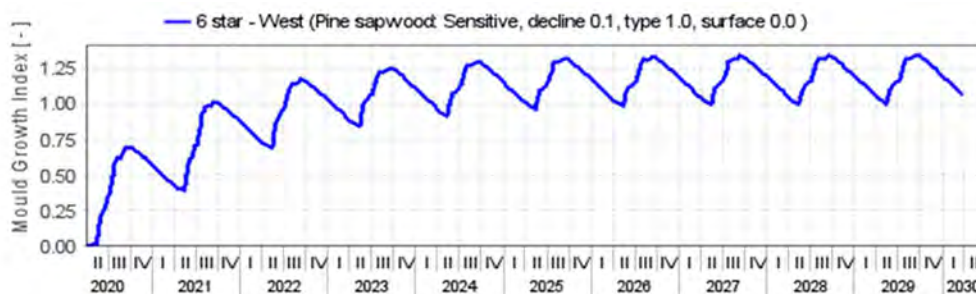


Figure 46: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth between XPS and membrane ACR 5

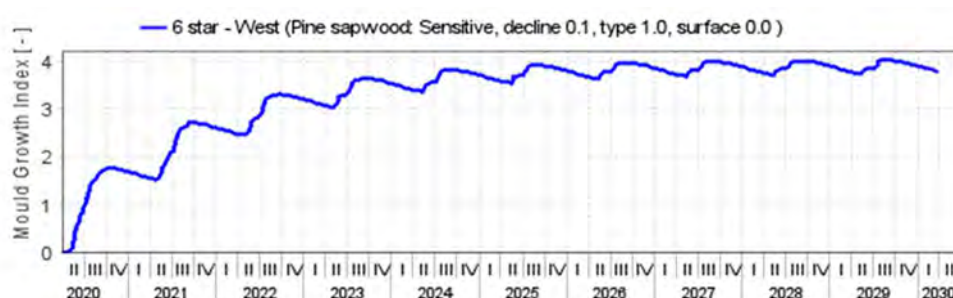


Figure 47: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 48, with a Mould Growth Index that exceeds 1.0 in the seventh year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 49, with a Mould Growth Index that exceeds 3.0 in the third year, is within the insulated timber frame.

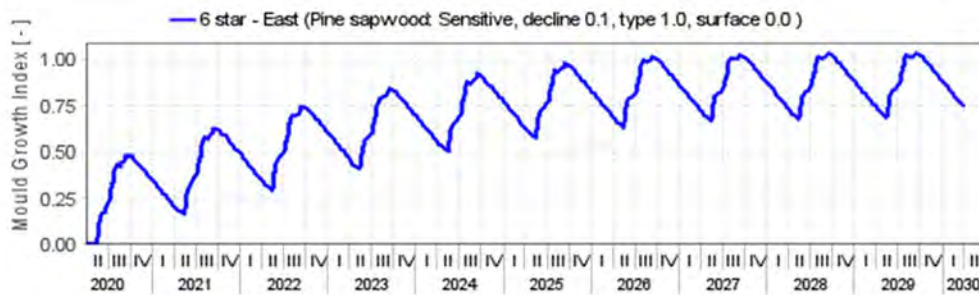


Figure 48: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth between XPS and membrane ACR 5

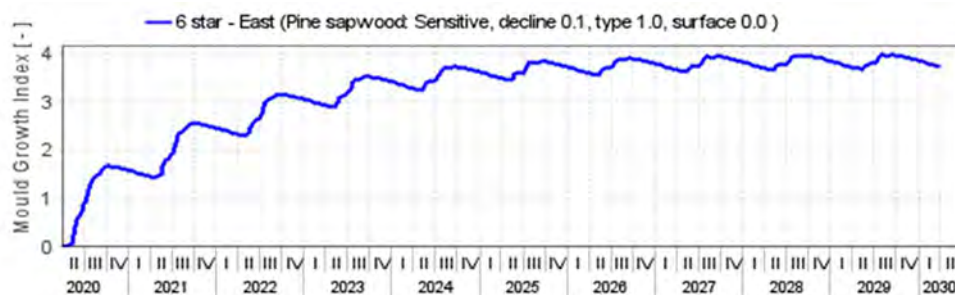


Figure 49: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

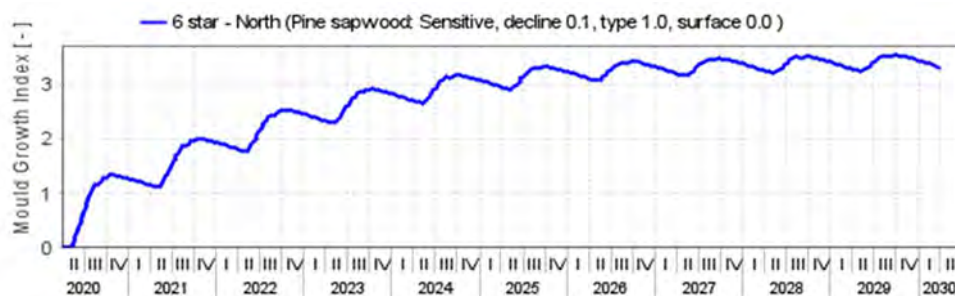


Figure 50: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

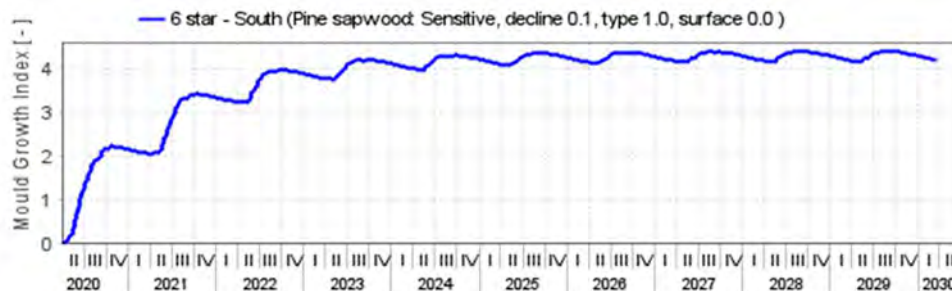


Figure 51: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

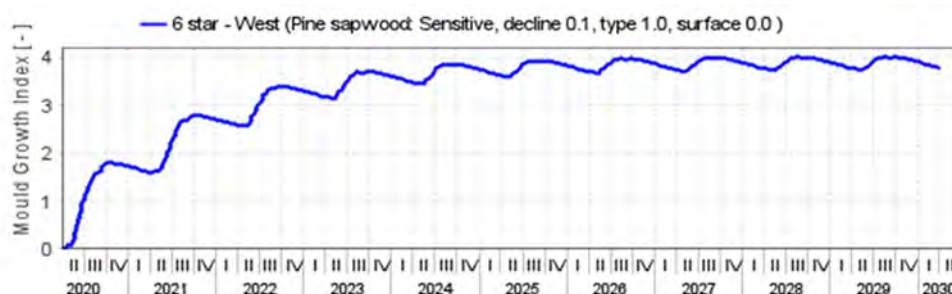


Figure 52: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

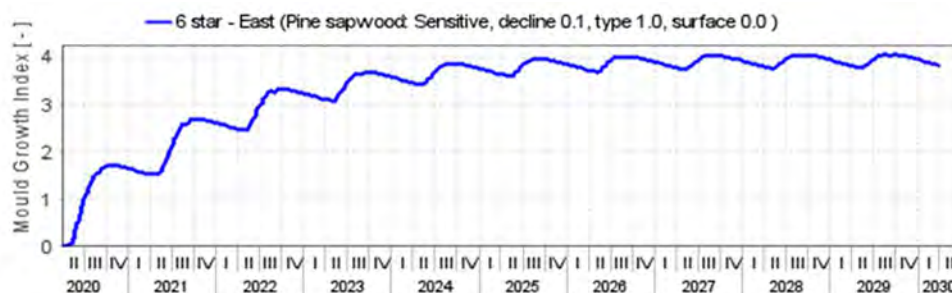


Figure 53: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

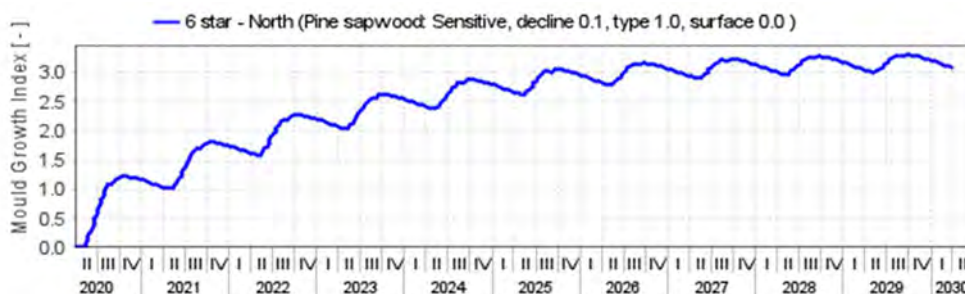


Figure 54: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 55, with a Mould Growth Index that exceeds 1.0 in the third year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 56, with a Mould Growth Index that exceeds 3.0 in the second year, is within the insulated timber frame.

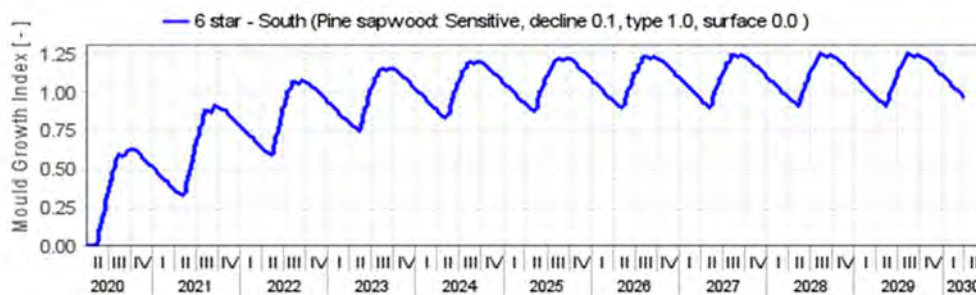


Figure 55: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth between XPS and membrane ACR 5

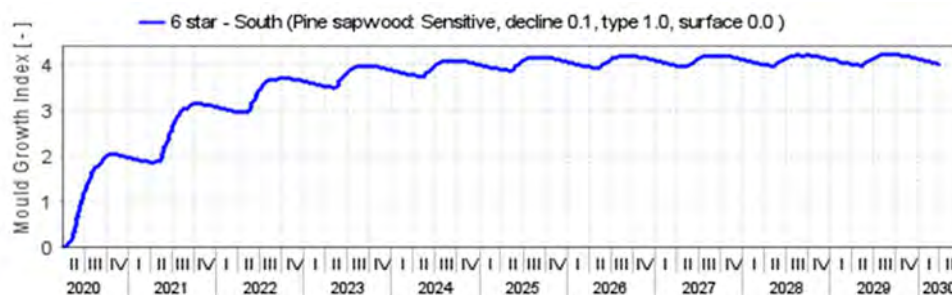


Figure 56: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 57, with a Mould Growth Index that exceeds 1.0 in the eighth year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system). Additionally, as this simulation result is between 1.0 and 3.0, it requires further investigation.

The second area of simulated mould growth, as shown in Figure 58, with a Mould Growth Index that exceeds 3.0 in the third year, is within the insulated timber frame.

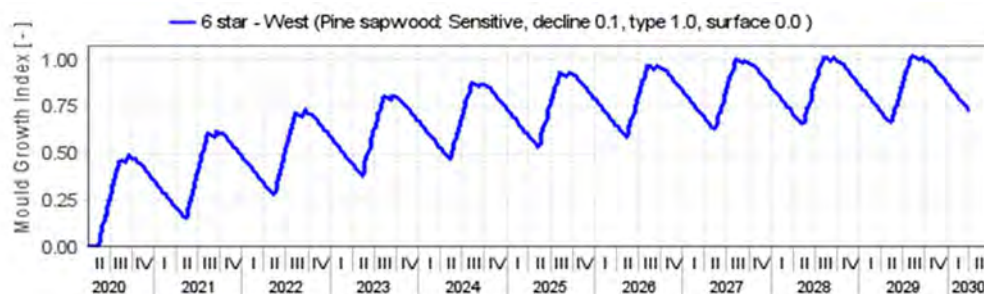


Figure 57: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth between XPS and membrane ACR 5

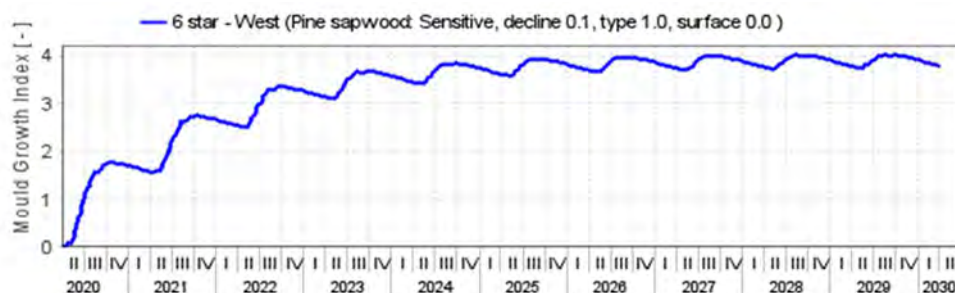


Figure 58: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

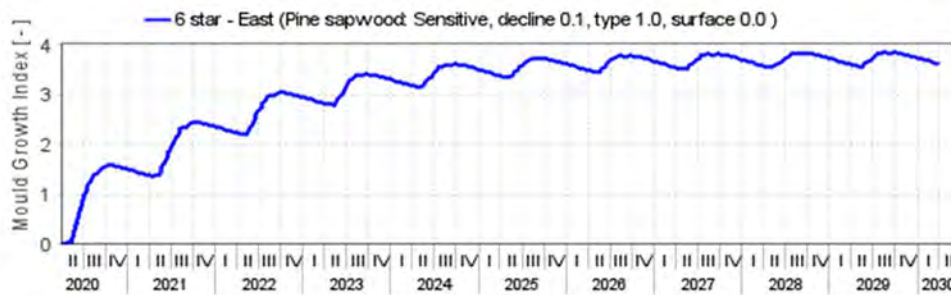
Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.



NCC CZ 8

North

Air change rate variable 10.0

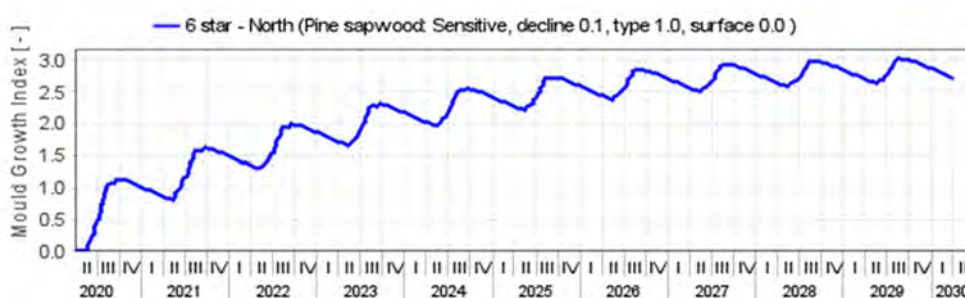
Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 60, with a Mould Growth Index that exceeds 3.0 in the ninth year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).



The second area of simulated mould growth, as shown in Figure 61, with a Mould Growth Index that exceeds 3.0 in the first year, is within the insulated timber frame.

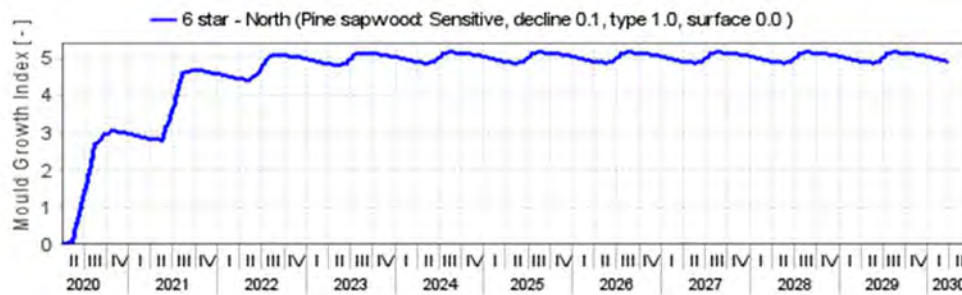


Figure 61: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 62, with a Mould Growth Index that exceeds 3.0 in the second year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).

The second area of simulated mould growth, as shown in Figure 63, with a Mould Growth Index that exceeds 3.0 in the first year, is within the insulated timber frame.

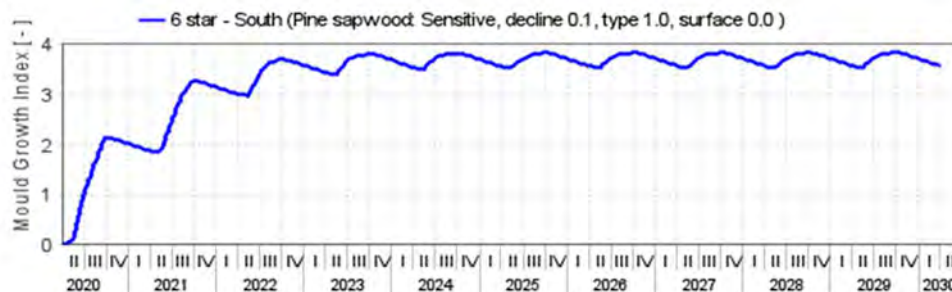


Figure 62: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth between XPS and membrane ACR 5

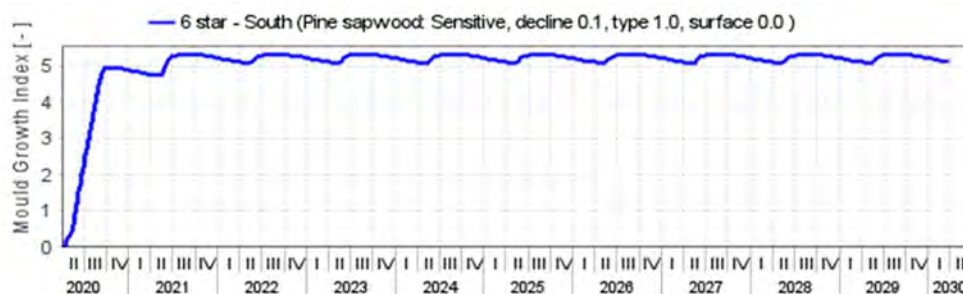


Figure 63: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 64, with a Mould Growth Index that exceeds 3.0 in the third year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).

The second area of simulated mould growth, as shown in Figure 65, with a Mould Growth Index that exceeds 3.0 in the first year, is within the insulated timber frame.

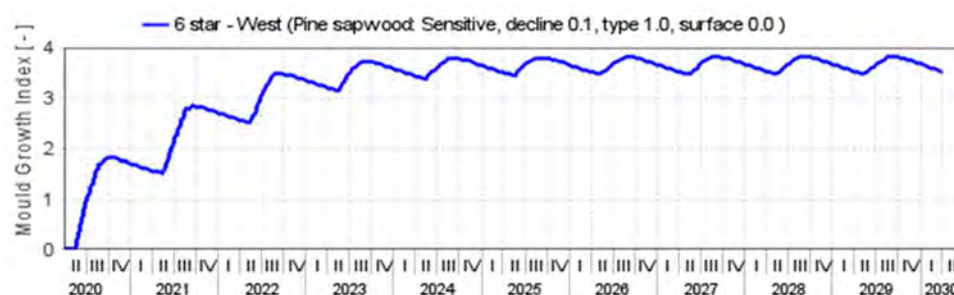


Figure 64: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth between XPS and membrane ACR 5

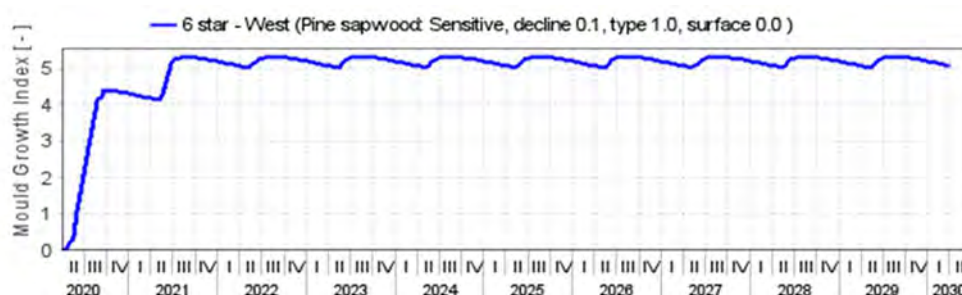


Figure 65: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: This wall system has two forms of mould growth evident. The first, as shown in Figure 66, with a Mould Growth Index that exceeds 3.0 in the third year, is between the XPS cladding and the membrane layer. Subject to the materials involved, the mould may or may not grow. However, this level of excessive moisture may impact the durability of the pliable membrane and XPS mechanical fixings. Any fixings that penetrate the XPS cladding would transport moisture to inside of the external layer (junction of XPS cladding and Render system).

The second area of simulated mould growth, as shown in Figure 67, with a Mould Growth Index that exceeds 3.0 in the second year, is within the insulated timber frame.

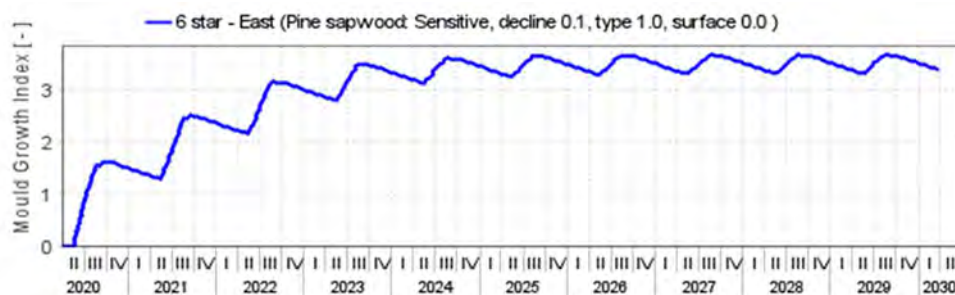


Figure 66: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth between XPS and membrane ACR 5

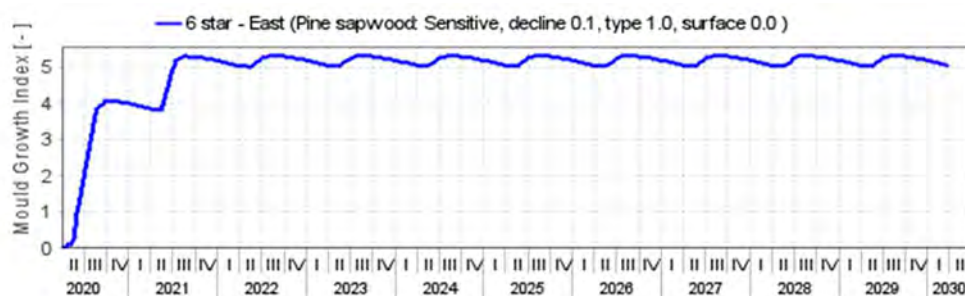


Figure 67: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

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Appendix 8: Hygrothermal simulation results – Expanded polystyrene (EPS) cladding

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

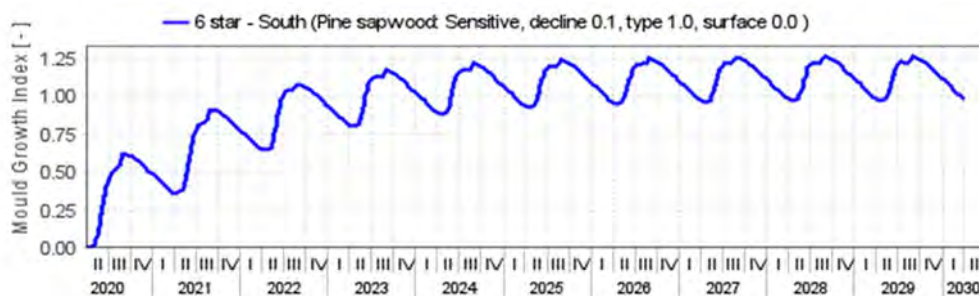


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

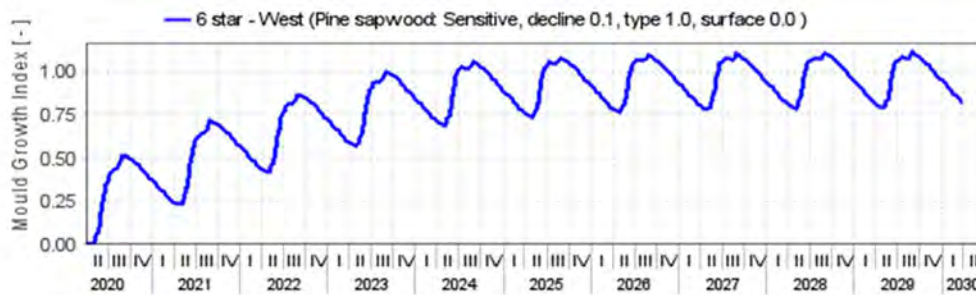


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

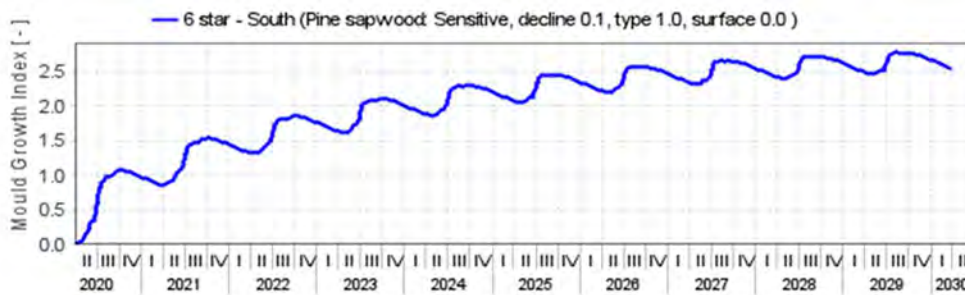


Figure 3: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

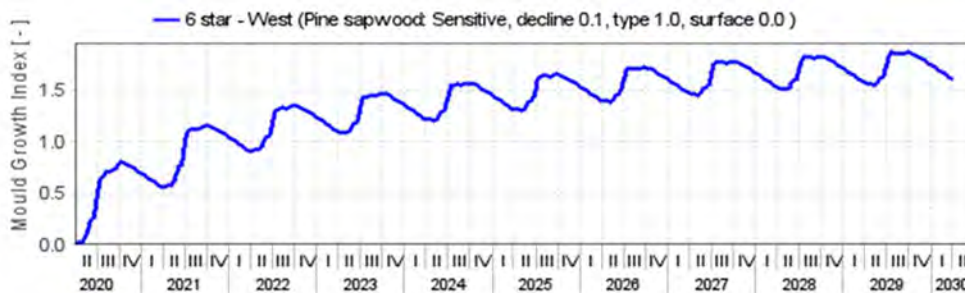


Figure 4: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

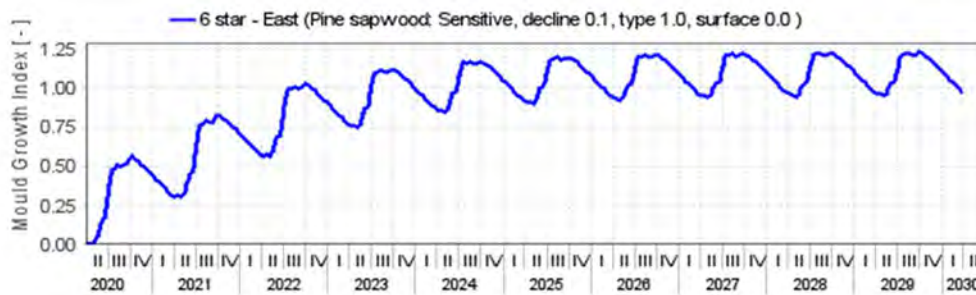


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

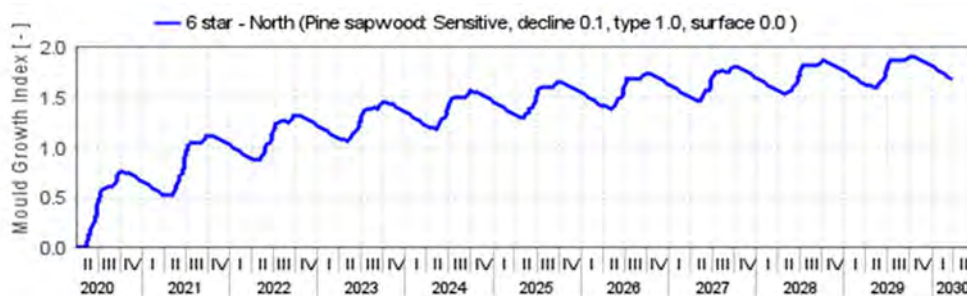


Figure 6: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

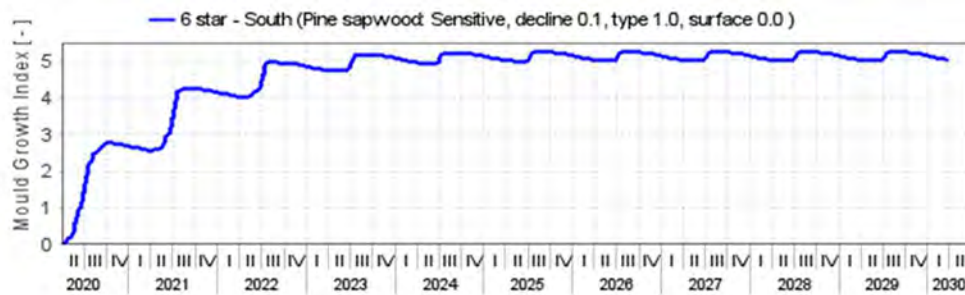


Figure 7: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

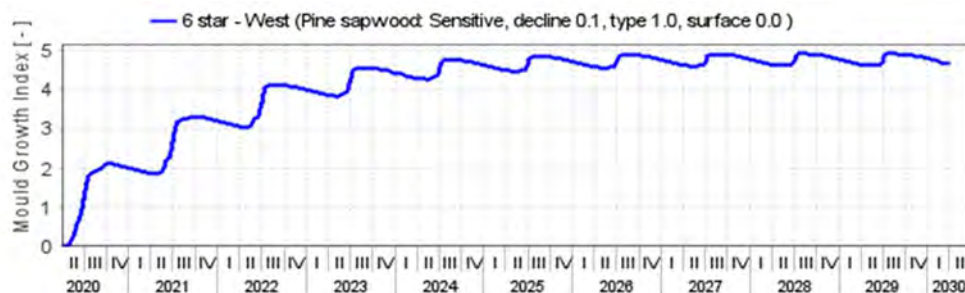


Figure 8: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

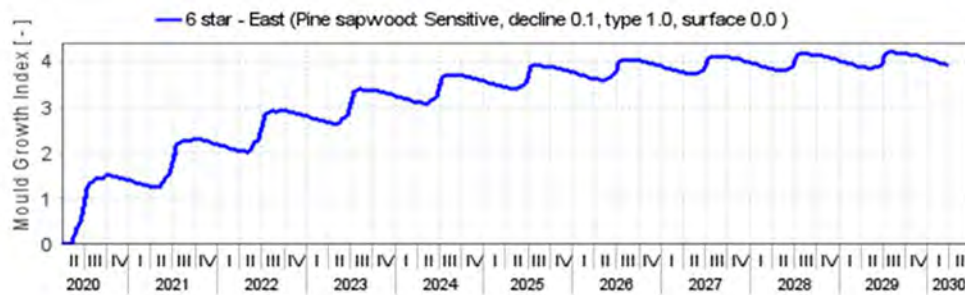


Figure 9: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

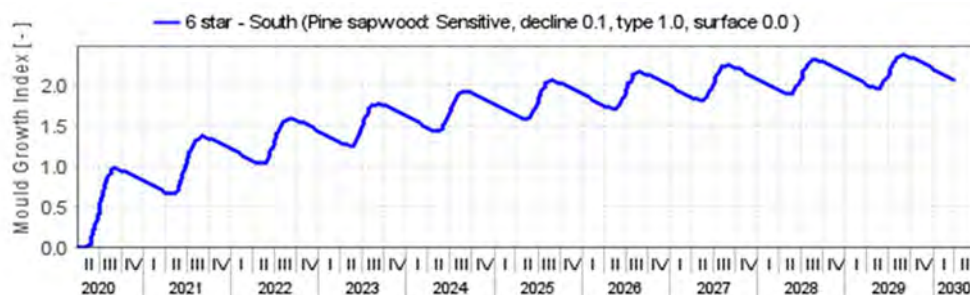


Figure 10: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

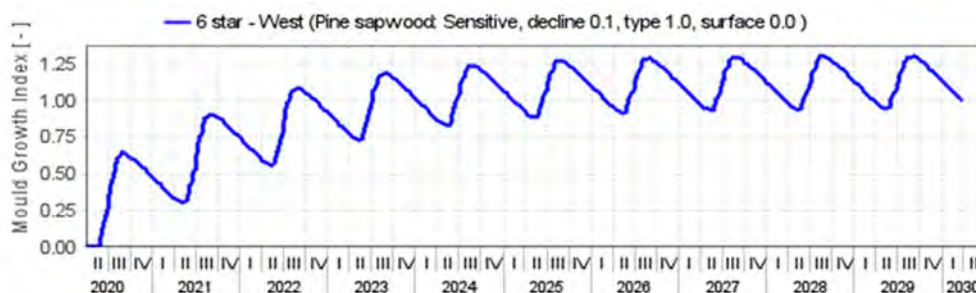


Figure 11: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

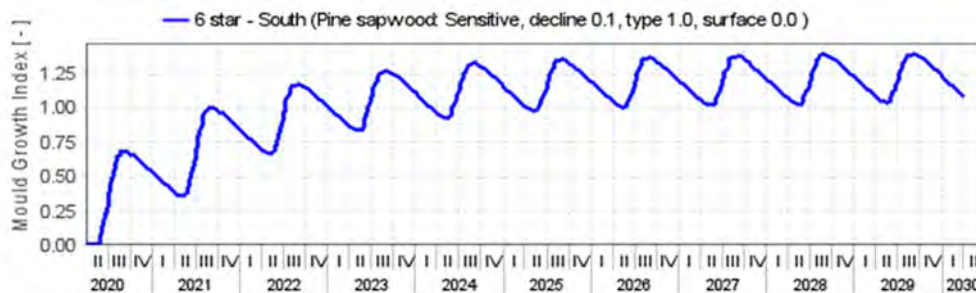


Figure 12: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

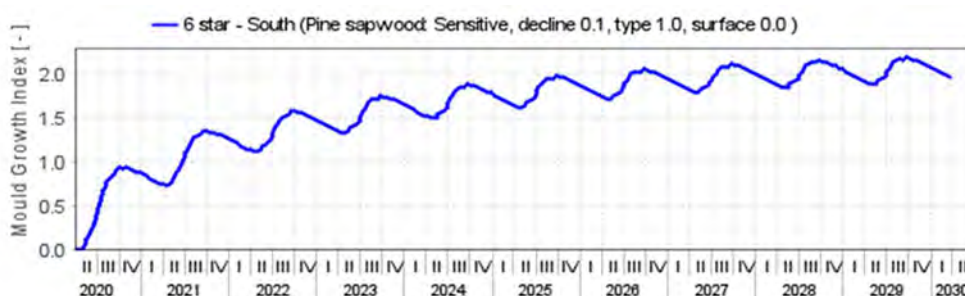


Figure 13: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

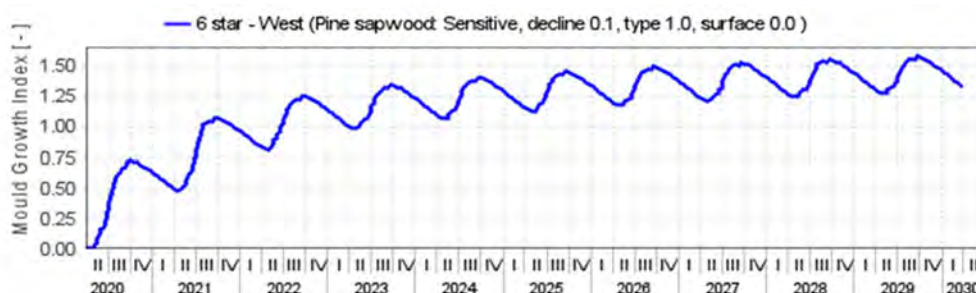


Figure 14: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

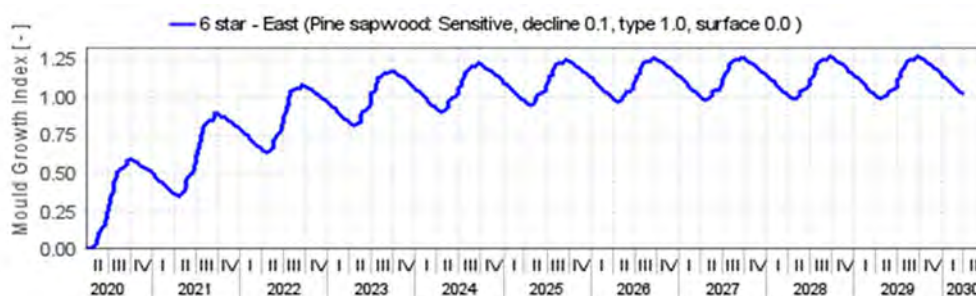


Figure 15: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

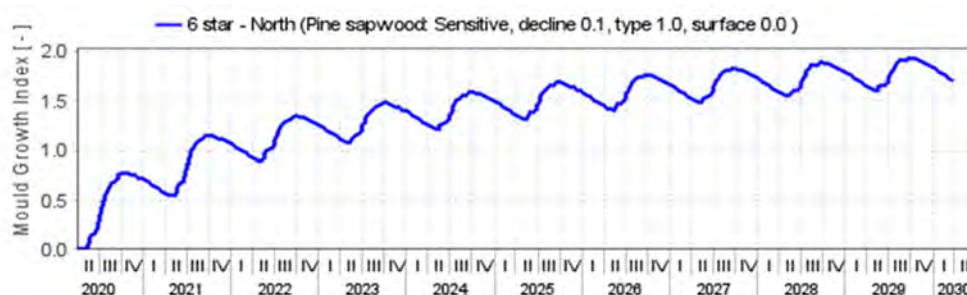


Figure 16: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

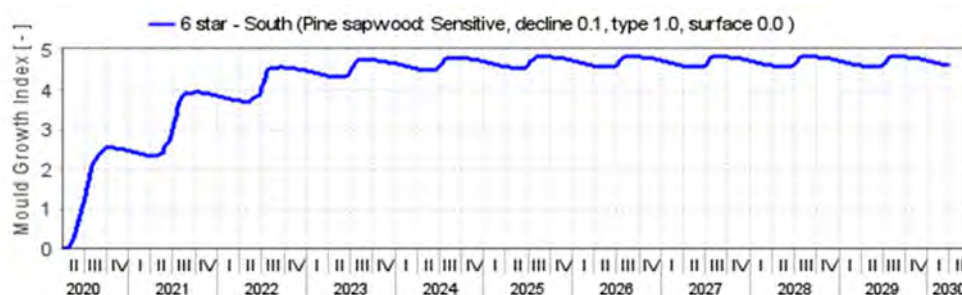


Figure 17: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

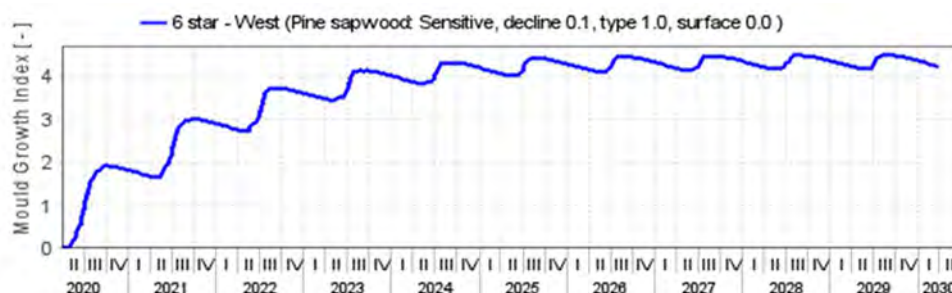


Figure 18: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

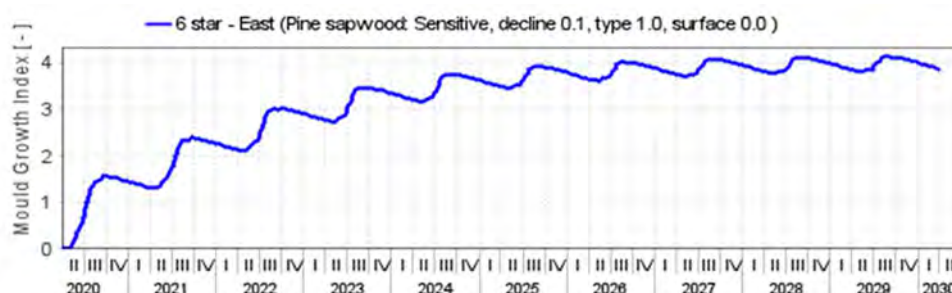


Figure 19: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Nil

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

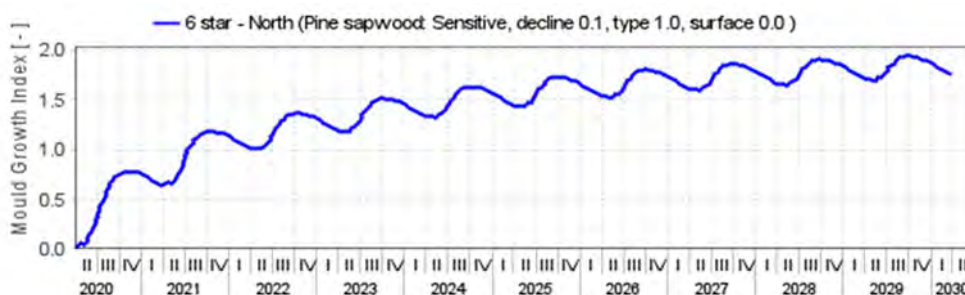


Figure 20: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Nil

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

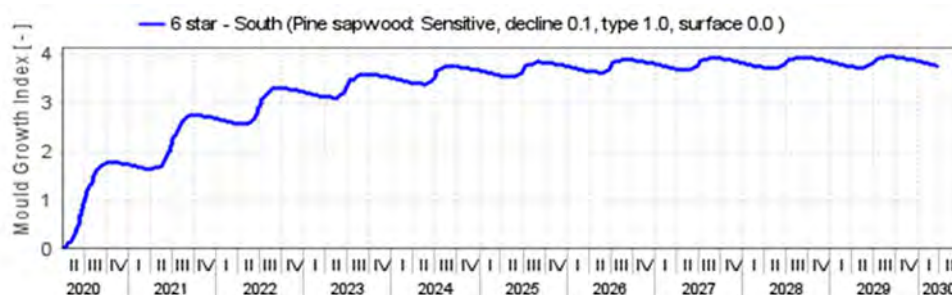


Figure 21: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

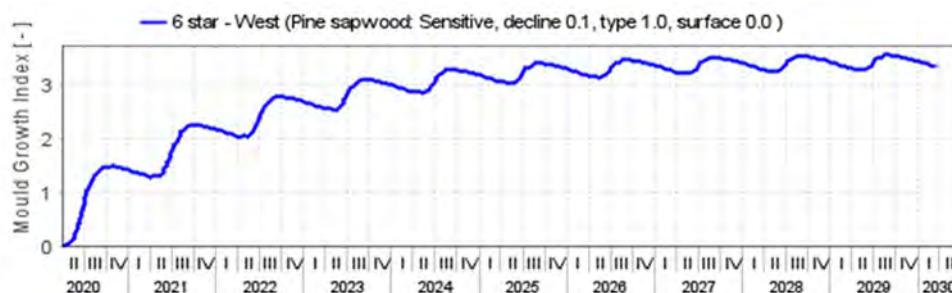


Figure 22: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

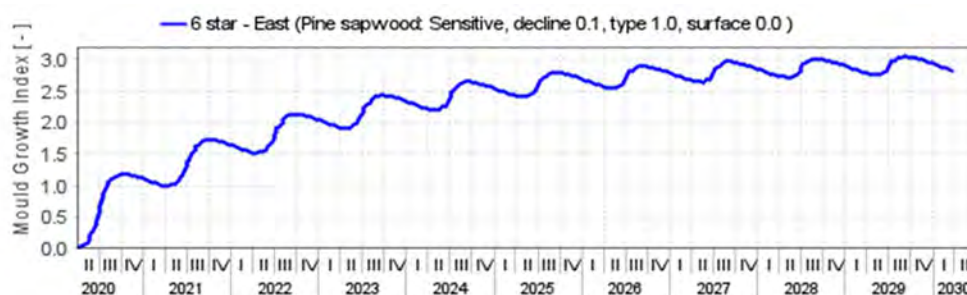


Figure 23: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

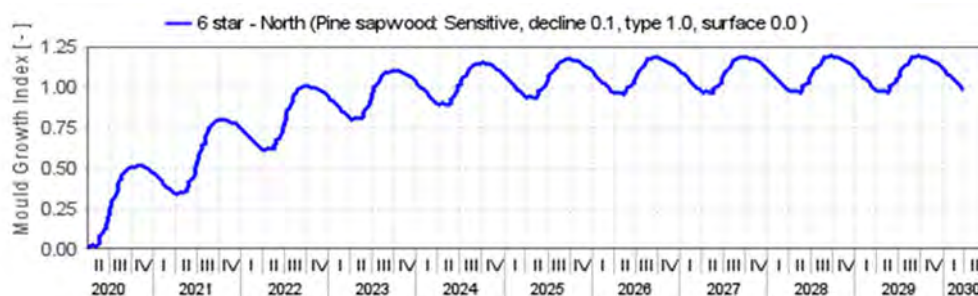


Figure 24: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

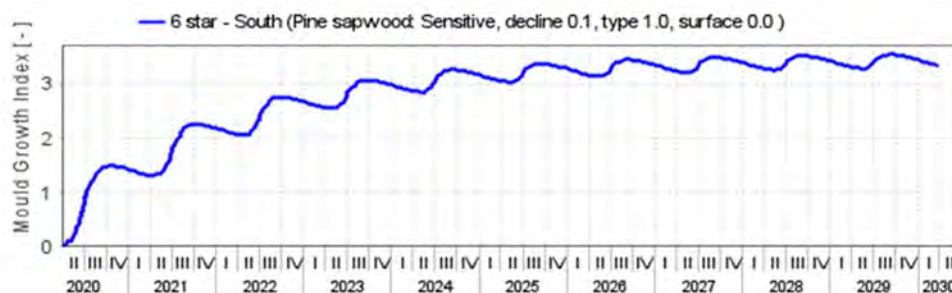


Figure 25: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

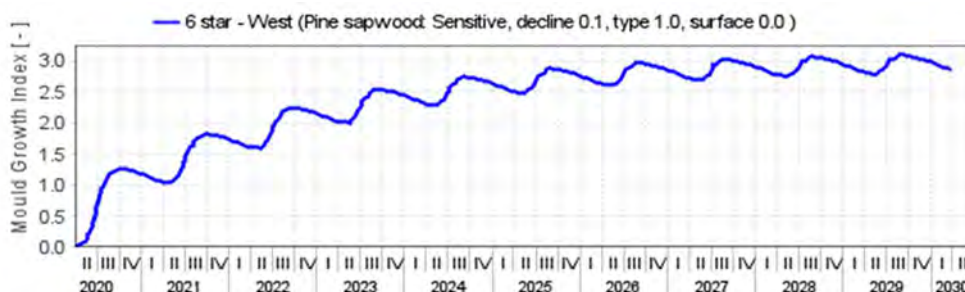


Figure 26: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

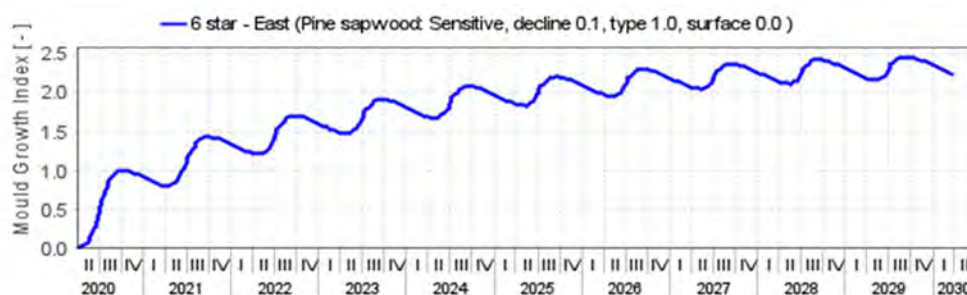


Figure 27: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

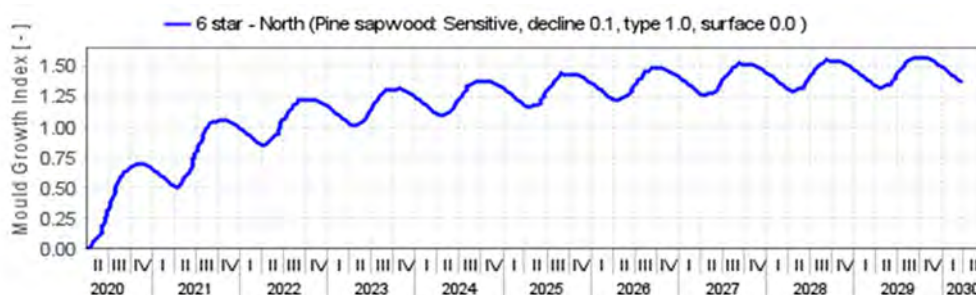


Figure 28: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

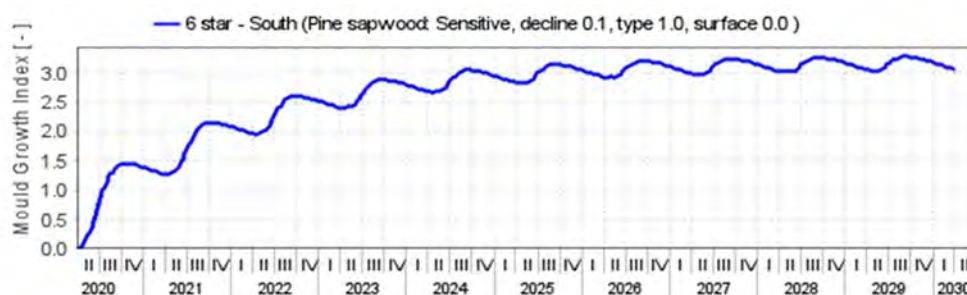


Figure 29: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

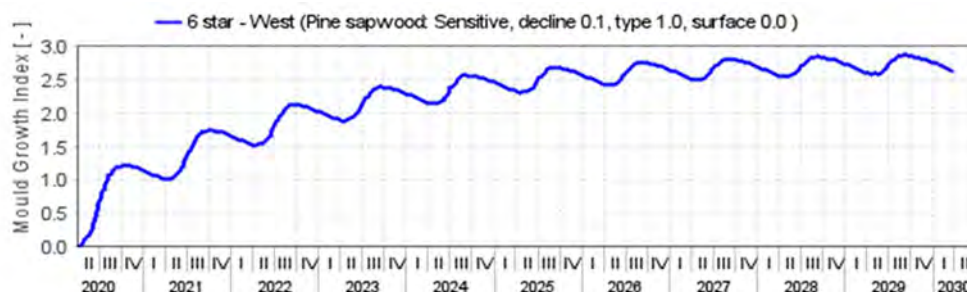


Figure 30: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: In Acrylic render layer

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: In Acrylic render layer

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the first year. This wall system requires further investigation.

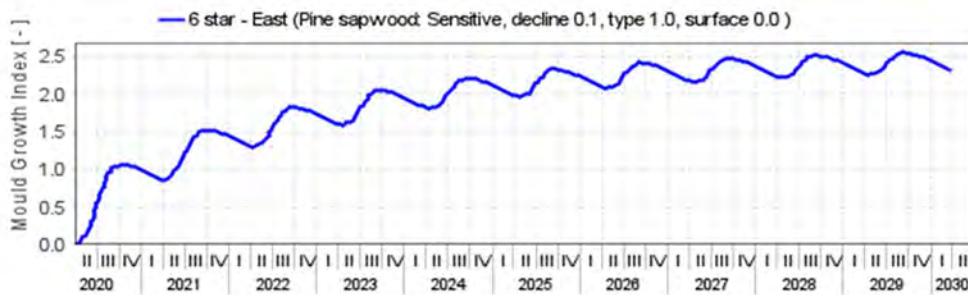


Figure 31: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: NIL

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

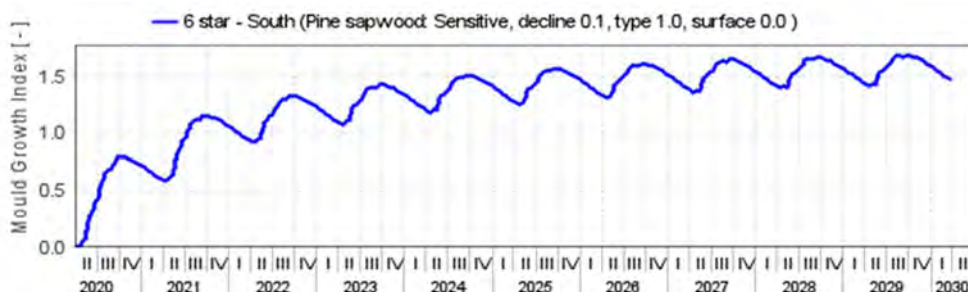


Figure 32: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

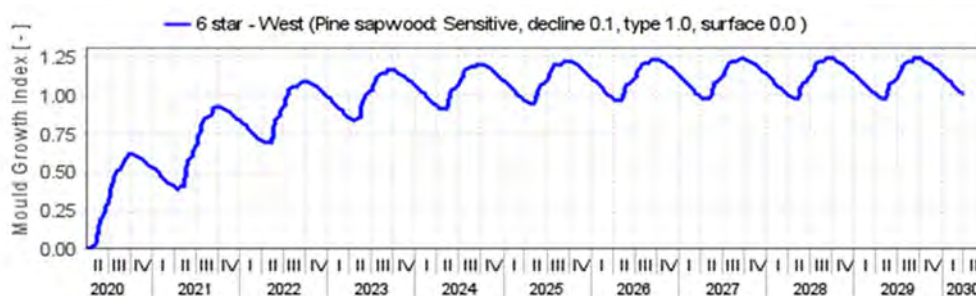


Figure 33: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

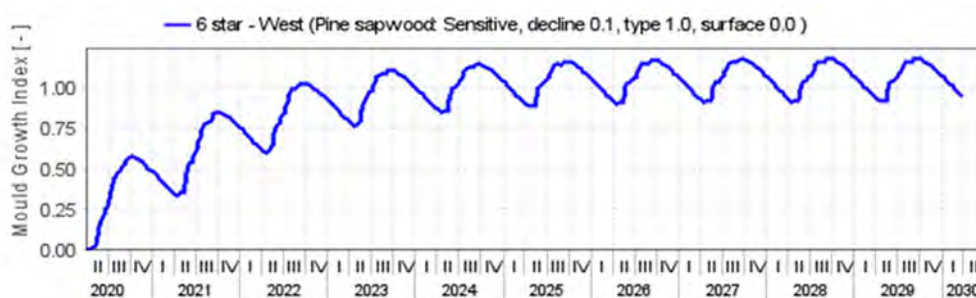


Figure 34: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

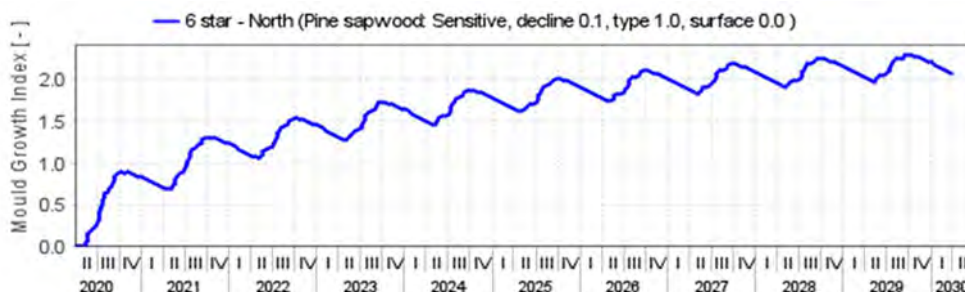


Figure 35: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

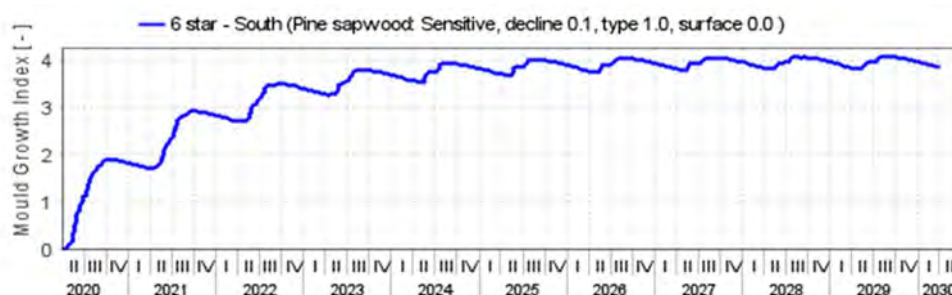


Figure 36: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

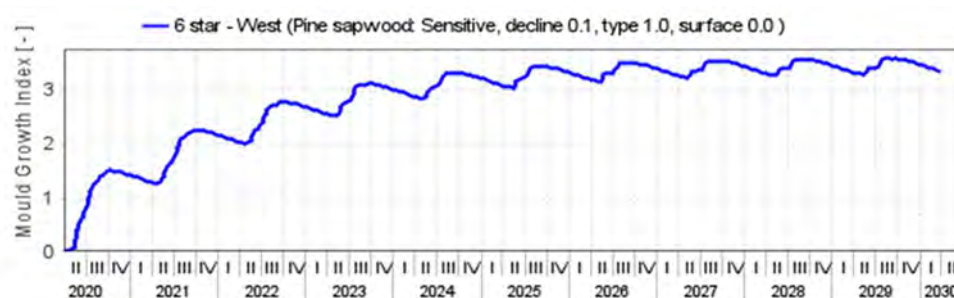


Figure 37: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

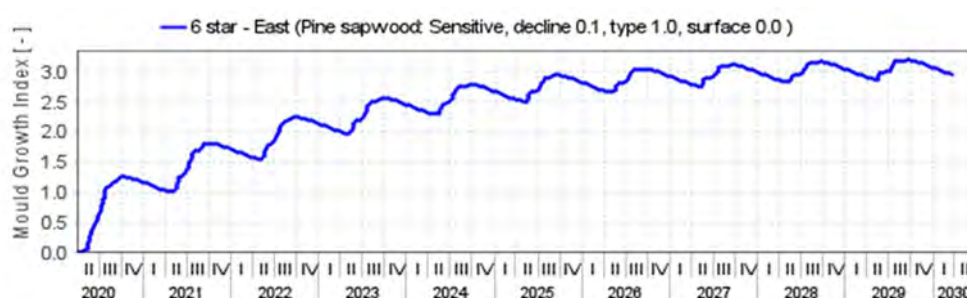


Figure 38: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

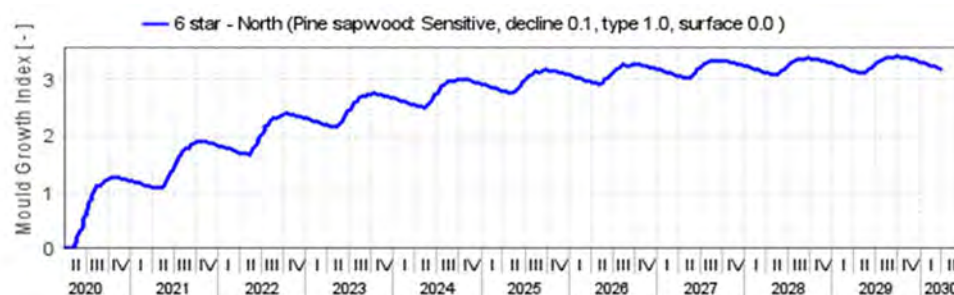


Figure 39: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

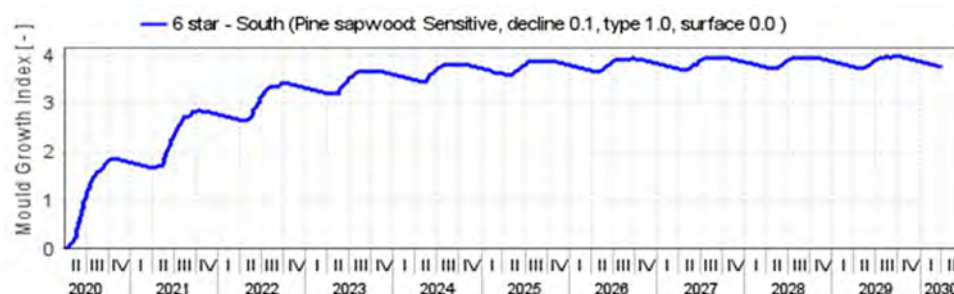


Figure 40: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

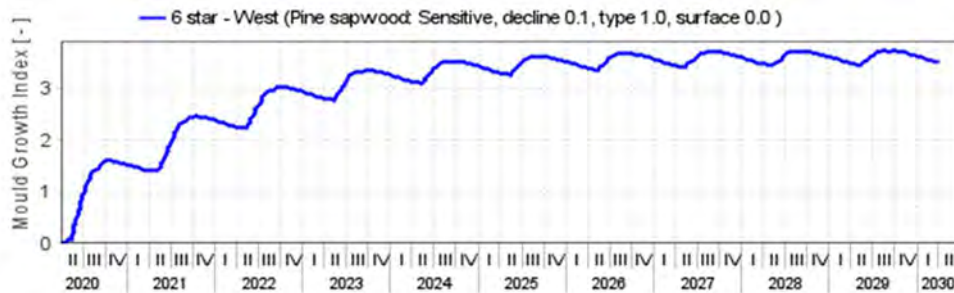


Figure 41: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

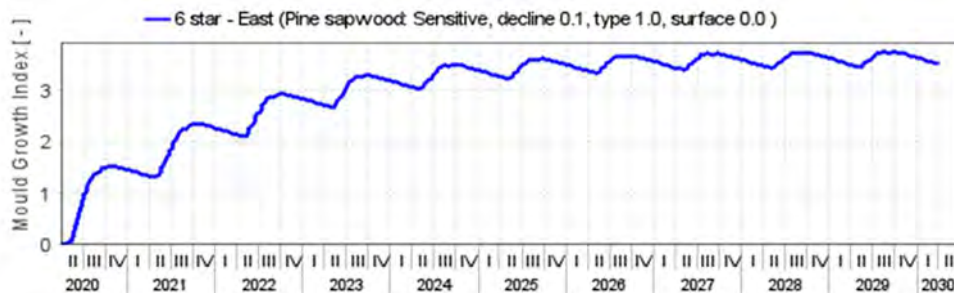


Figure 42: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

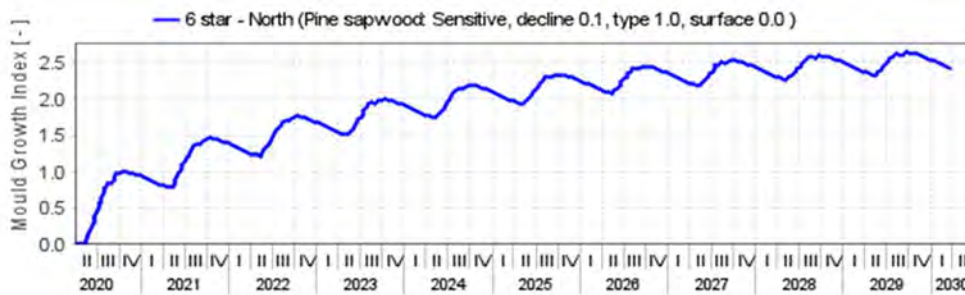


Figure 43: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

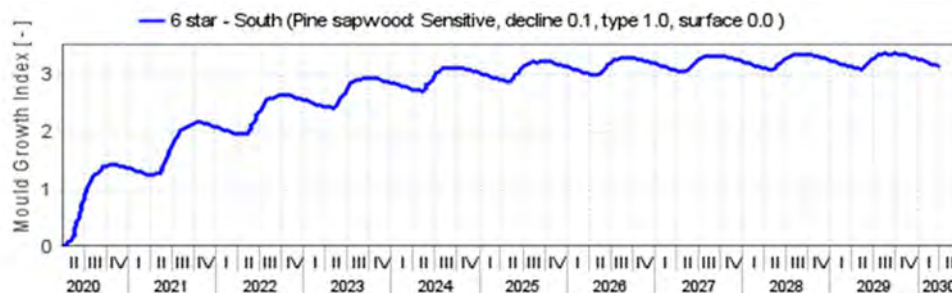


Figure 44: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

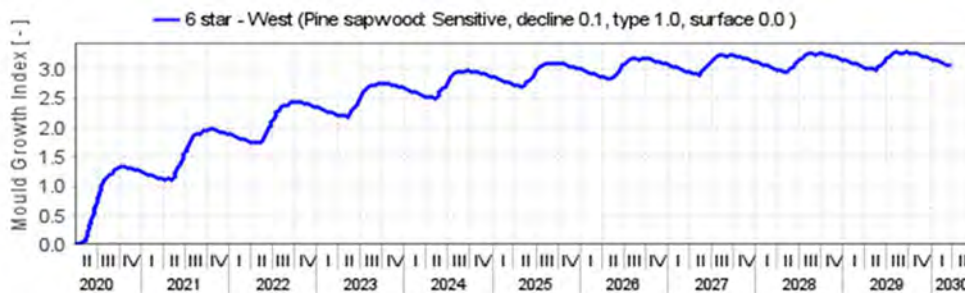


Figure 45: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

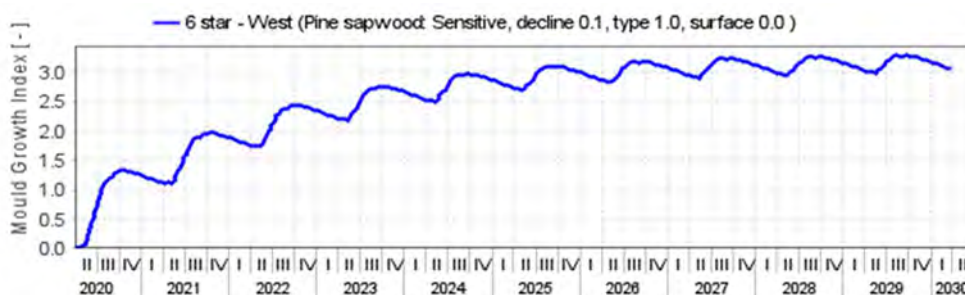


Figure 46: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

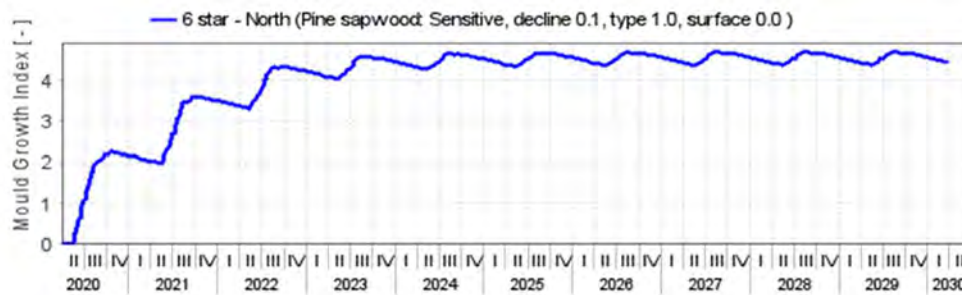


Figure 47: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

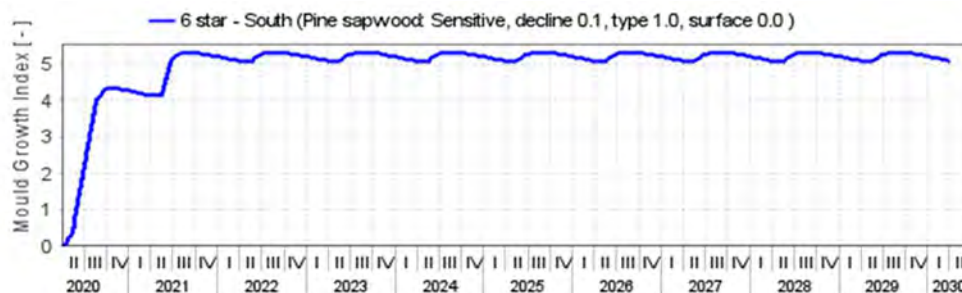


Figure 48: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

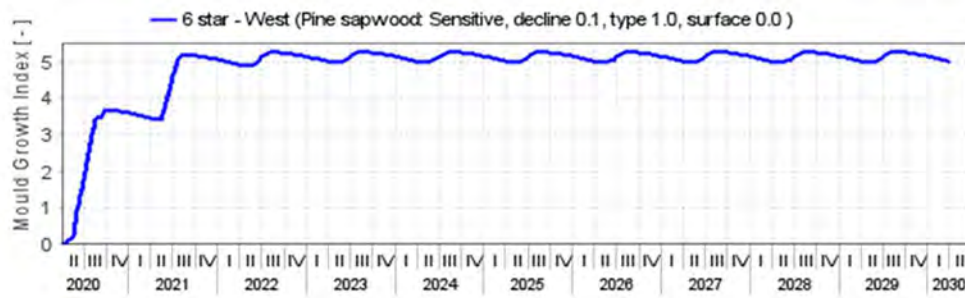


Figure 49: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

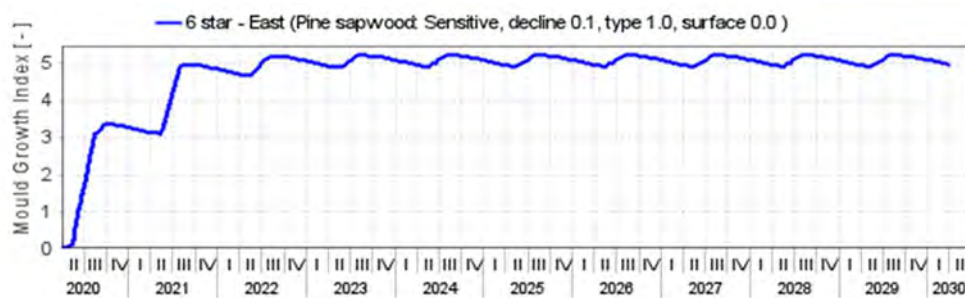


Figure 50: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

Moisture accumulation and mould growth for 6 Star housing Research Report 1

Appendix 9: Hygrothermal simulation results – Autoclaved aerated concrete (AAC) cladding Rev 2 (24/03/2023)

NOTE: THIS ITERATION OF THIS WALL SYSTEM DOES NOT INCLUDE MANUFACTURERS' PREFERENCE FOR A CAVITY BETWEEN THE PLIABLE MEMBRANE AND THE AAC CLADDING. THE NEXT ITERATION OF THIS WALL SYSTEM WILL INCLUDE SOME MANUFACTURERS' PREFERENCE FOR A CAVITY.

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

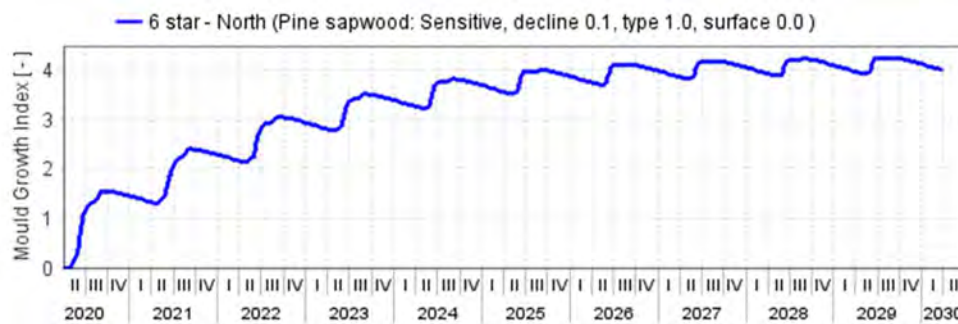


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

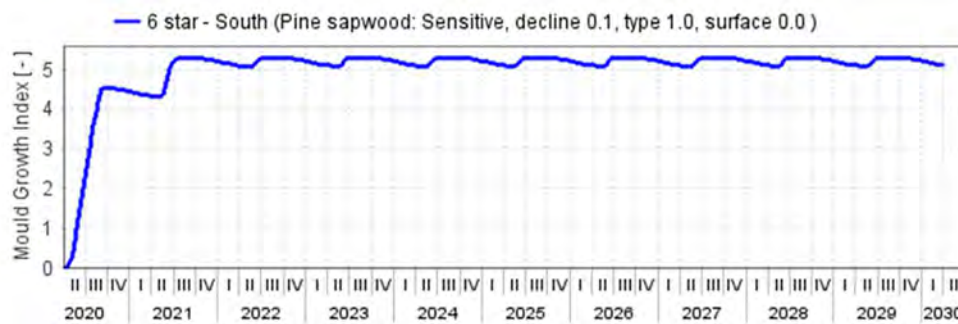


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

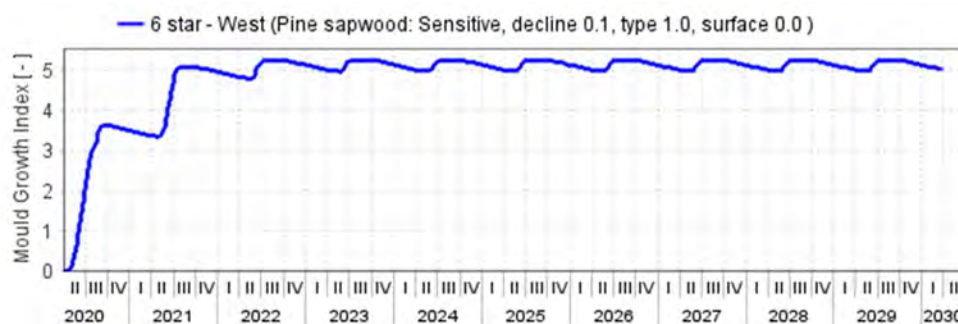


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

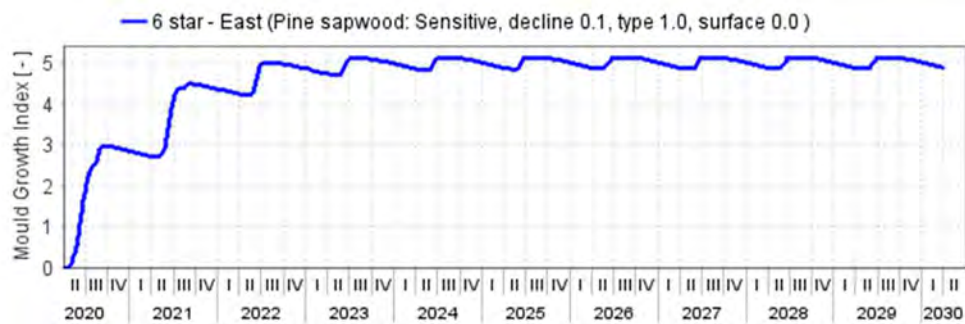


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

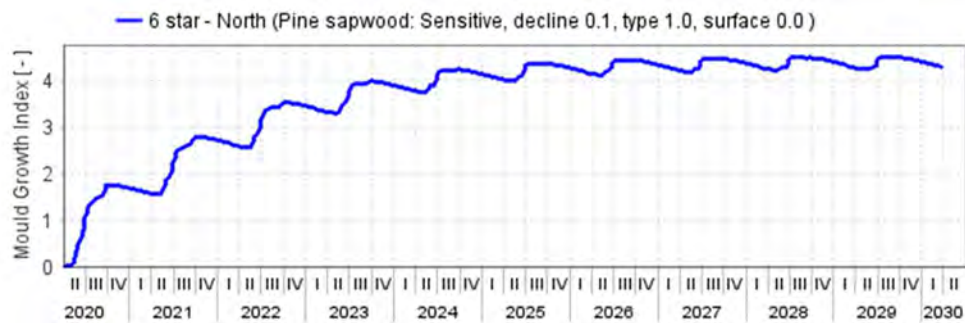


Figure 5: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

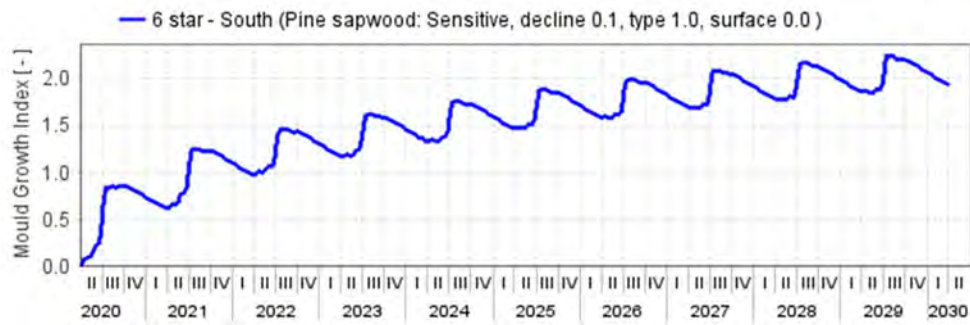


Figure 6: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Slight accumulation in insulation layer.

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

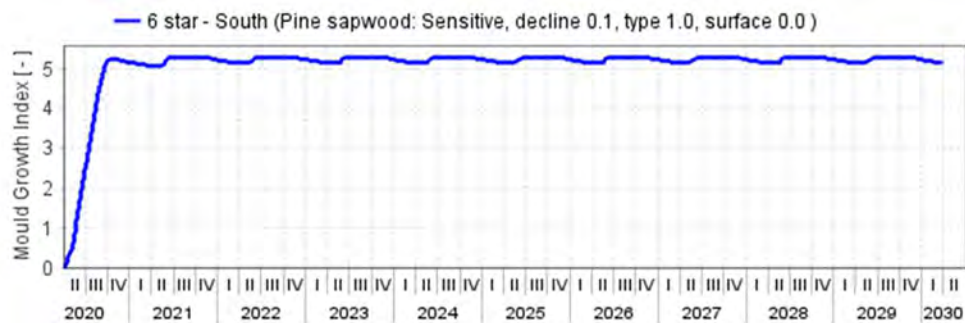


Figure 7: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the sixth year. This wall system requires further investigation.

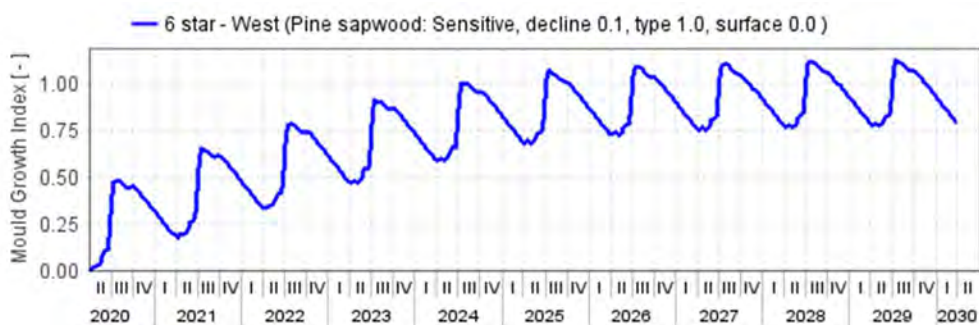


Figure 8: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

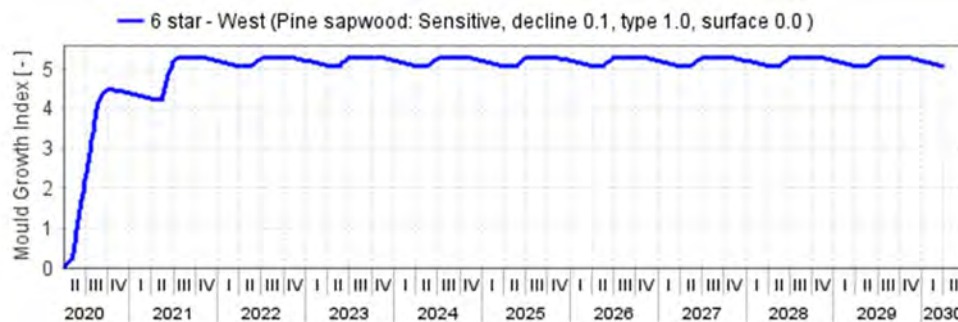


Figure 9: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

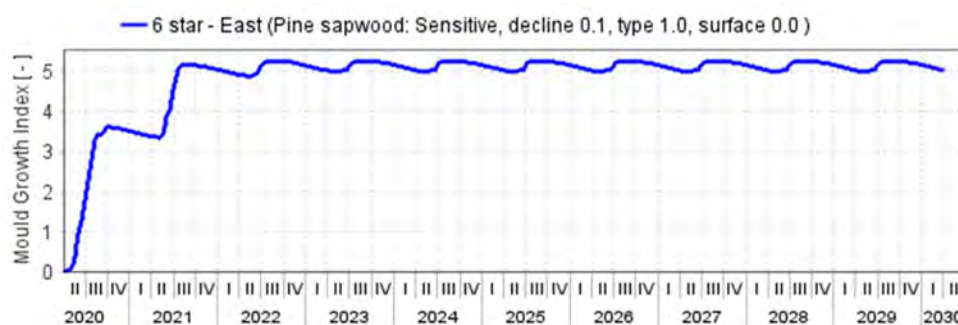


Figure 10: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

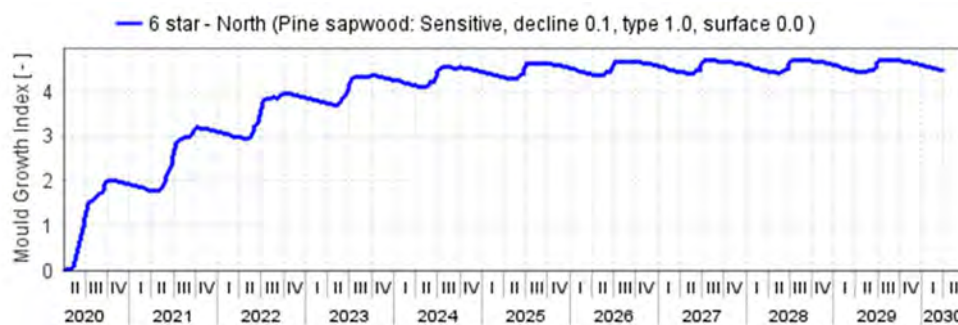


Figure 11: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

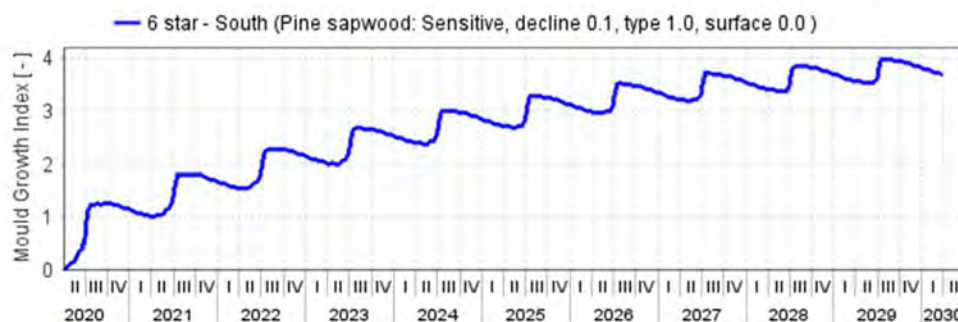


Figure 12: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

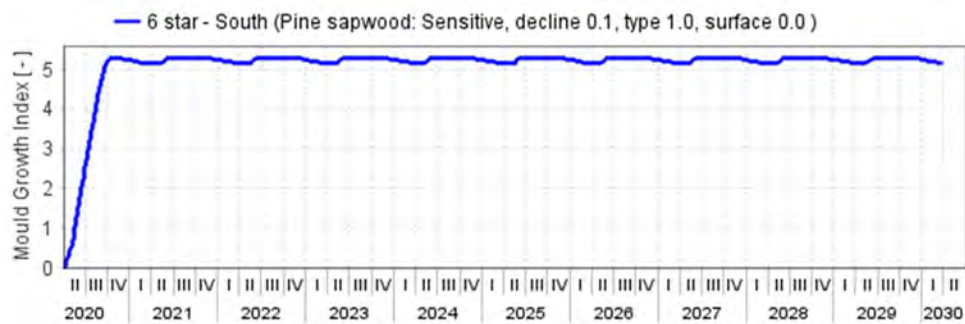


Figure 13: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

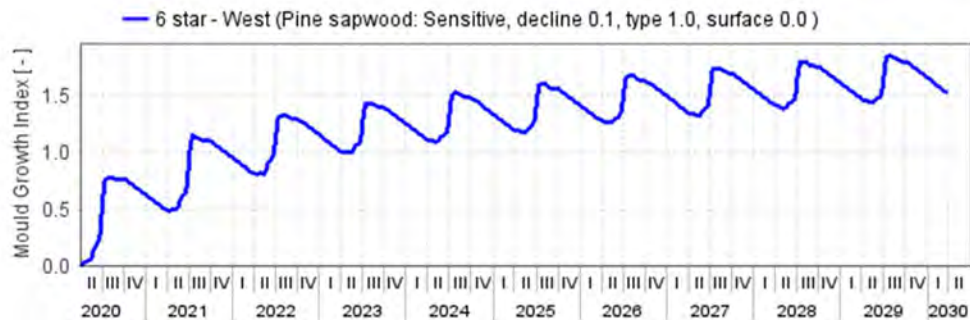


Figure 14: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

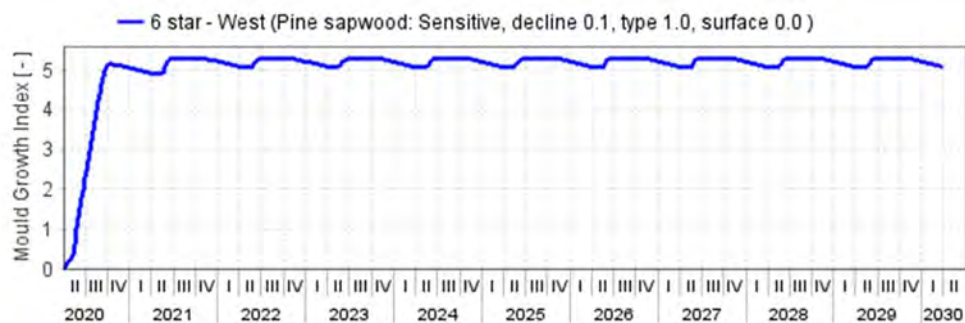


Figure 15: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

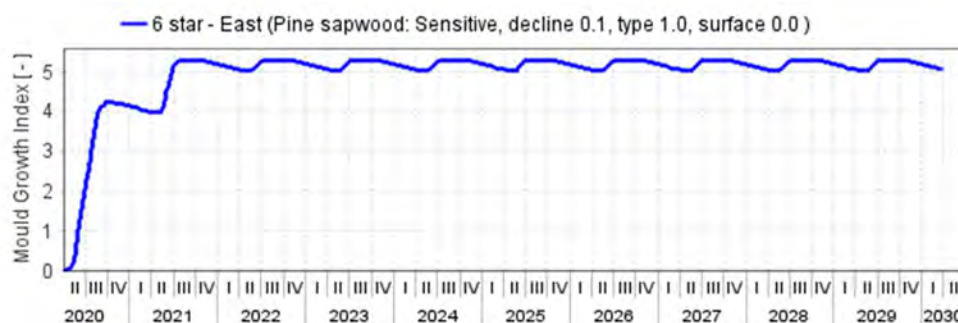


Figure 16: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

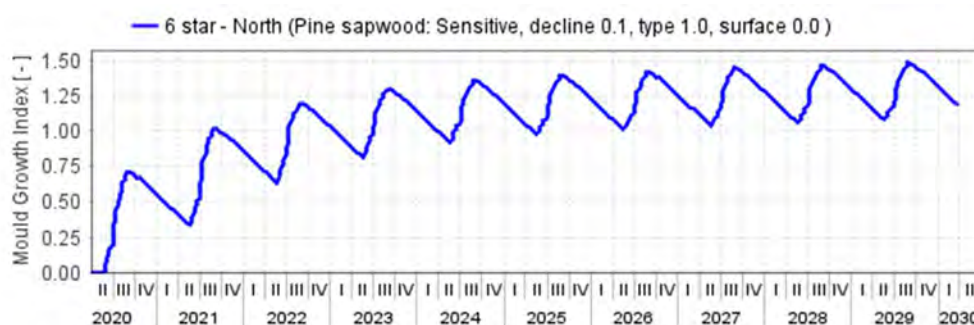


Figure 17: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

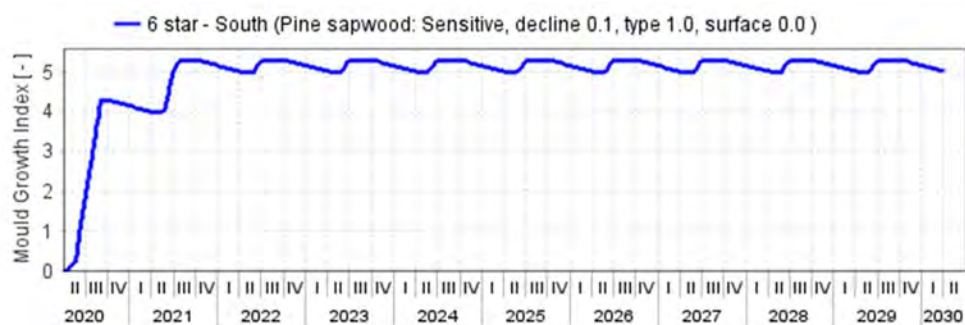


Figure 18: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

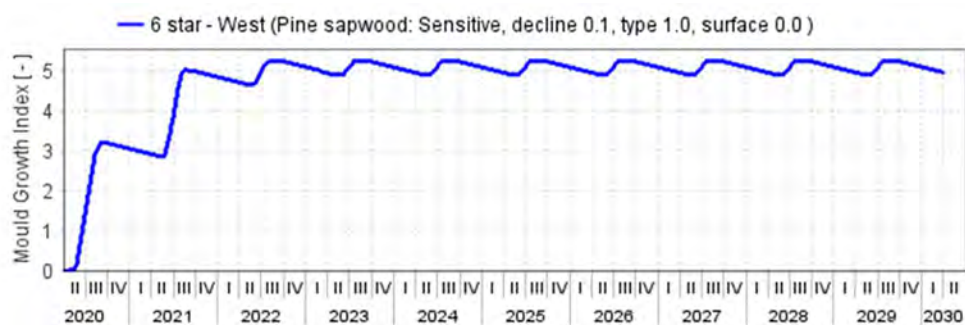


Figure 19: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

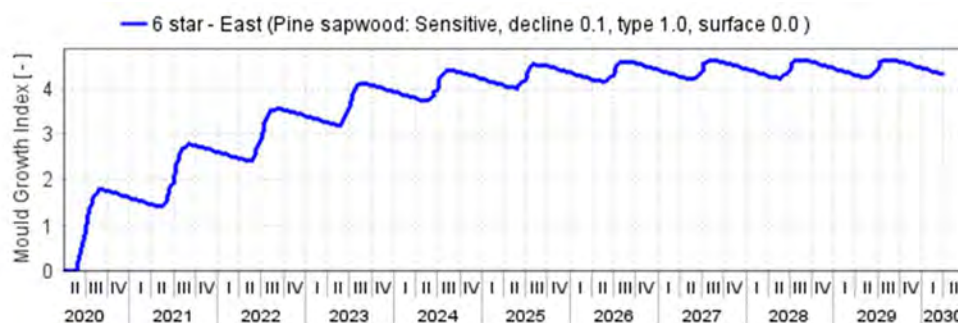


Figure 20: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

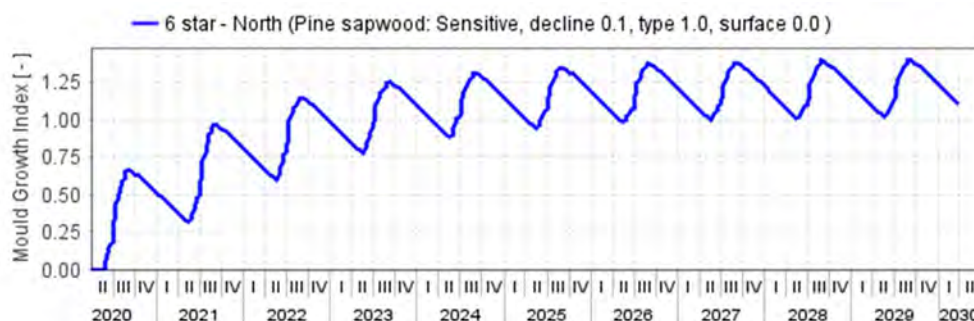


Figure 21: NatHERS CZ 27 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

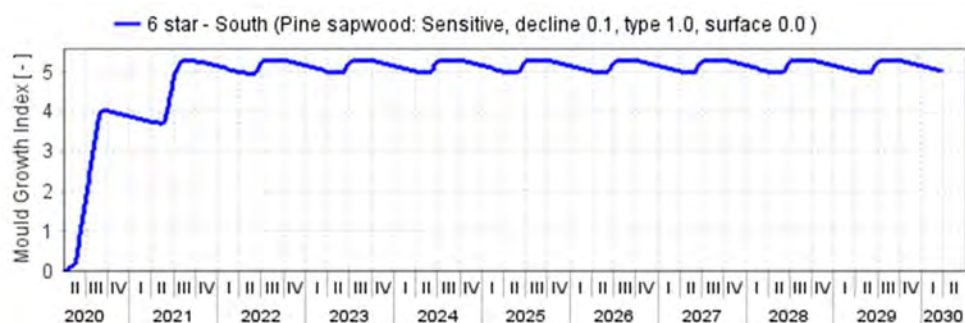


Figure 22: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

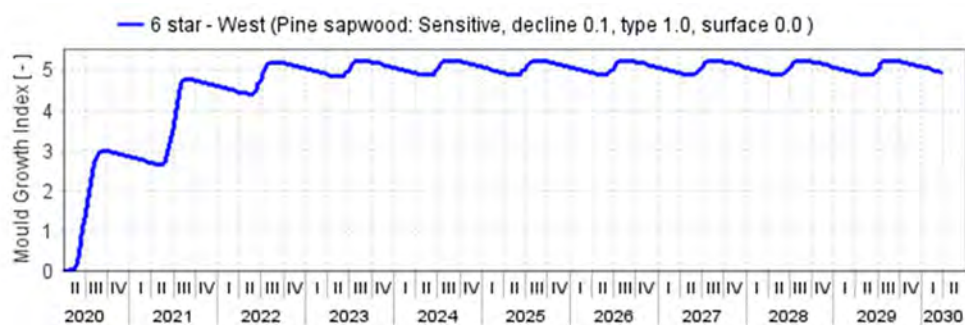


Figure 23: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

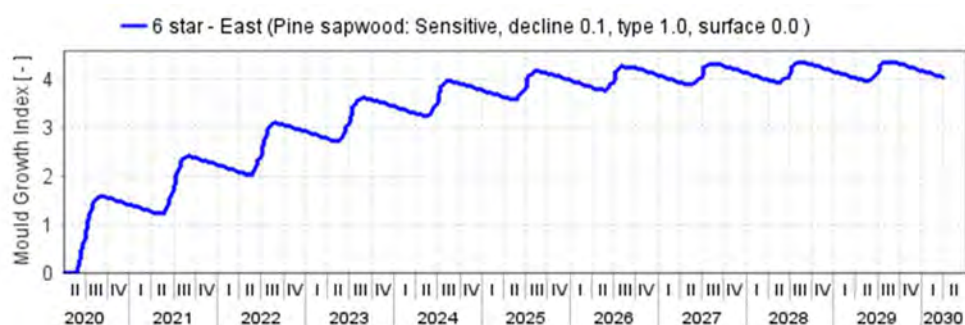


Figure 24: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

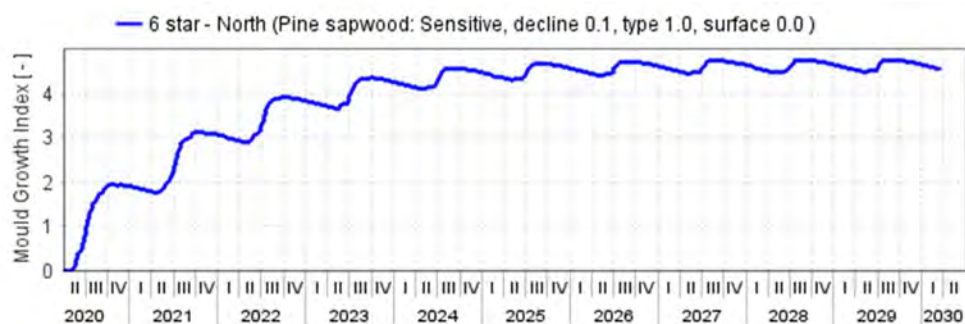


Figure 25: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

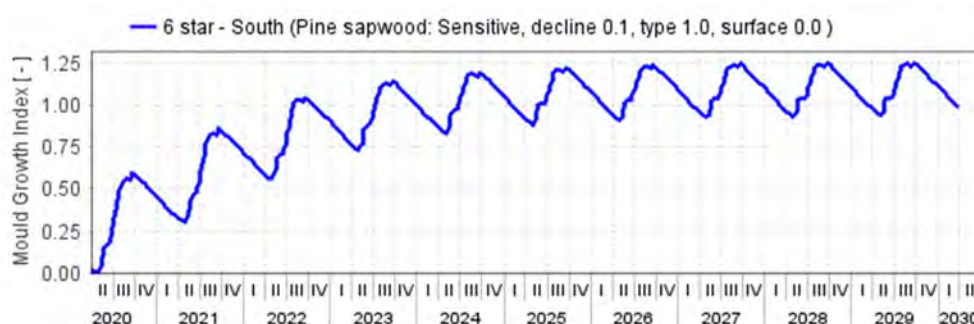


Figure 26: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

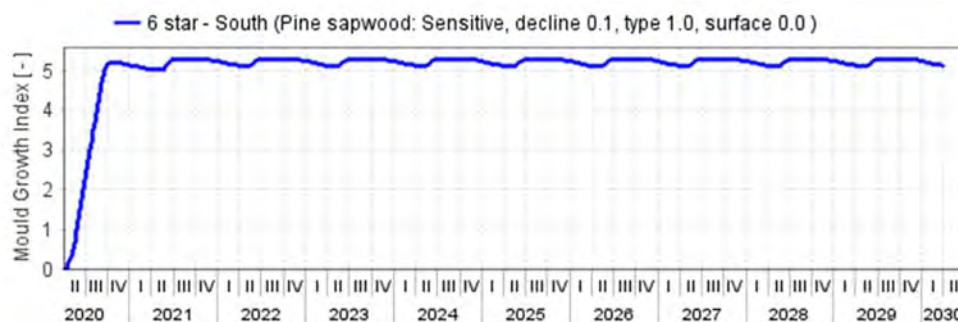


Figure 27: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

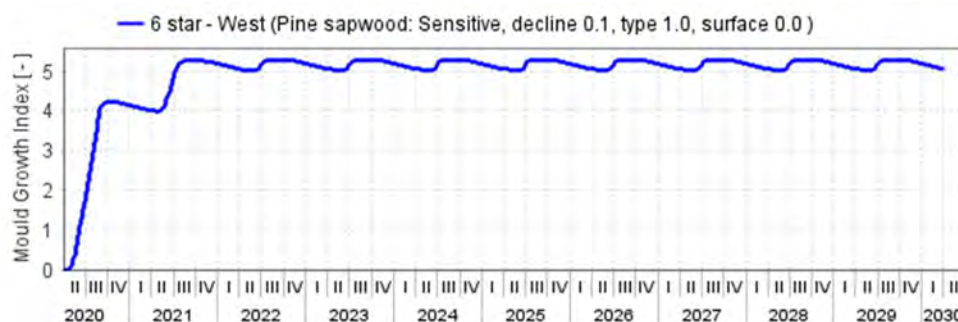


Figure 28: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

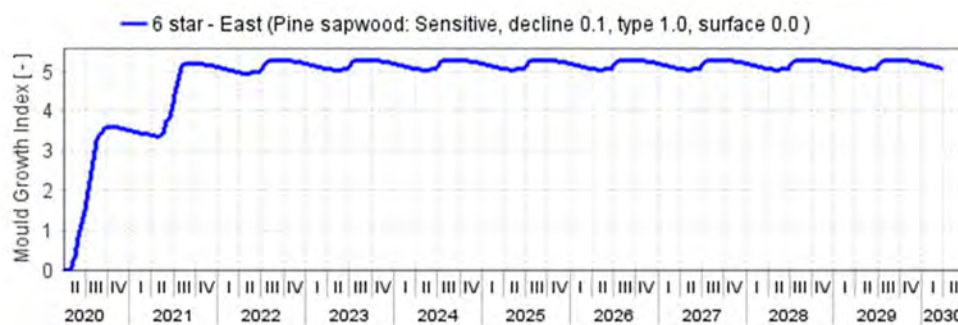


Figure 29: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

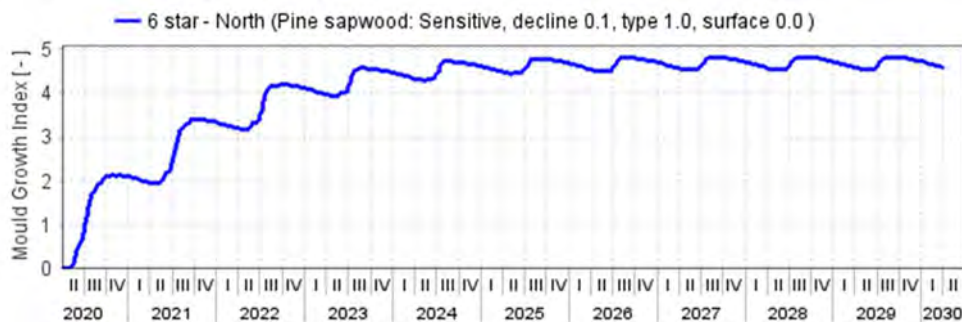


Figure 30: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

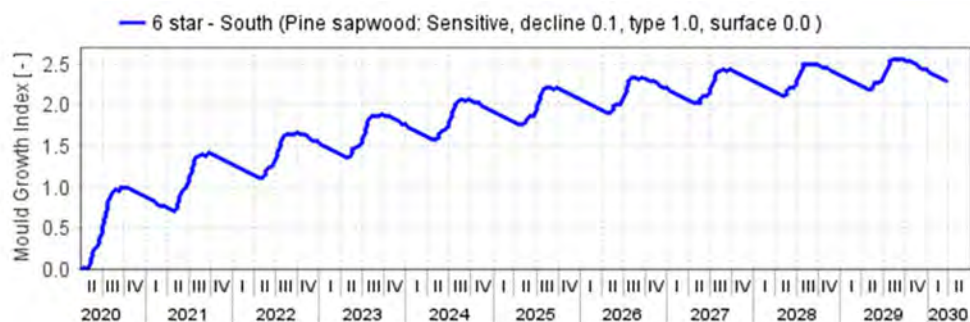


Figure 31: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

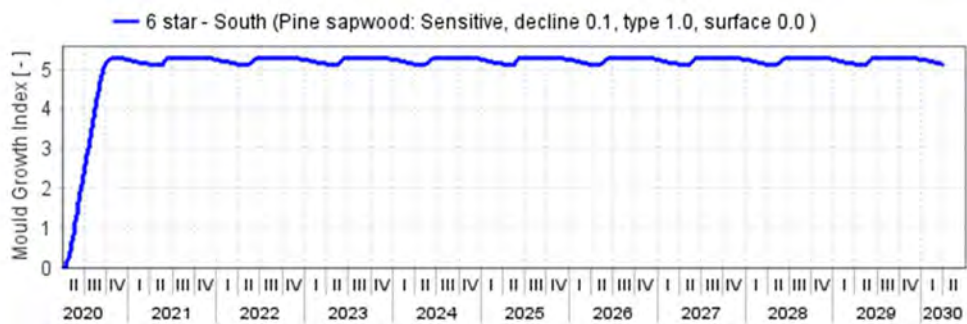


Figure 32: NatHERS CZ 60 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fifth year. This wall system requires further investigation.

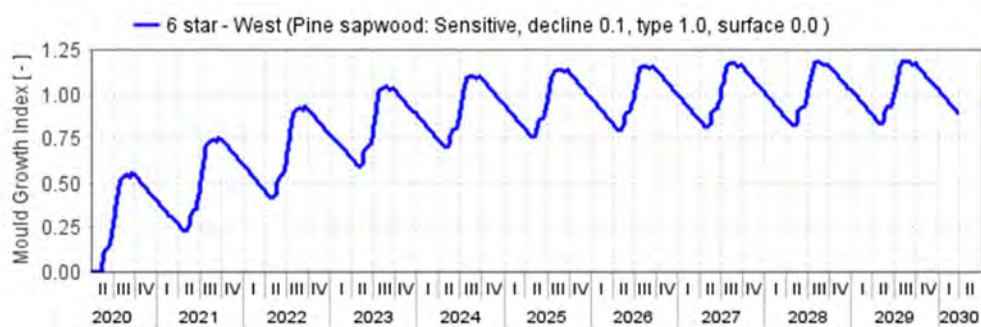


Figure 33: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

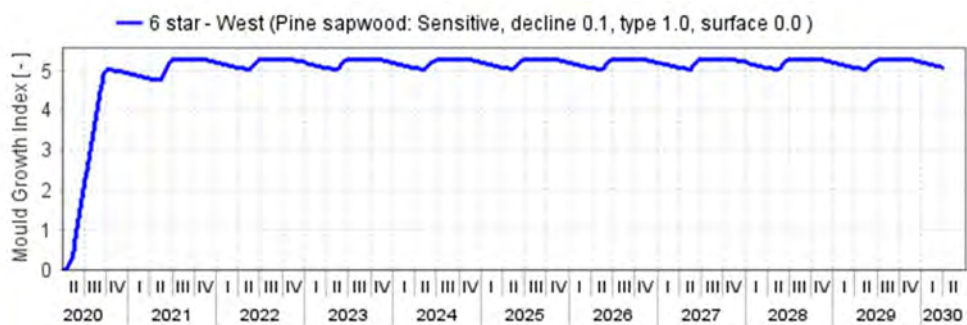


Figure 34: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

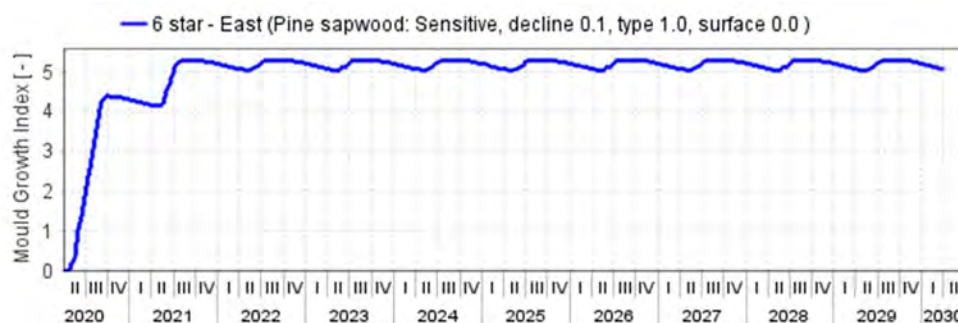


Figure 35: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

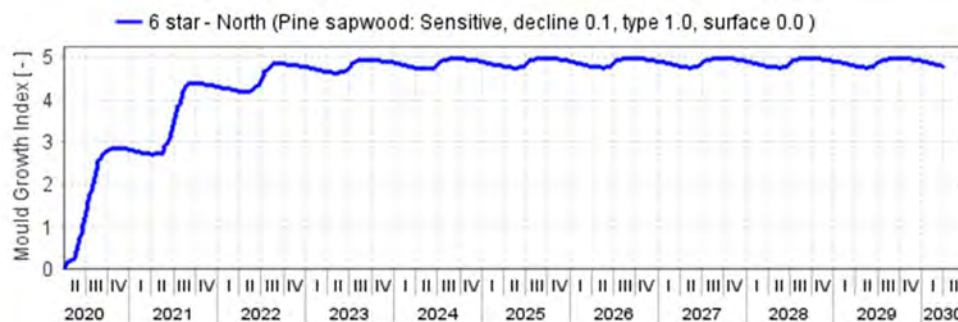


Figure 36: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

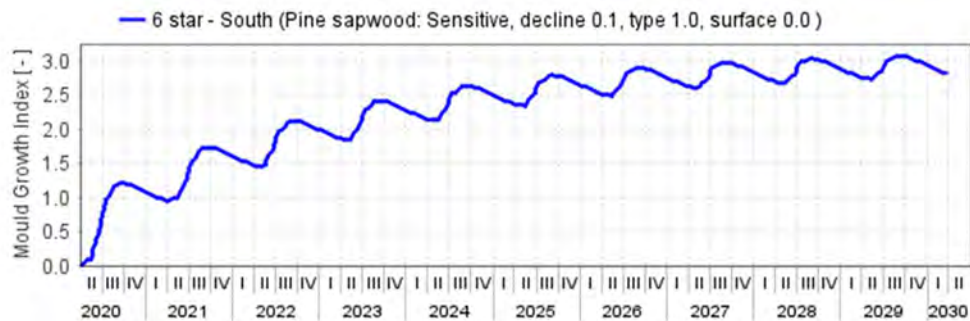


Figure 37: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Slight accumulation in insulation layer

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

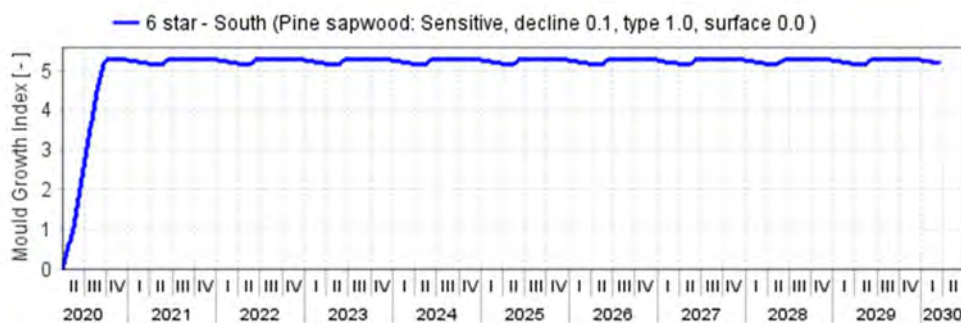


Figure 38: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

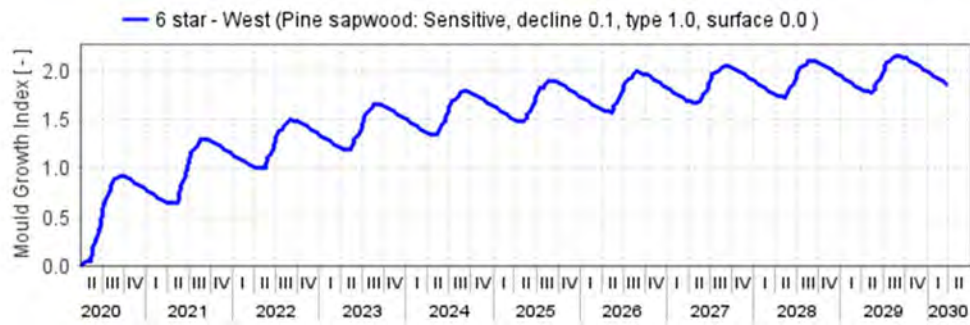


Figure 39: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

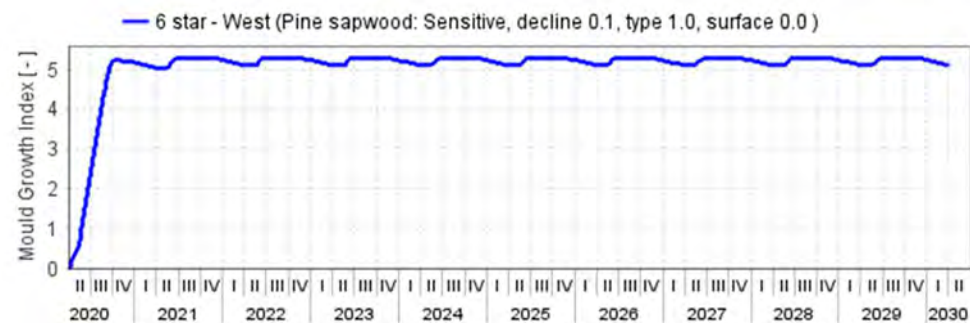


Figure 40: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall system requires further investigation.

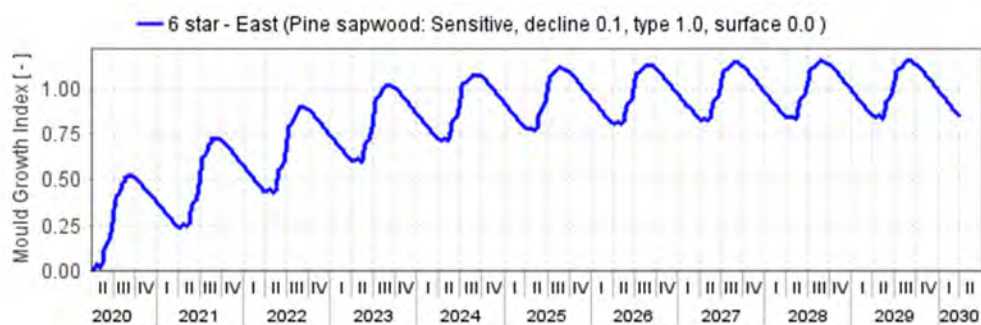


Figure 41: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

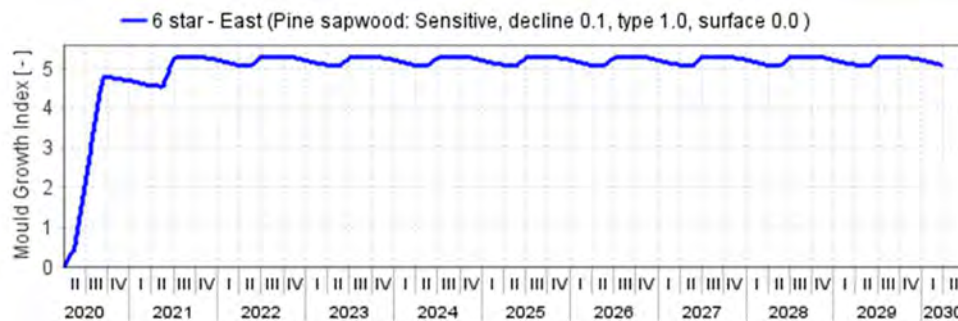


Figure 42: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

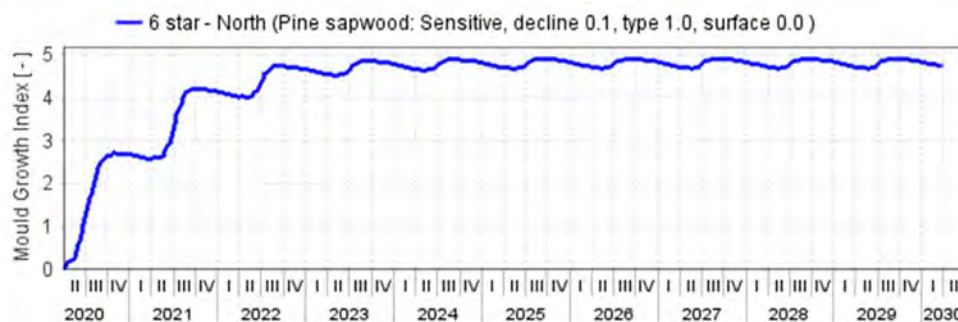


Figure 43: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

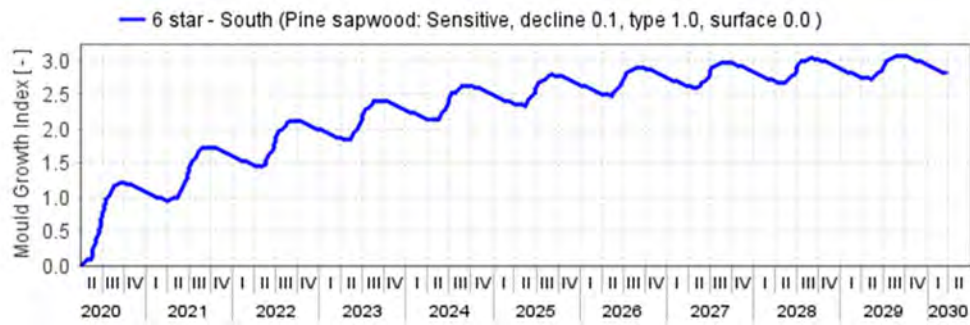


Figure 44: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

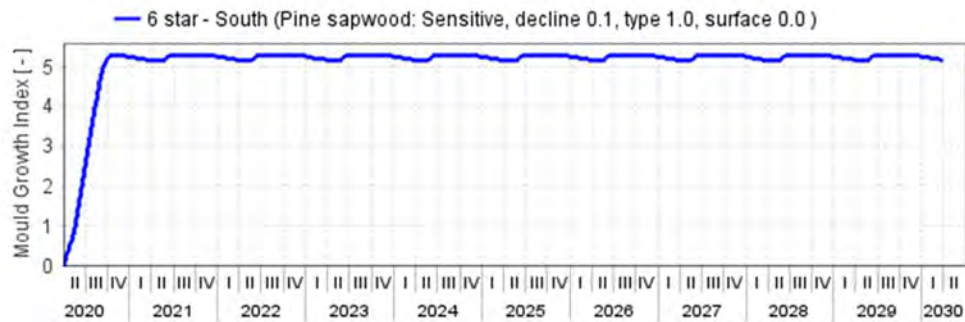


Figure 45: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

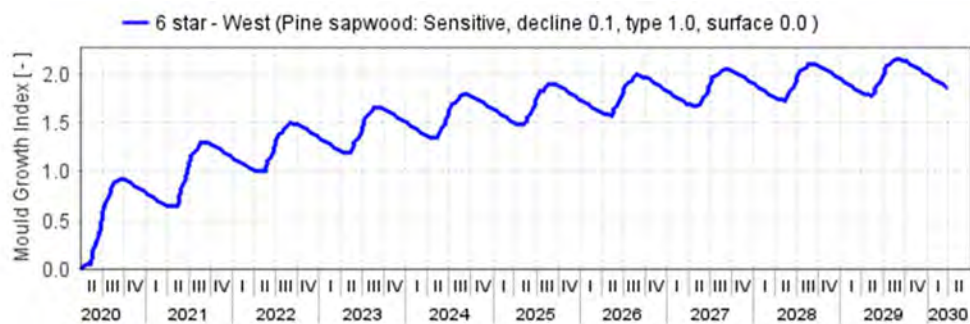


Figure 46: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

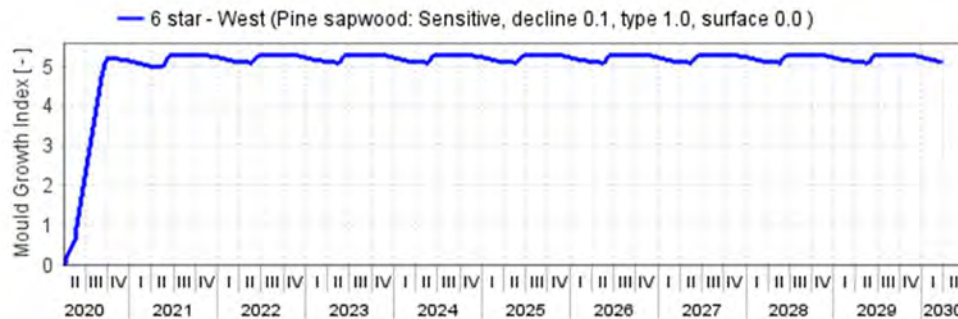


Figure 47: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fifth year. This wall system requires further investigation.

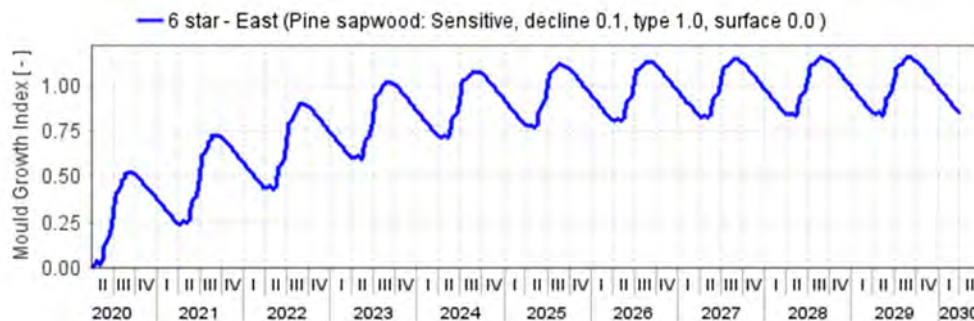


Figure 48: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

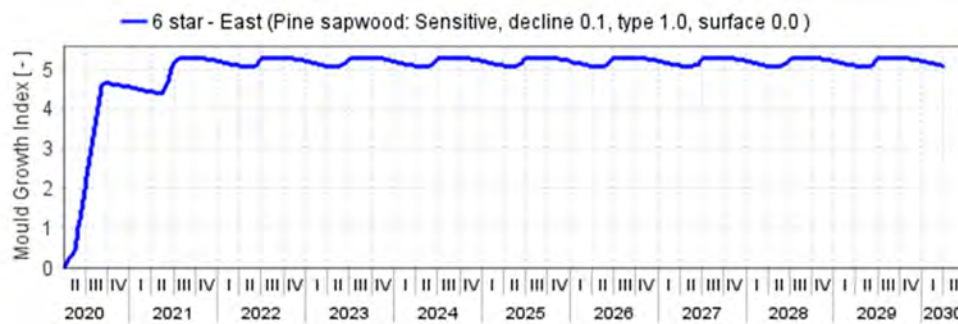


Figure 49: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

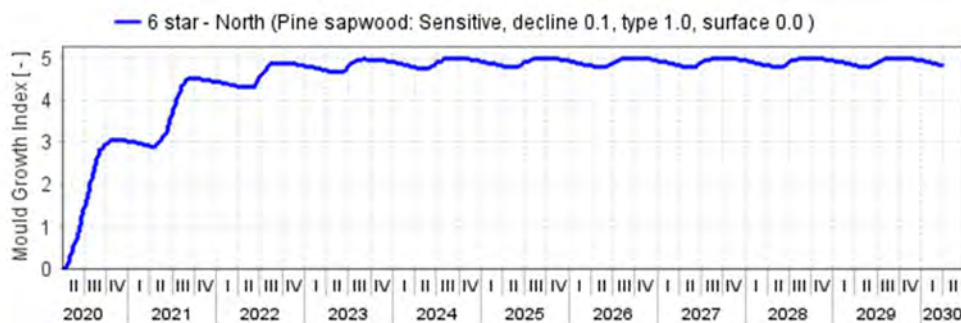


Figure 50: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the first year. This wall system requires further investigation.

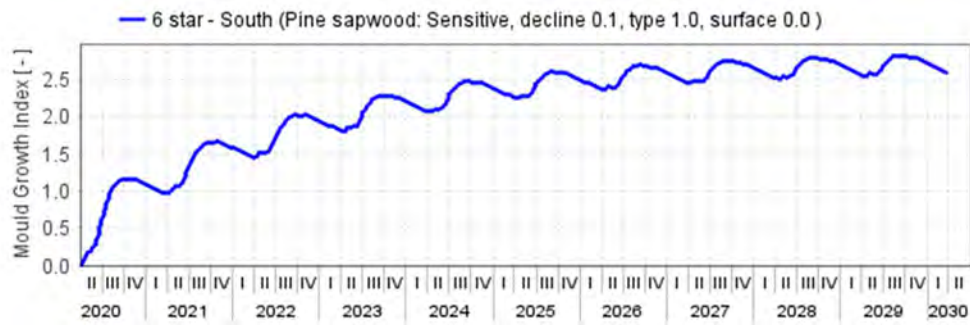


Figure 51: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

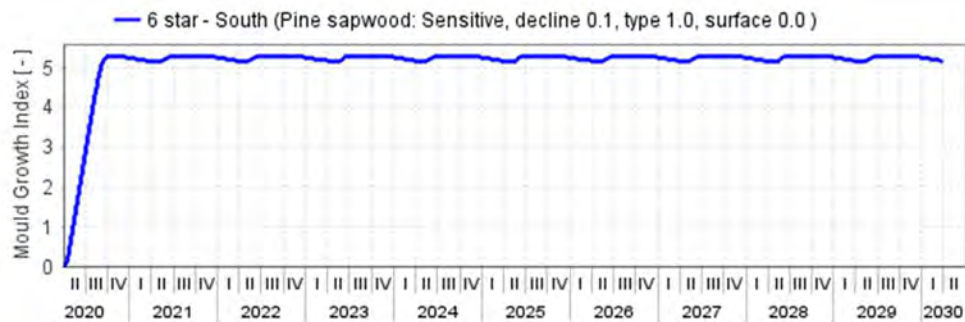


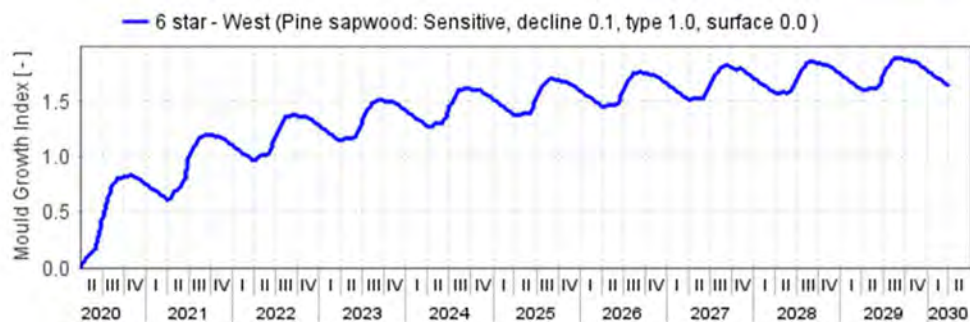
Figure 52: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.



We Figure 53: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

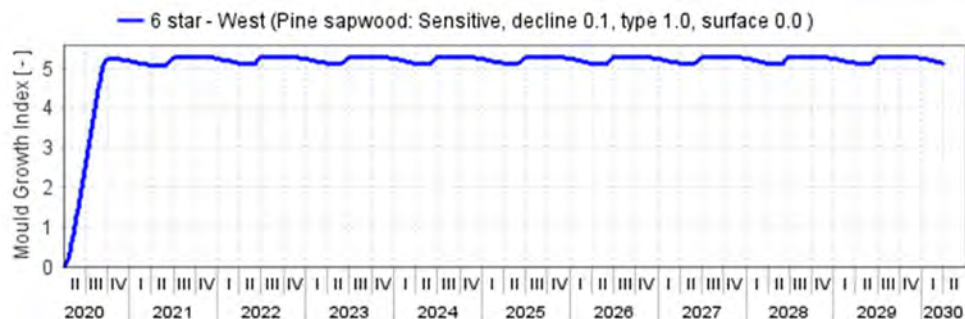


Figure 54: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall system requires further investigation.

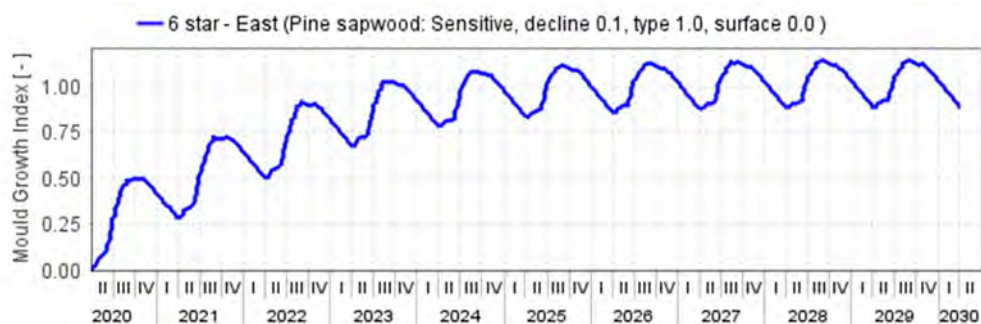


Figure 55: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

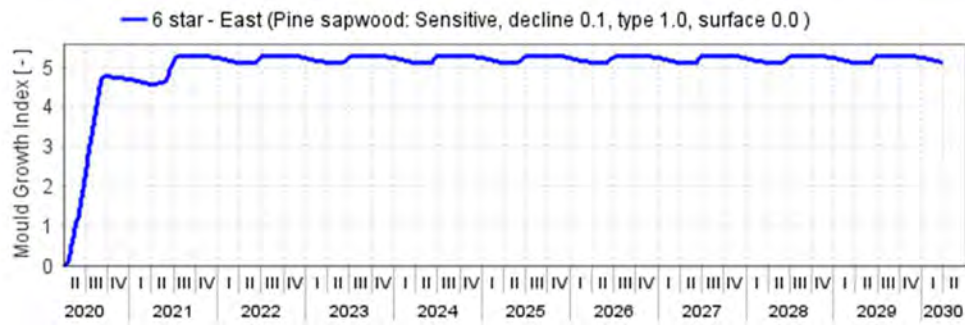


Figure 56: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

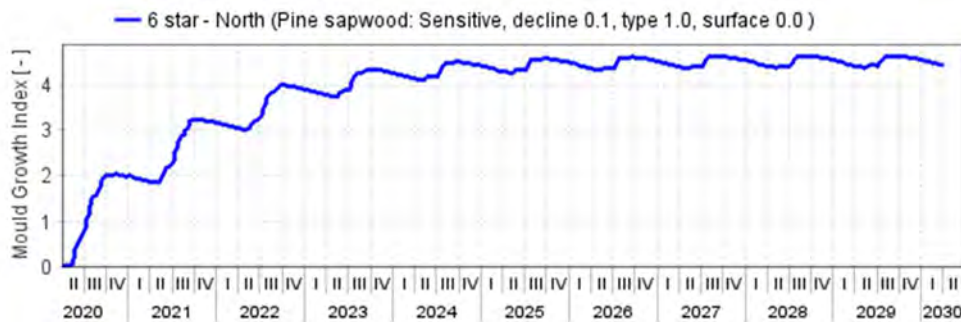


Figure 57: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

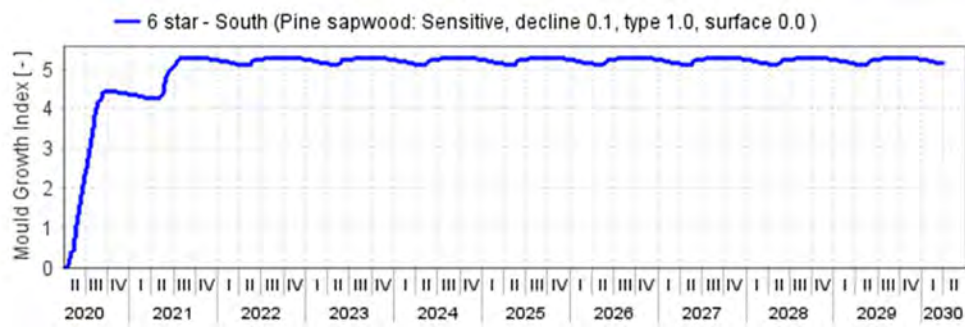


Figure 58: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

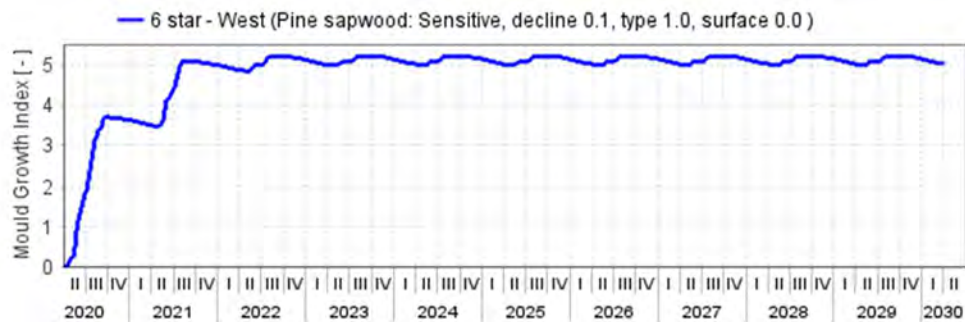


Figure 59: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

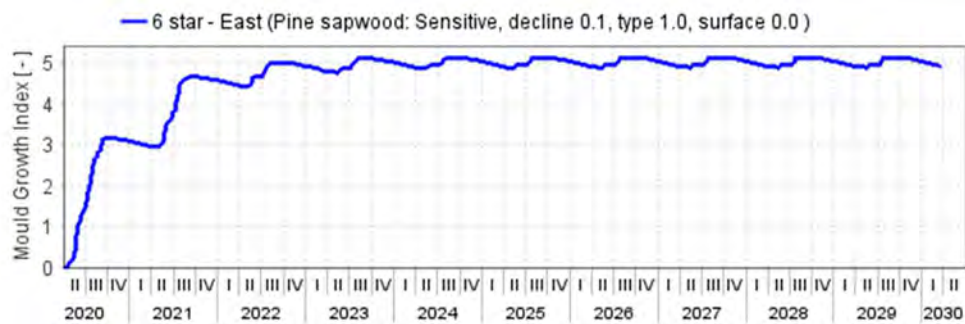


Figure 60: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

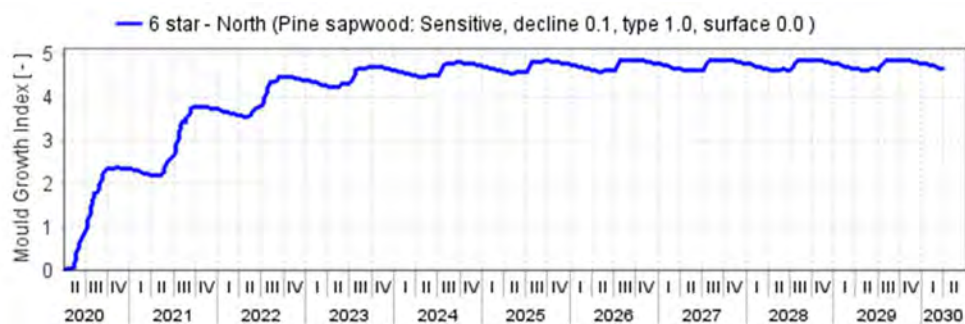


Figure 61: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the third year. This wall system requires further investigation.

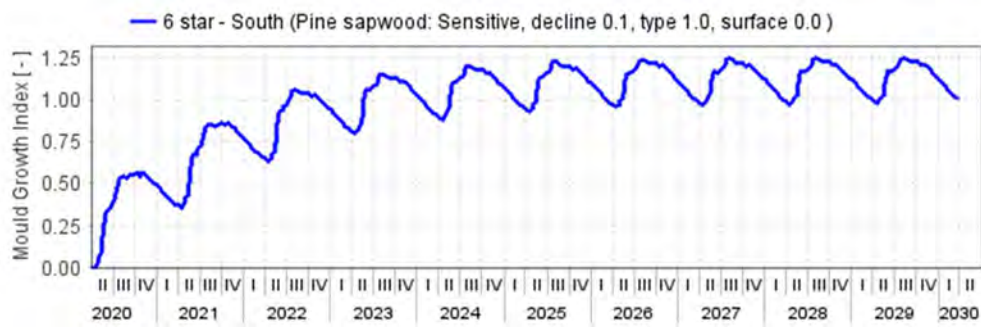


Figure 62: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

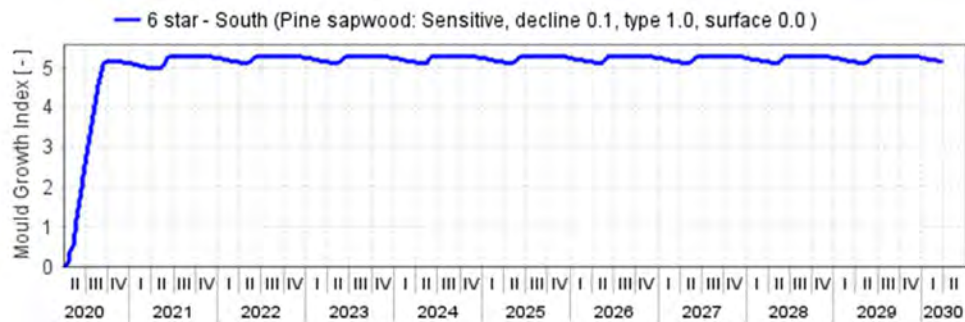


Figure 63: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

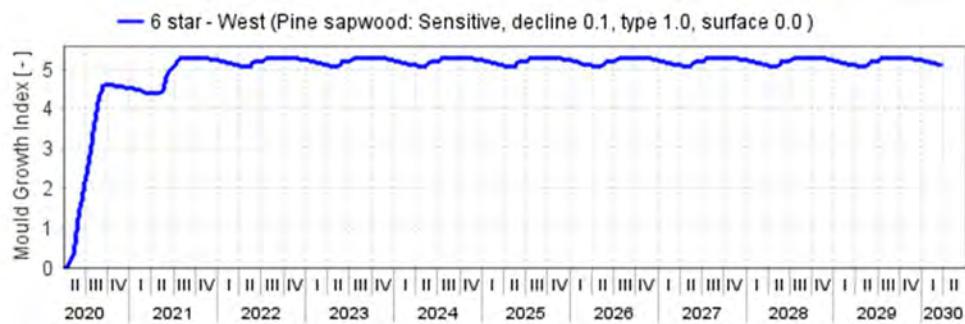


Figure 64: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

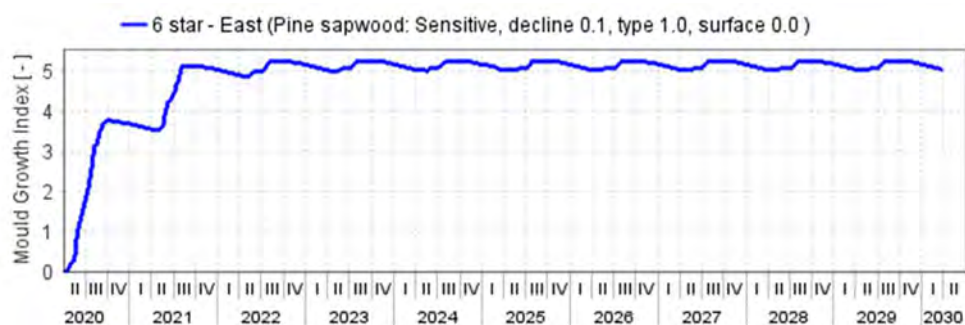


Figure 65: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the fourth year. This wall system requires further investigation.

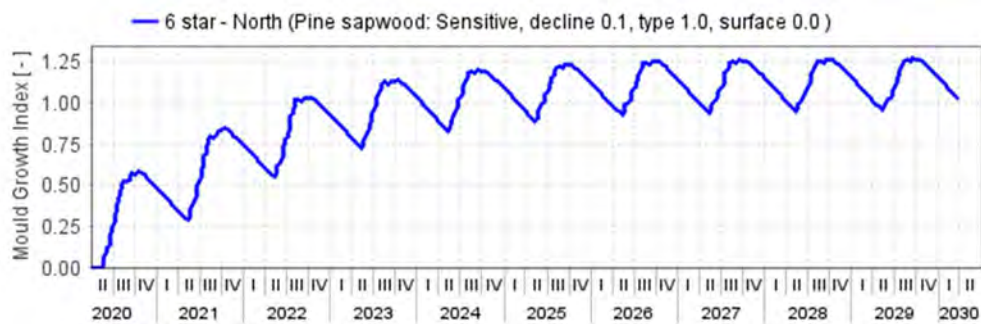


Figure 66: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

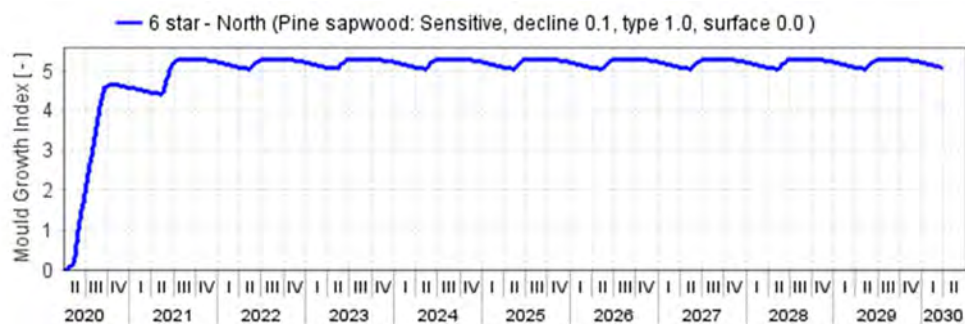


Figure 67: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

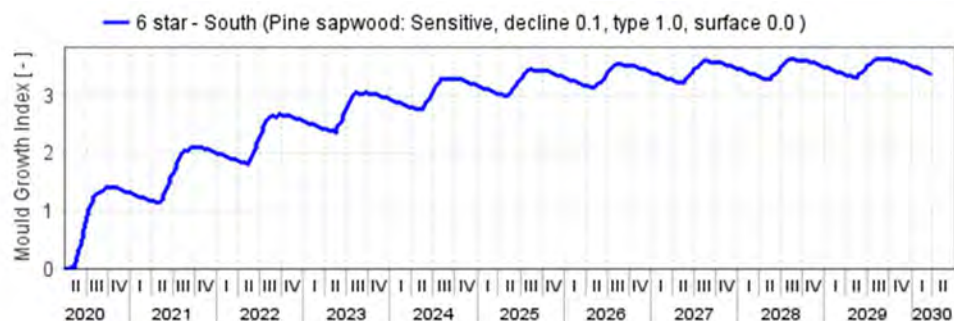


Figure 68: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

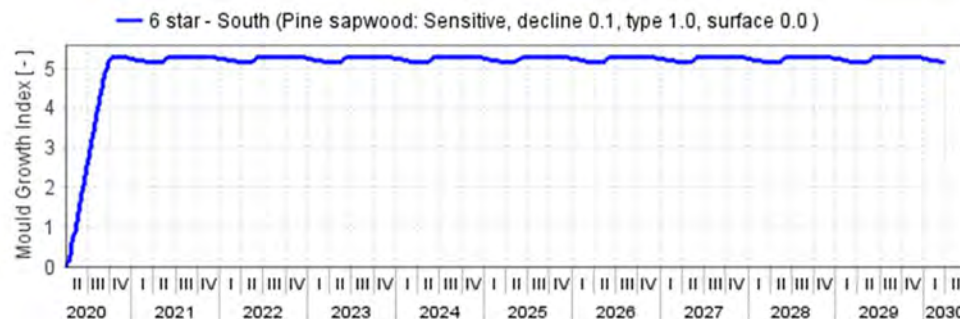


Figure 69: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

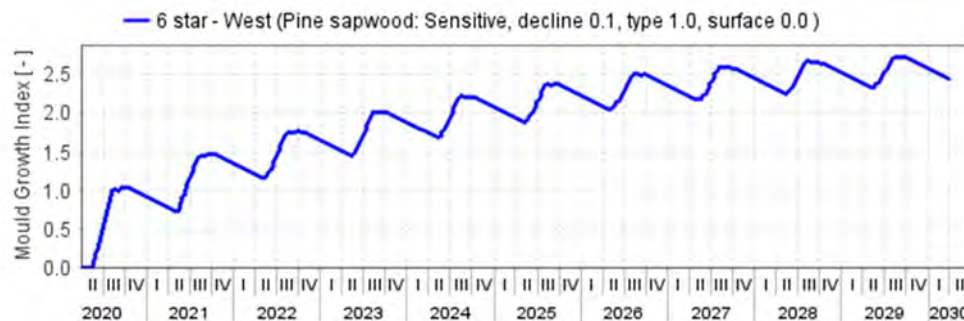


Figure 70: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

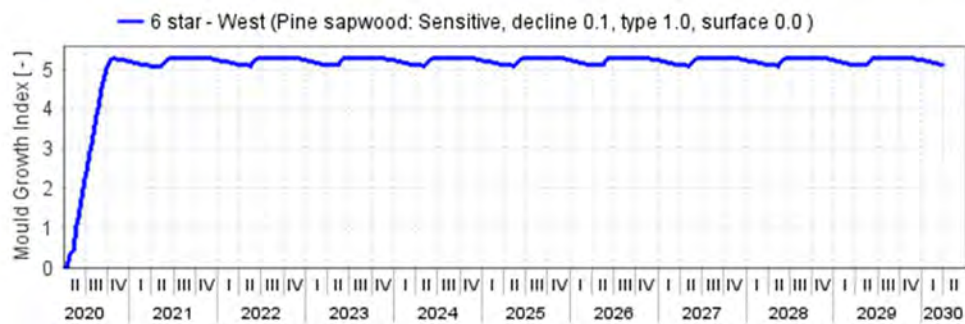


Figure 71: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

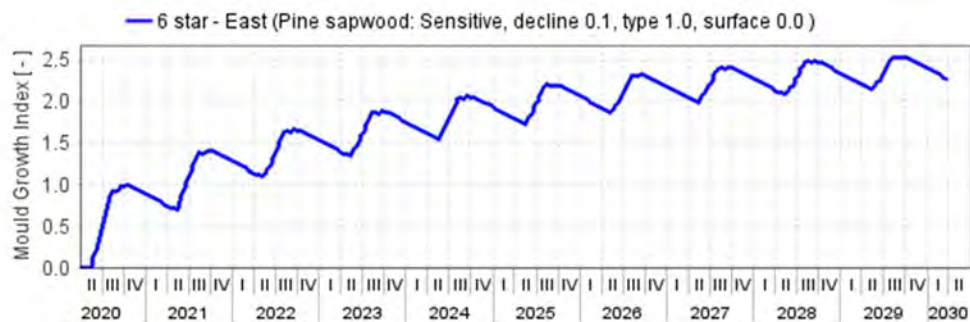


Figure 72: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

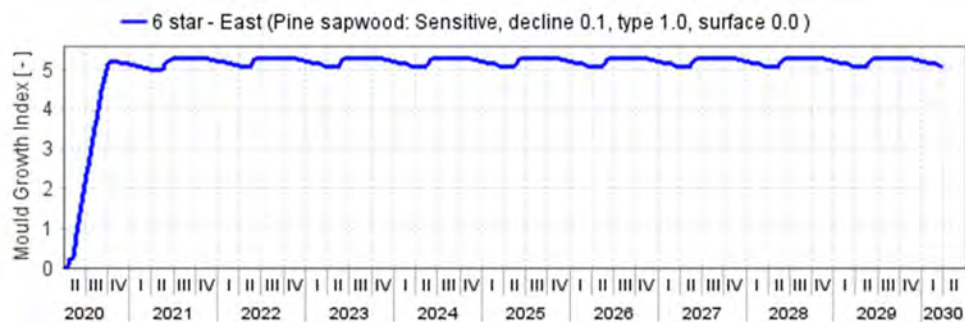


Figure 73: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the sixth year. This wall system requires further investigation.

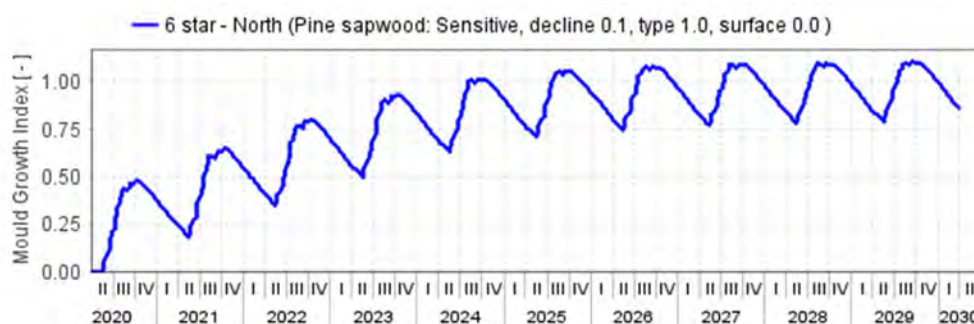


Figure 74: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

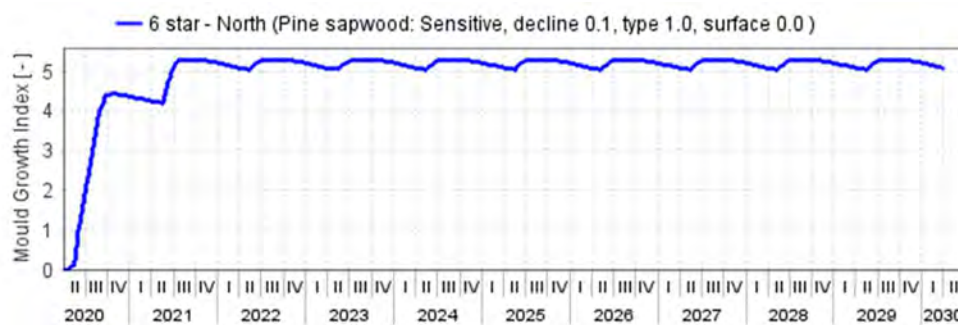


Figure 75: NatHERS CZ 66 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

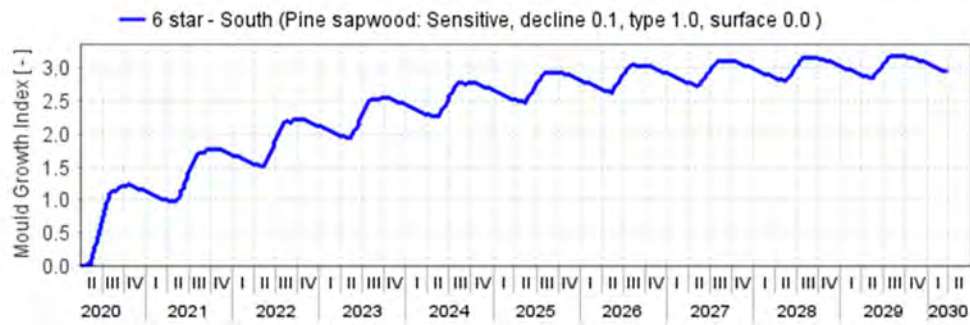


Figure 76: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

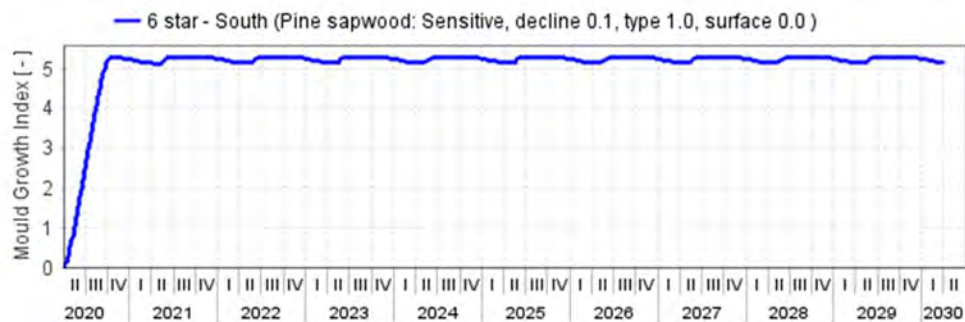


Figure 77: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

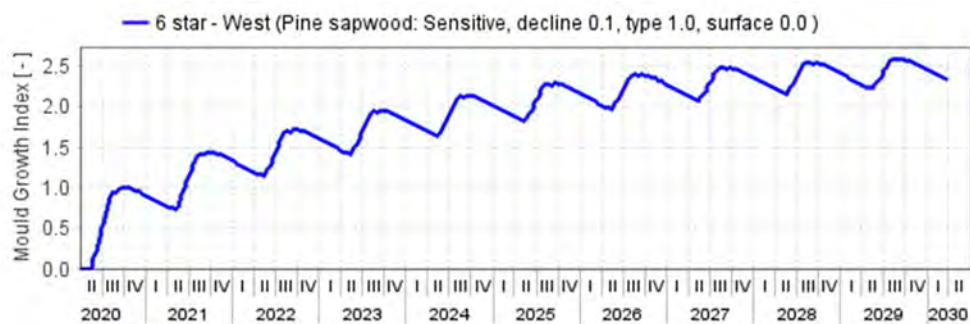


Figure 78: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

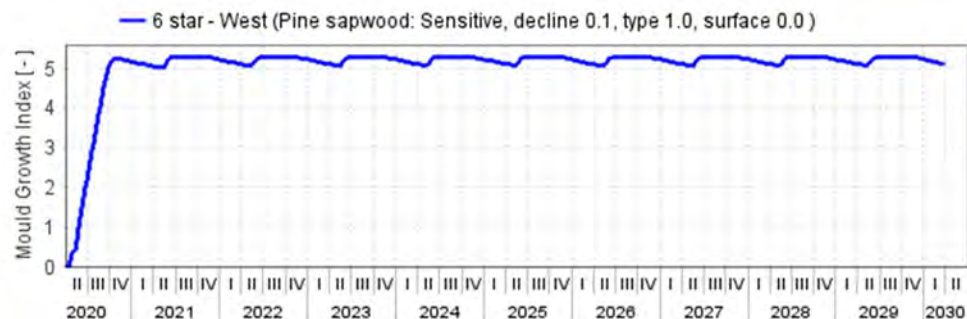


Figure 79: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

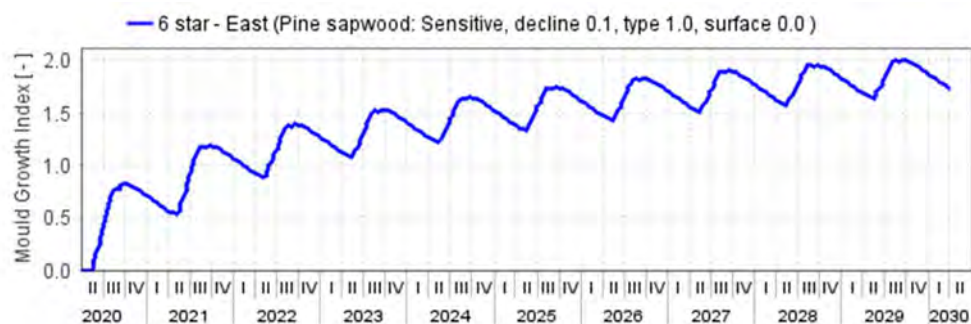


Figure 80: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

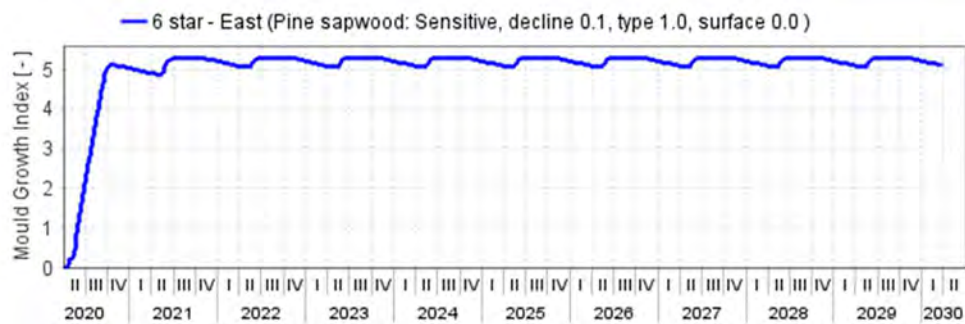


Figure 81: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 1.0 in the second year. This wall system requires further investigation.

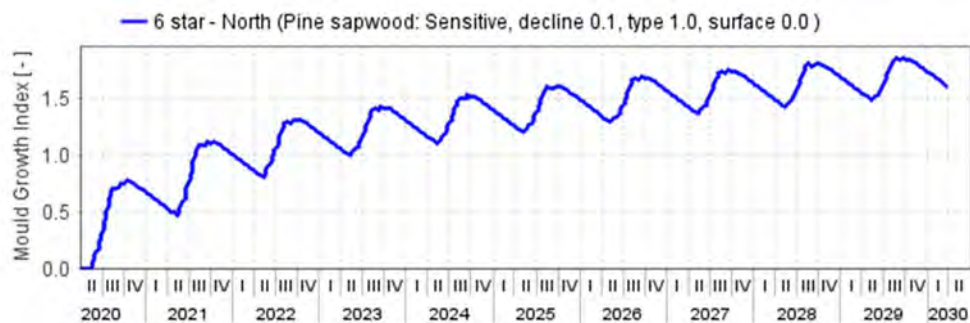


Figure 82: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

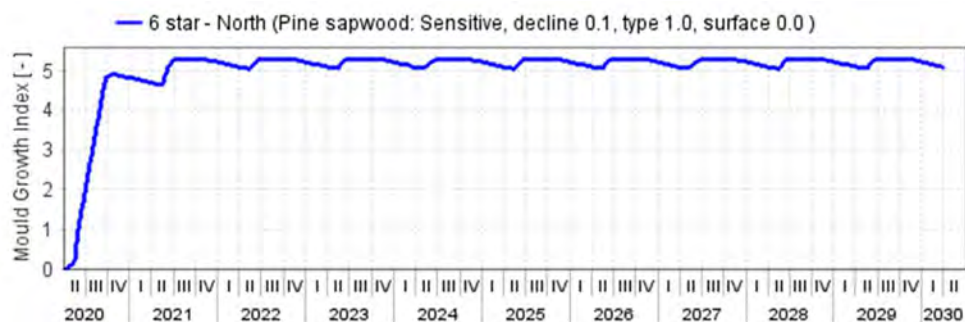


Figure 83: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

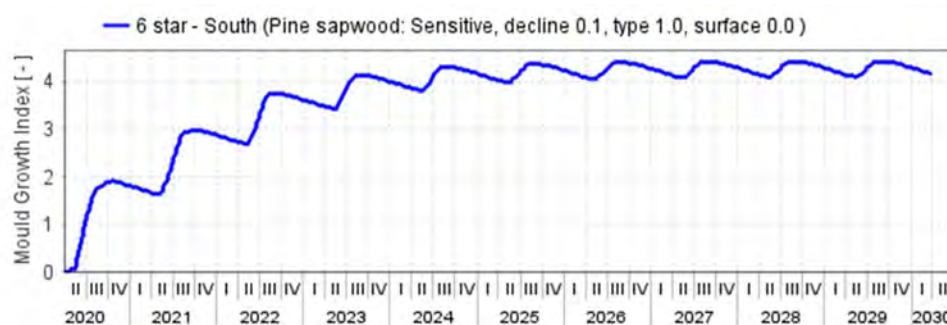


Figure 84: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

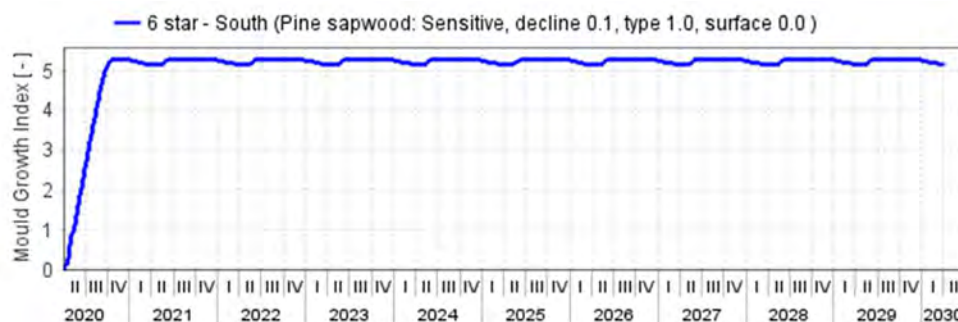


Figure 85: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

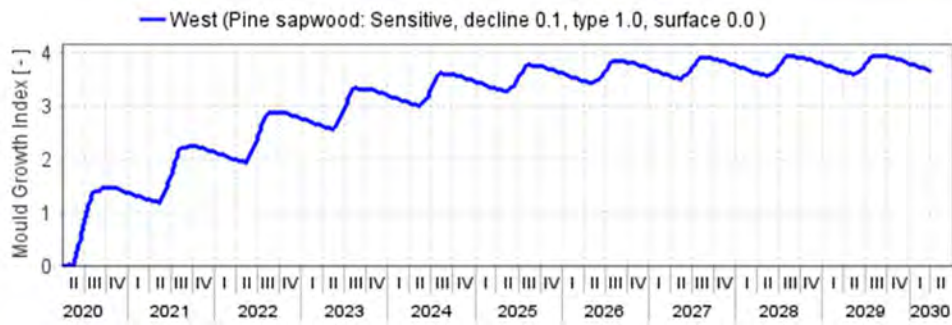


Figure 86: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

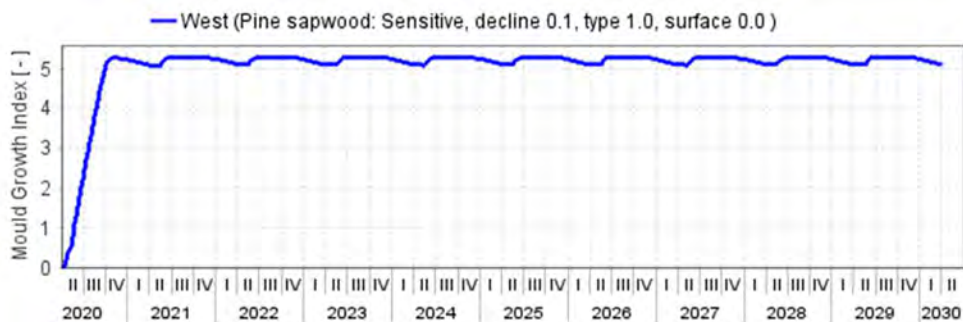


Figure 87: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

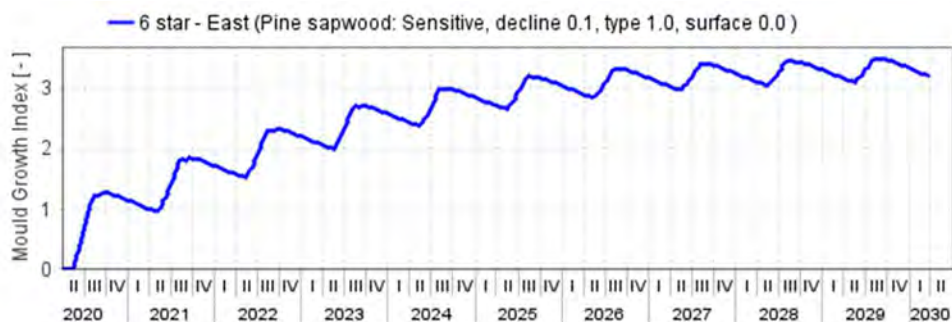


Figure 88: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

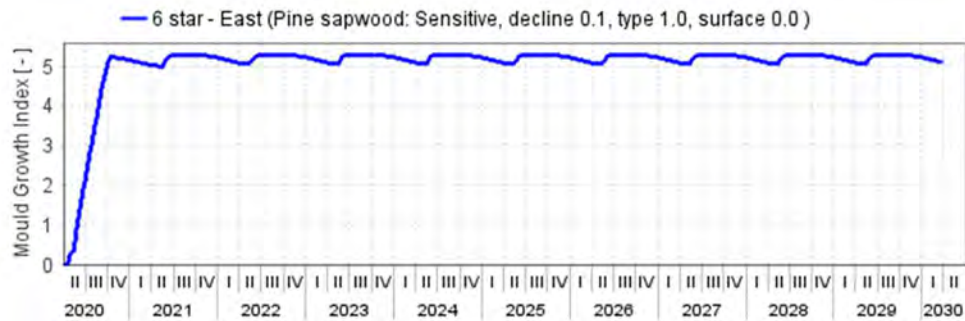


Figure 89: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

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Appendix 10: Hygrothermal simulation results – Flat metal cladding

Note: as per the title of this appendix, these simulations relate to the use of a metallic cladding system that is directly fixed to a wall frame and is in contact with the pliable building membrane. A flat metal system could be sheet-metal, sheet iron, thin aluminium composite systems and the like. Additionally, some systems have a profile which includes parts that will be in contact with the pliable building membrane and parts that will not be in contact with the pliable building membrane, which require extensive additional analysis.

1. Climate zone 21

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

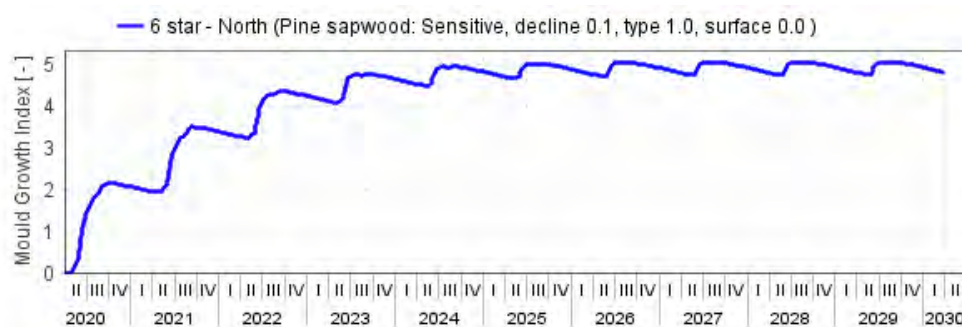


Figure 1: NatHERS CZ 21 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

South

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

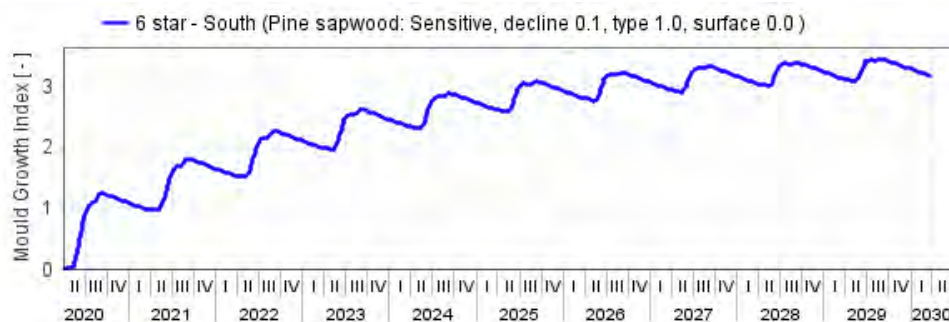


Figure 2: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Moisture in the insulation layer.

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

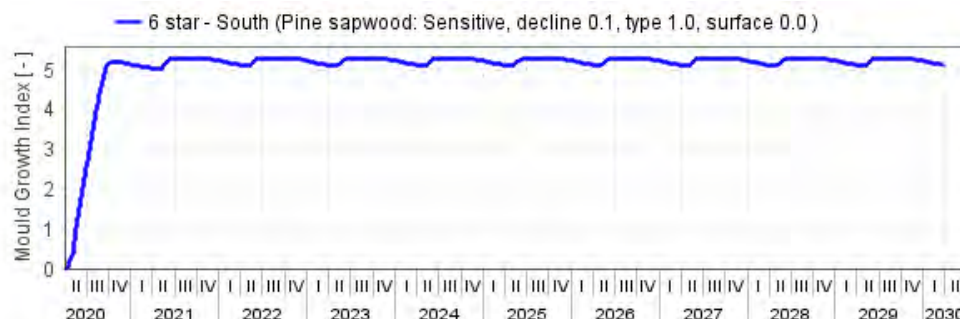


Figure 3: NatHERS CZ 21 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

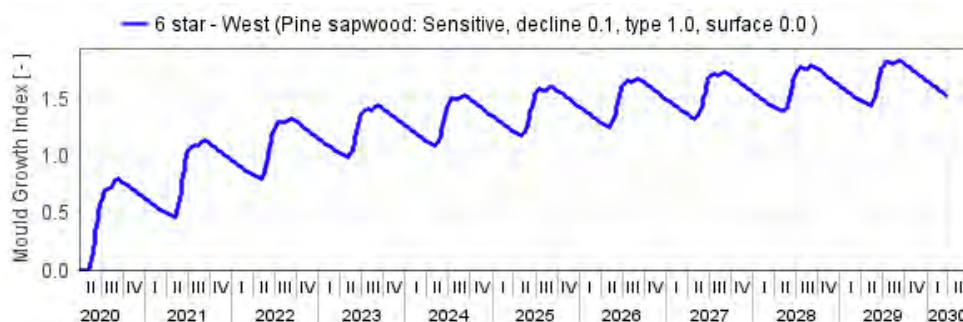


Figure 4: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

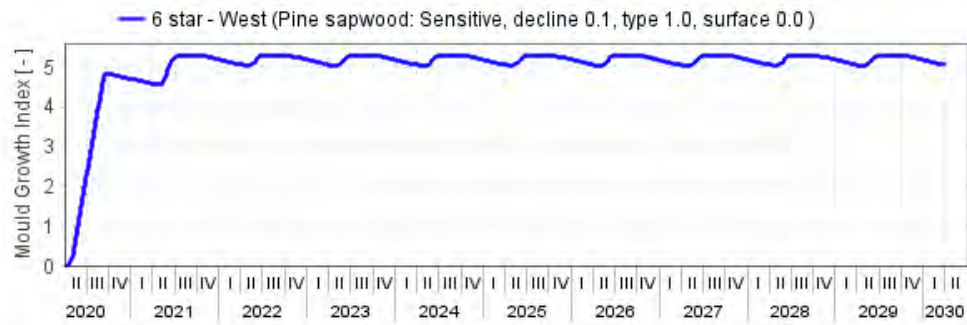


Figure 5: NatHERS CZ 21 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall system requires further investigation.

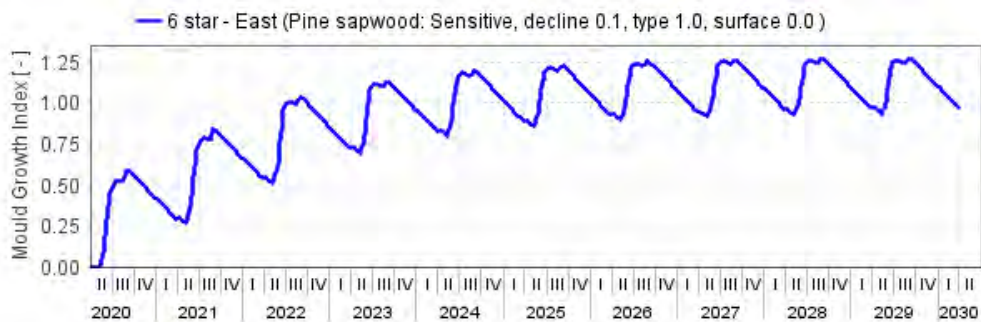


Figure 6: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

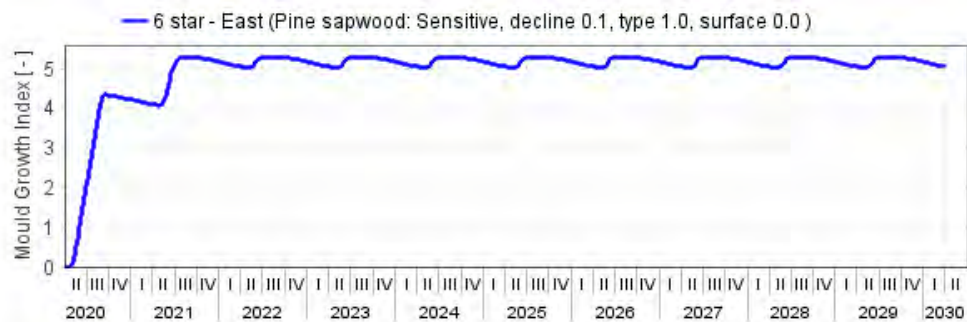


Figure 7: NatHERS CZ 21 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

2. Climate zone 22

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

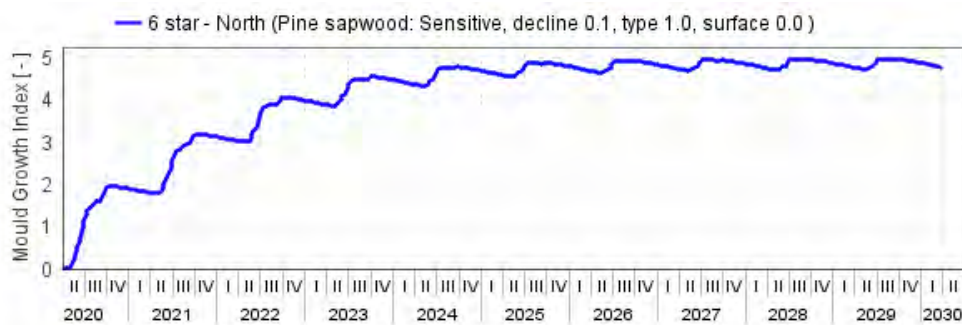


Figure 8: NatHERS CZ 22 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

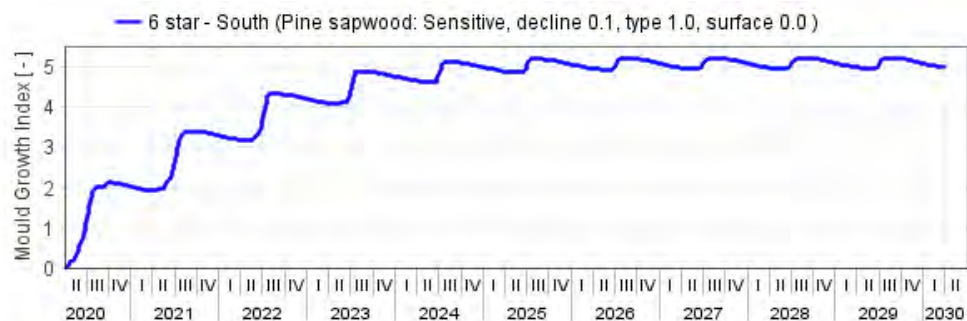


Figure 9: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: Moisture accumulation in the insulation layer.

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

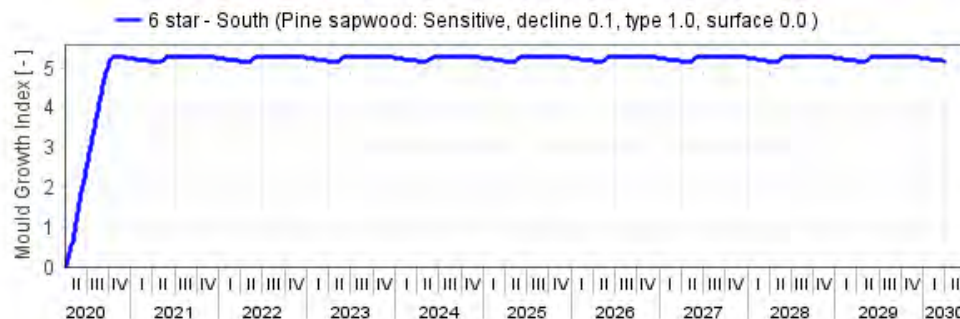


Figure 10: NatHERS CZ 22 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

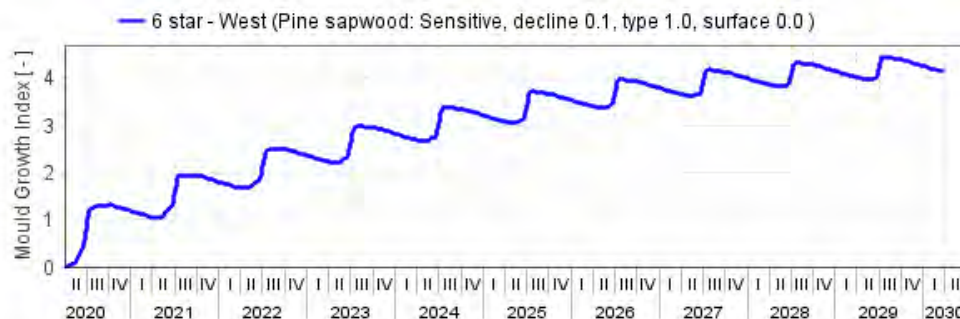


Figure 11: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

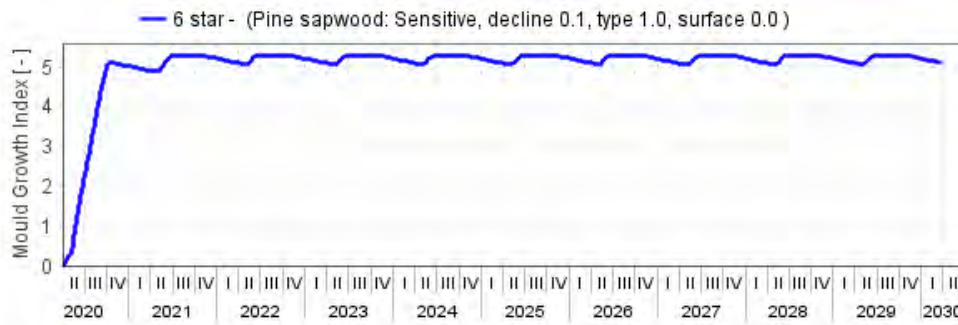


Figure 12: NatHERS CZ 22 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

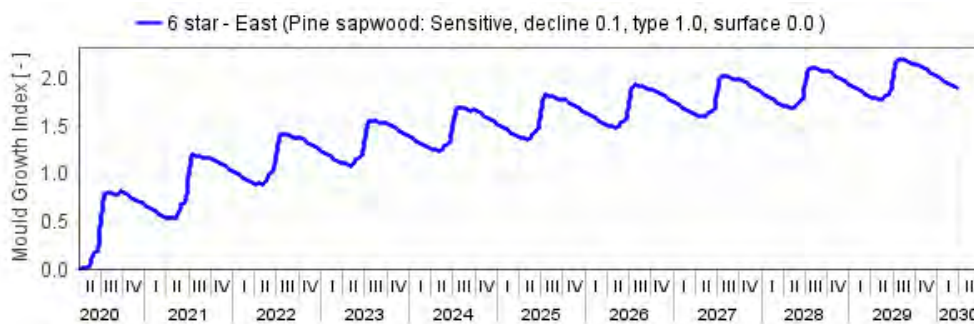


Figure 13: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

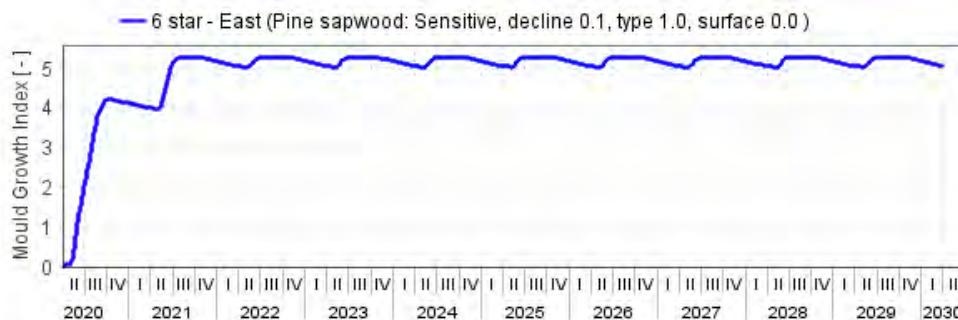


Figure 14: NatHERS CZ 22 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

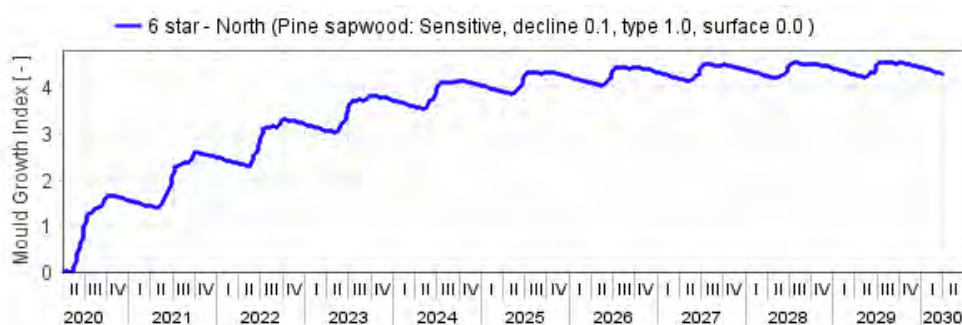


Figure 15: NatHERS CZ 22 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

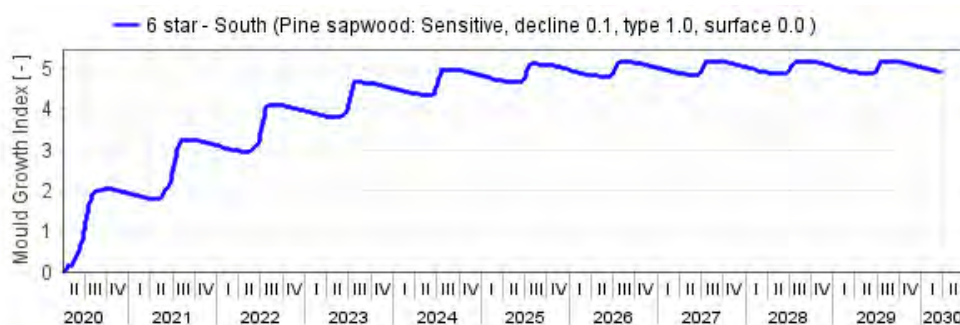


Figure 16: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

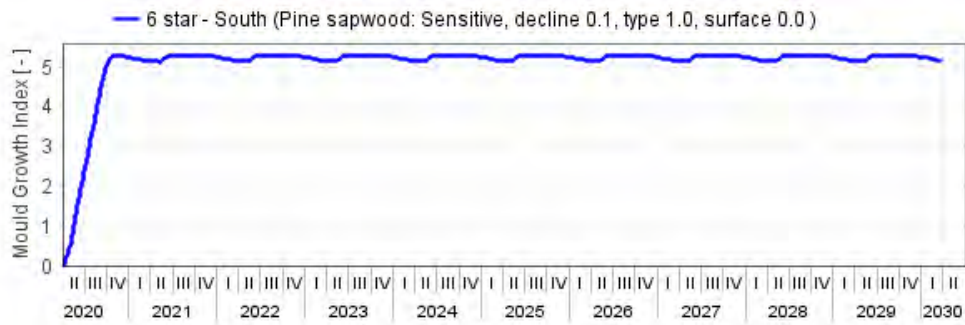


Figure 17: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

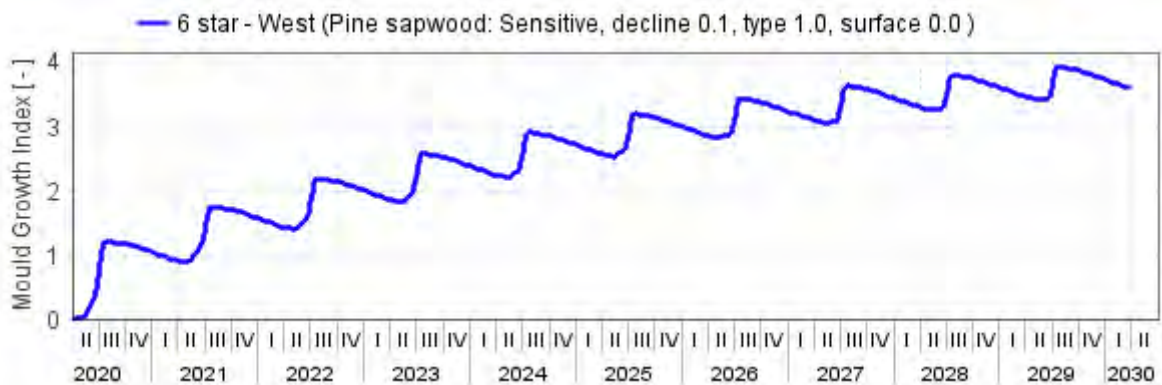


Figure 18: NatHERS CZ 22 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

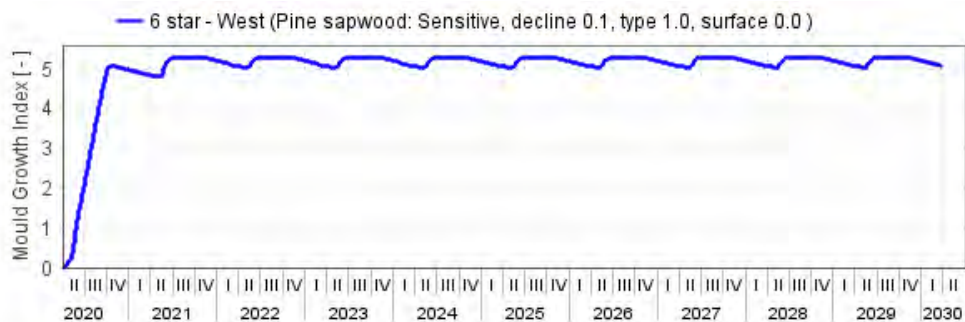


Figure 19: NatHERS CZ 22 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the third year. This wall system requires further investigation.

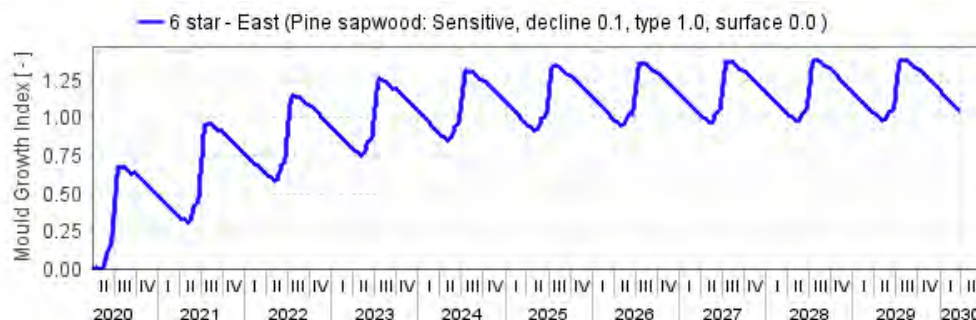


Figure 20: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

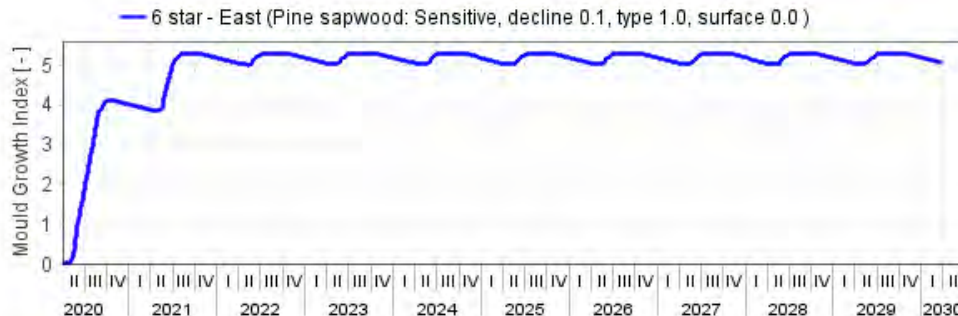


Figure 21: NatHERS CZ 22 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

3. Climate zone 27

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

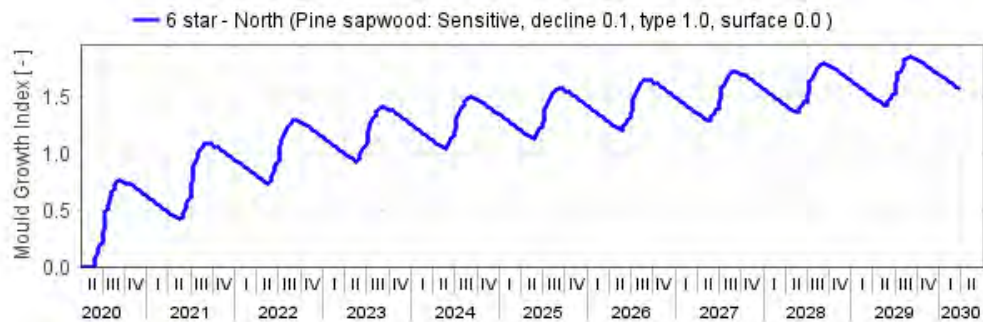


Figure 22: NatHERS CZ 27 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the seventh year.

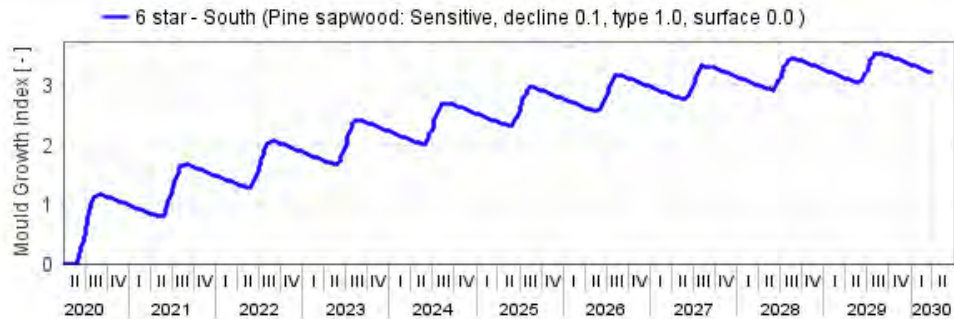


Figure 23: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

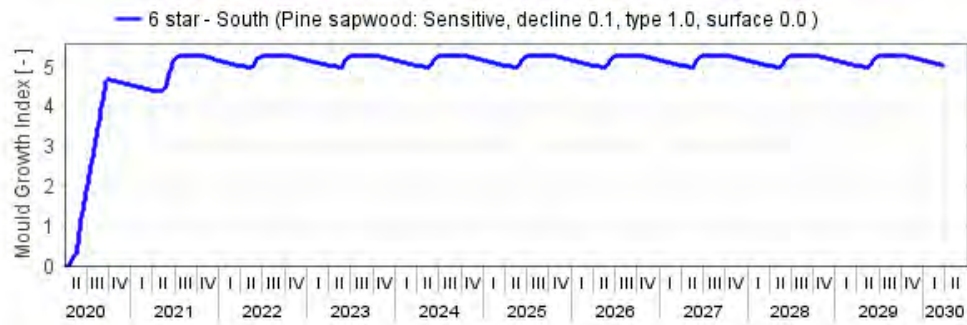


Figure 24: NatHERS CZ 27 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fourth year. This wall system requires further investigation.

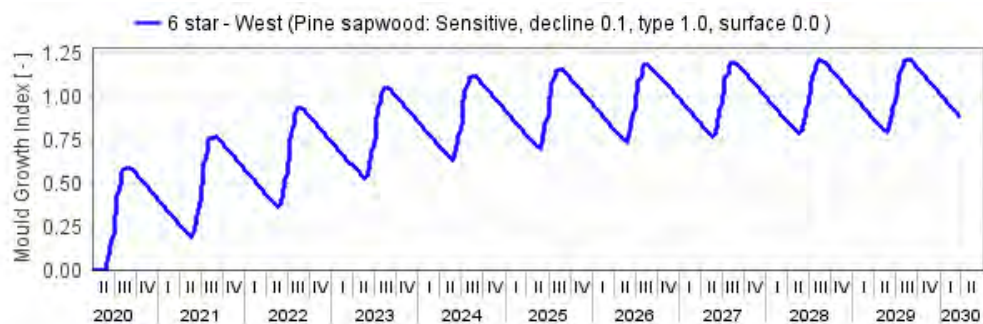


Figure 25: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

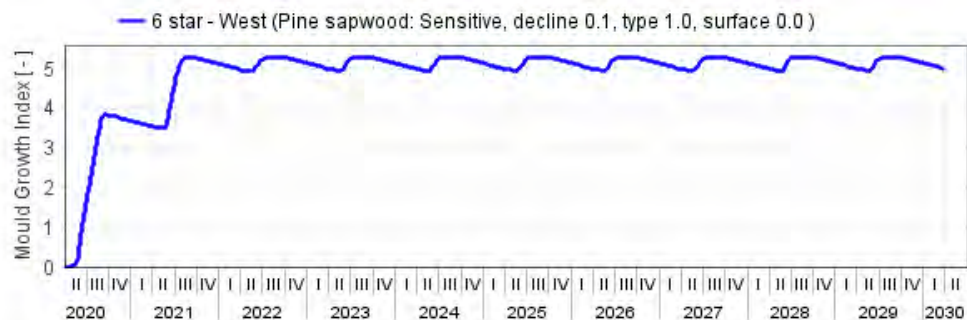


Figure 26: NatHERS CZ 27 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

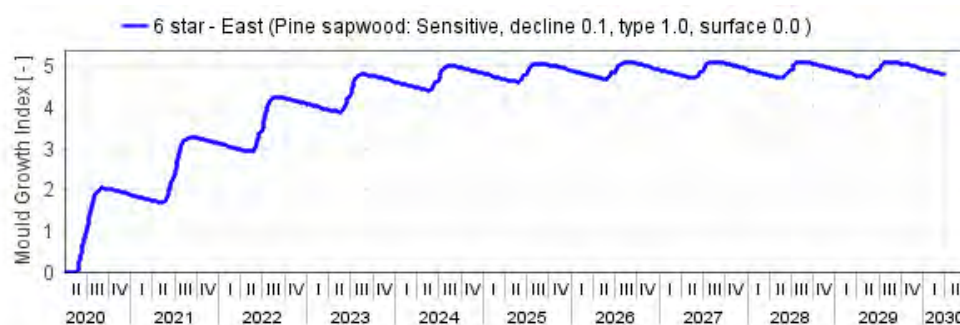


Figure 27: NatHERS CZ 27 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

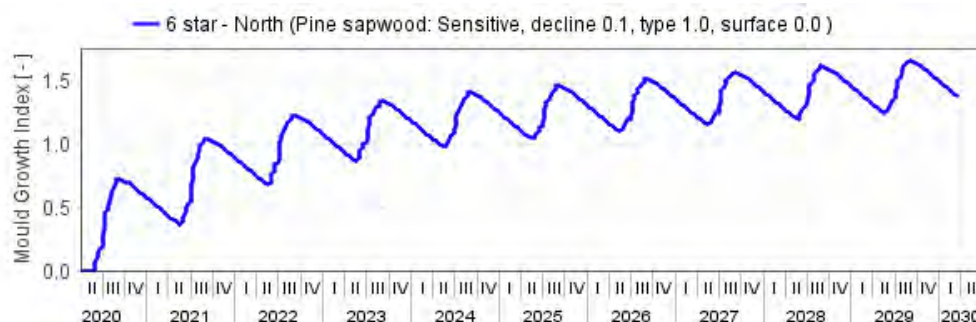


Figure 28: NatHERS CZ 27 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the eighth year.

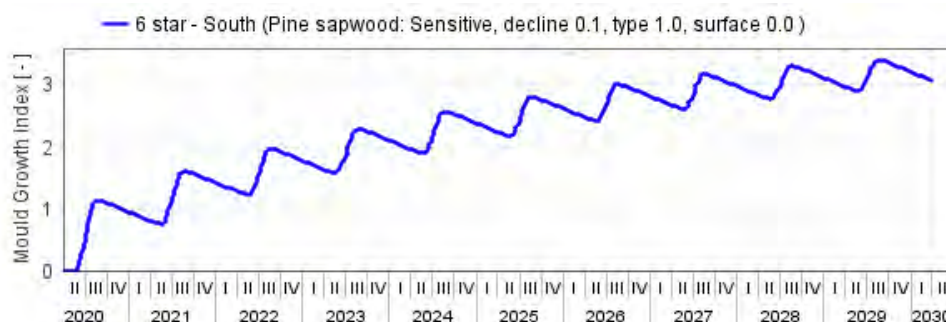


Figure 29: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

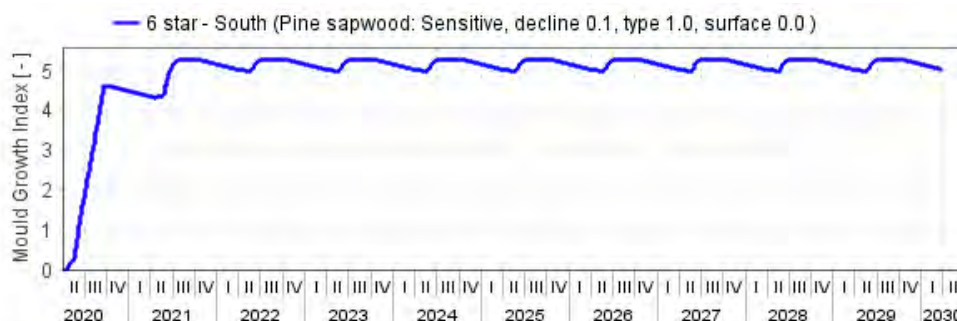


Figure 30: NatHERS CZ 27 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

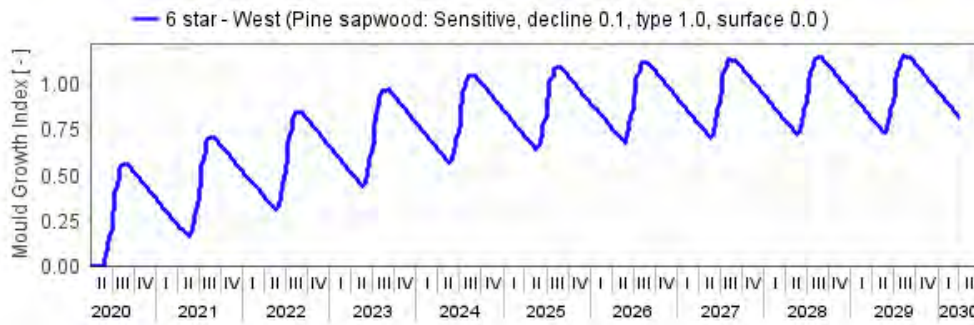


Figure 31: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

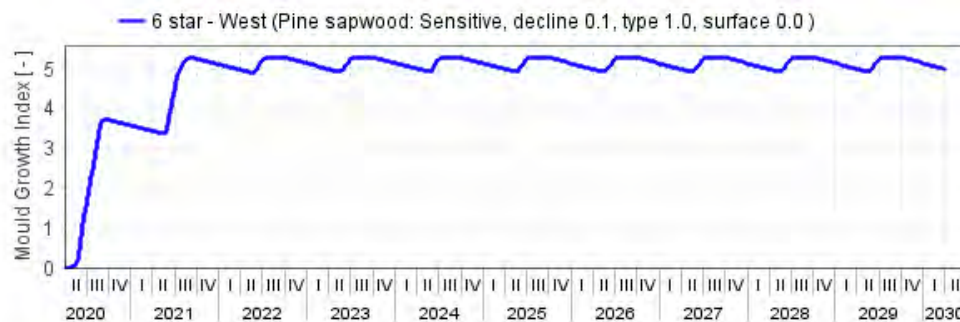


Figure 32: NatHERS CZ 27 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

Figure 33: NatHERS CZ 27 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

4. Climate zone 60

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

Figure 34: NatHERS CZ 60 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

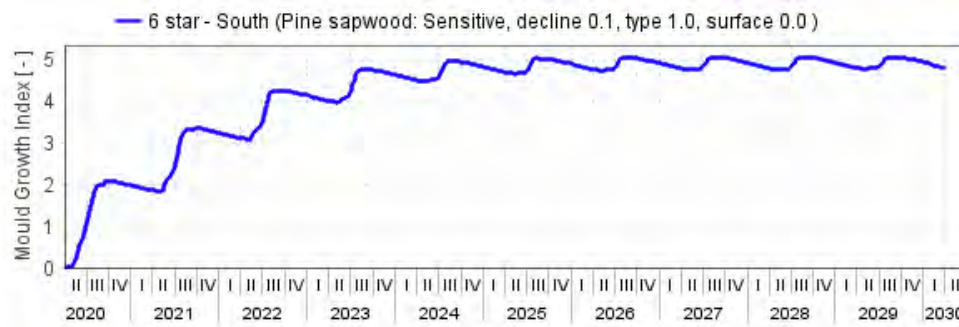


Figure 35: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

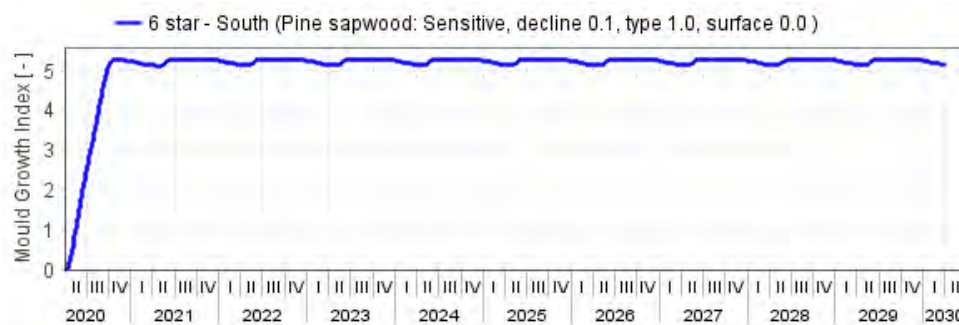


Figure 36: NatHERS CZ 60 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

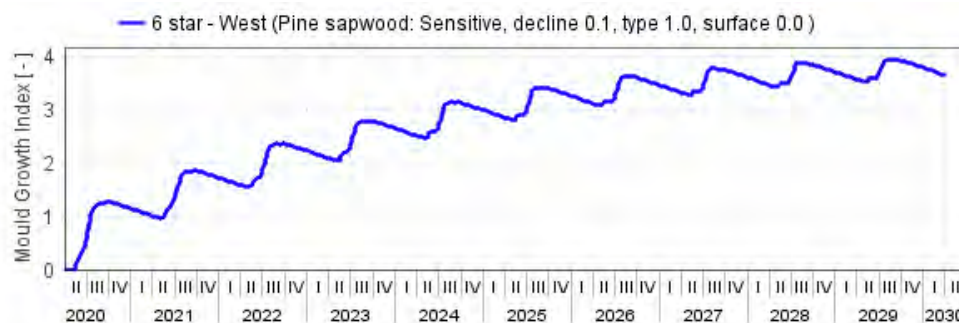


Figure 37: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

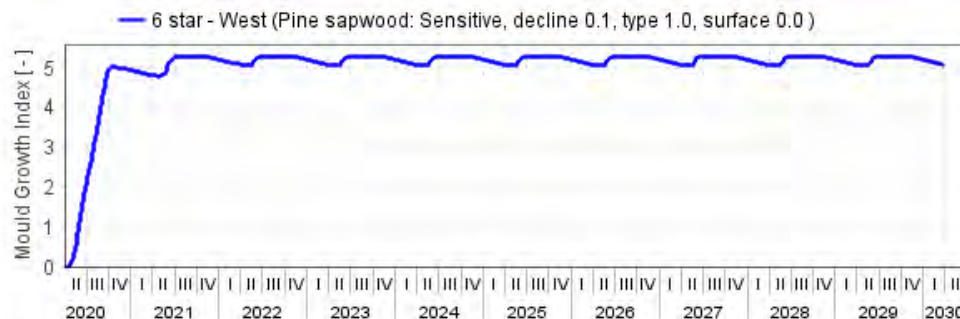


Figure 38: NatHERS CZ 60 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

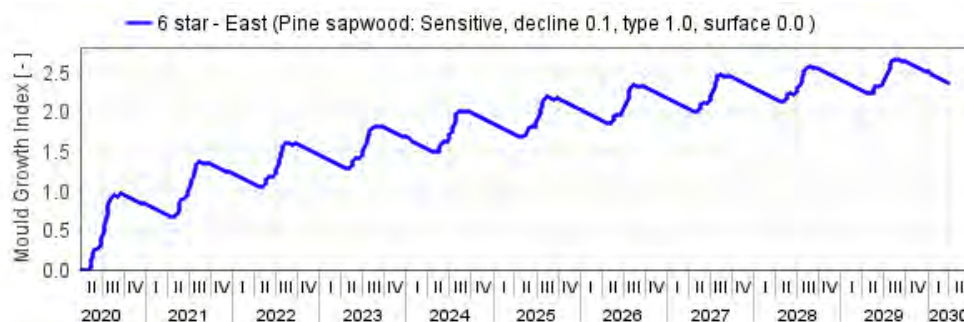


Figure 39: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

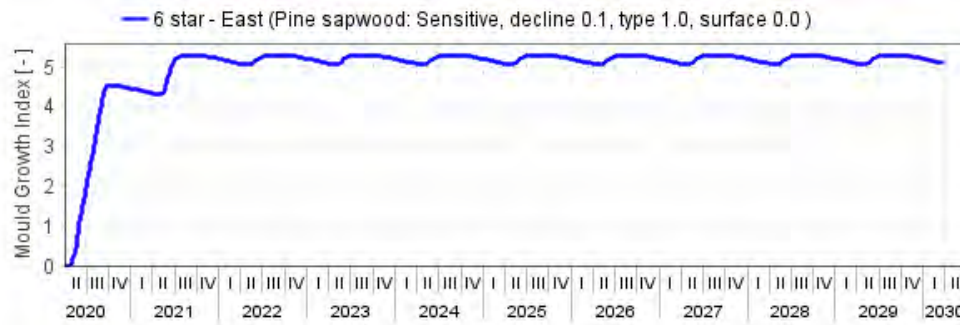


Figure 40: NatHERS CZ 60 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the third year.

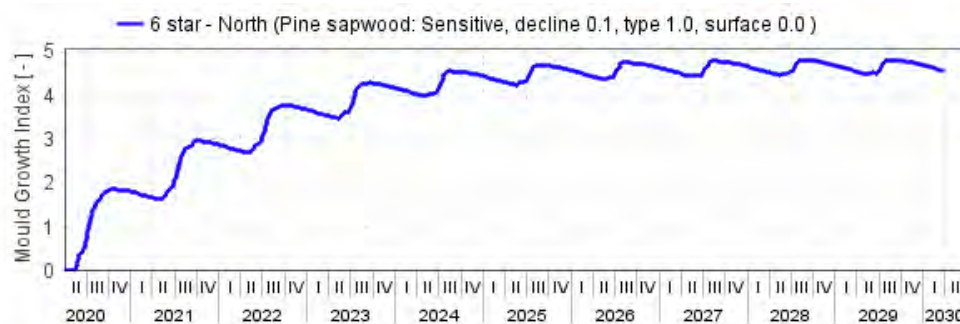


Figure 41: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

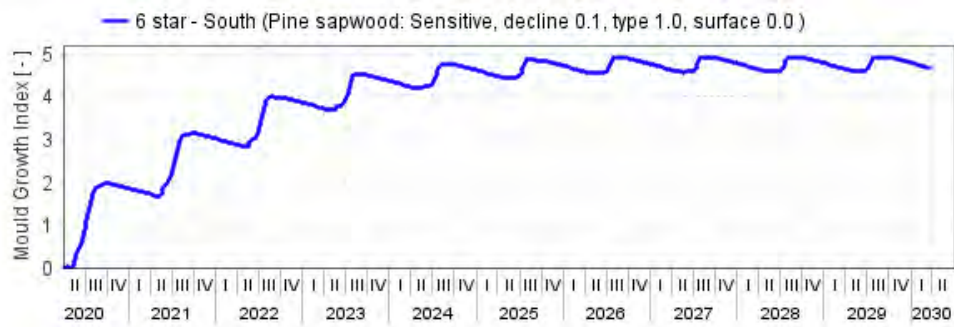


Figure 42: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

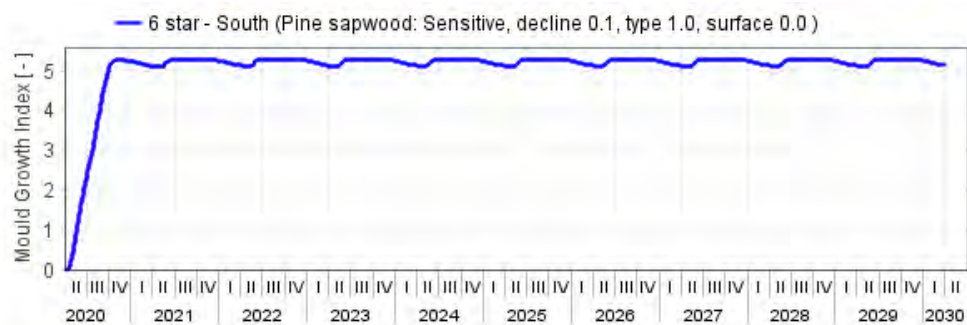


Figure 43: NatHERS CZ 60 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the ninth year.

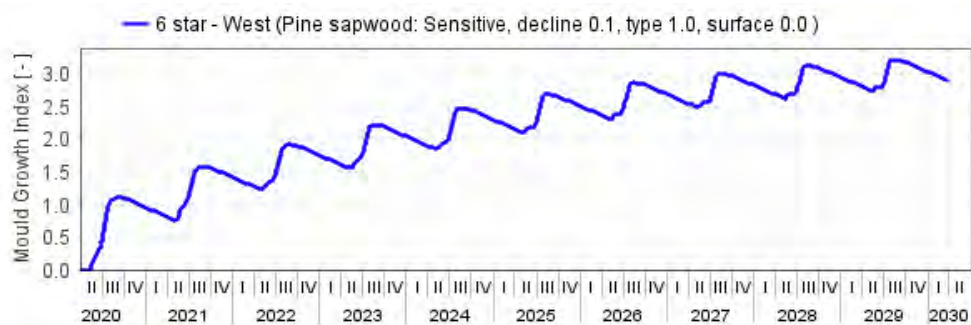


Figure 44: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

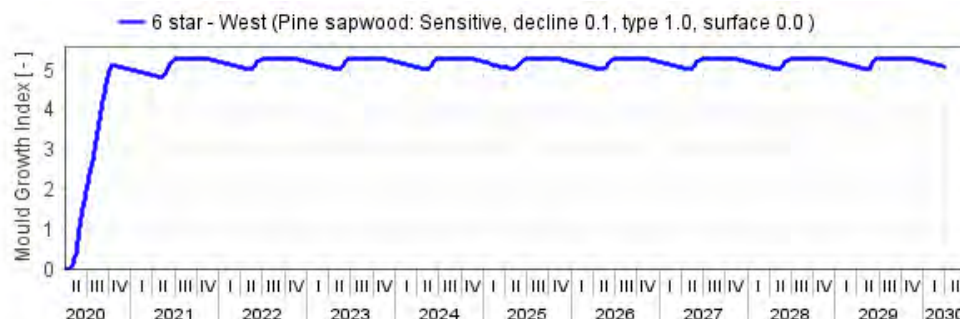


Figure 45: NatHERS CZ 60 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

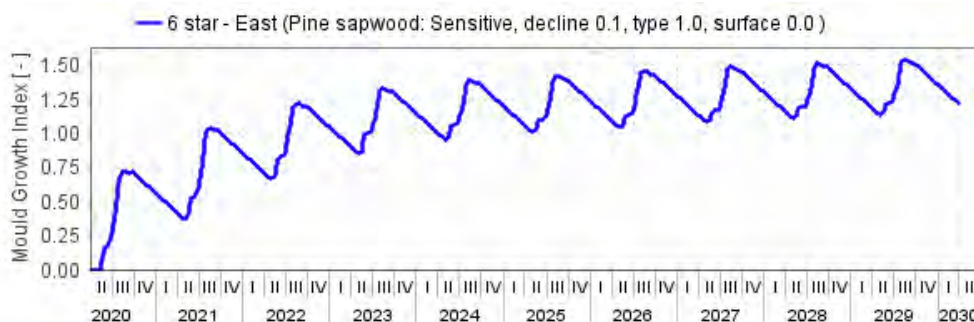


Figure 46: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

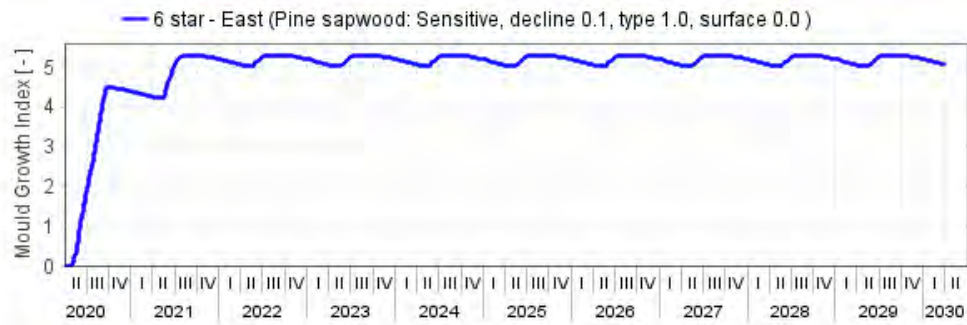


Figure 47: NatHERS CZ 60 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

5. Climate zone 61

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

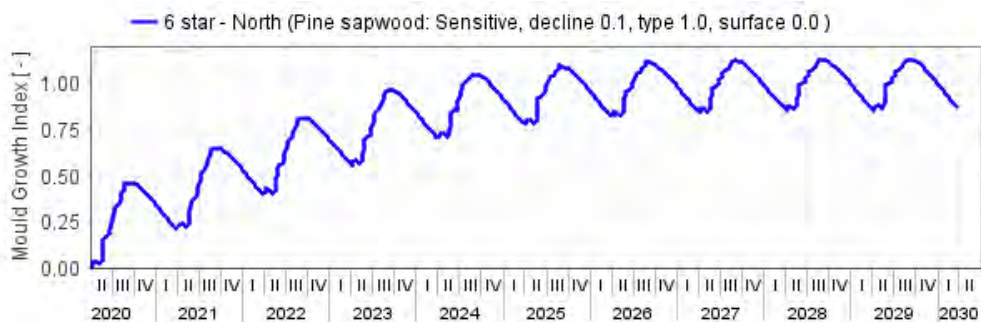


Figure 48: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

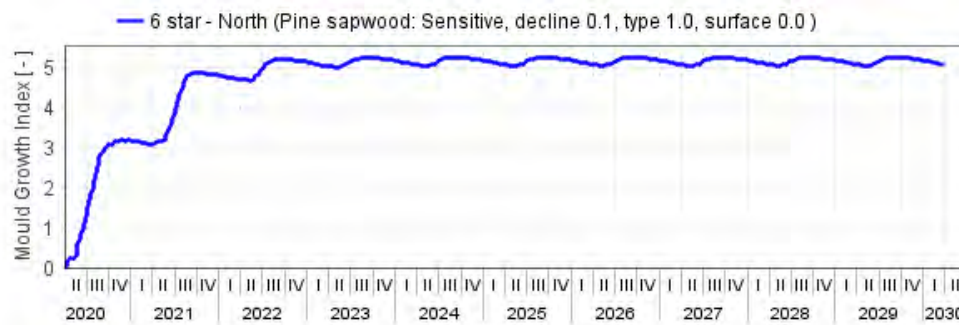


Figure 49: NatHERS CZ 61 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

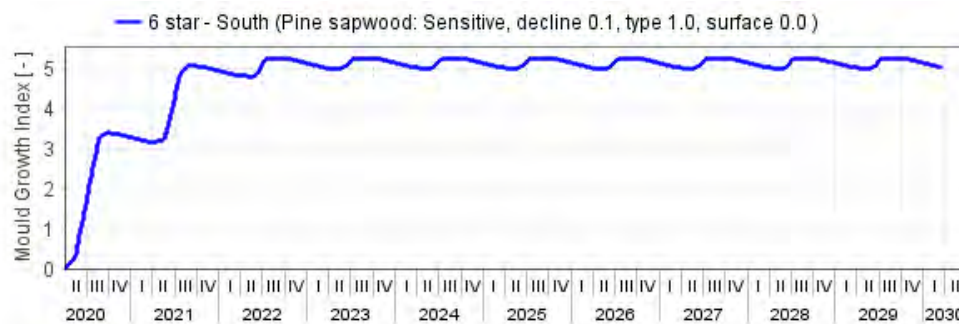


Figure 50: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

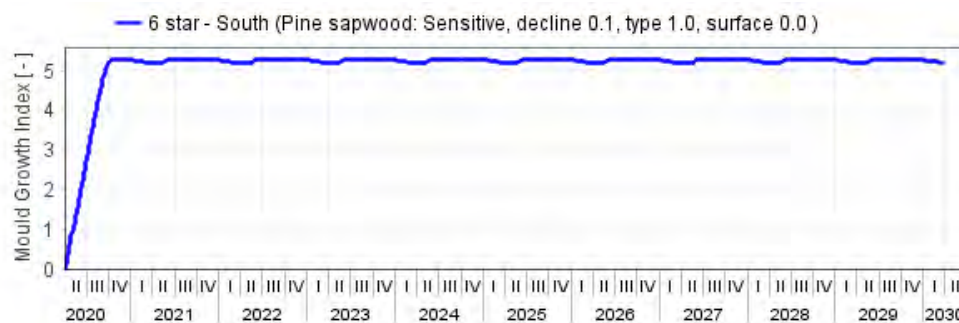


Figure 51: NatHERS CZ 61 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

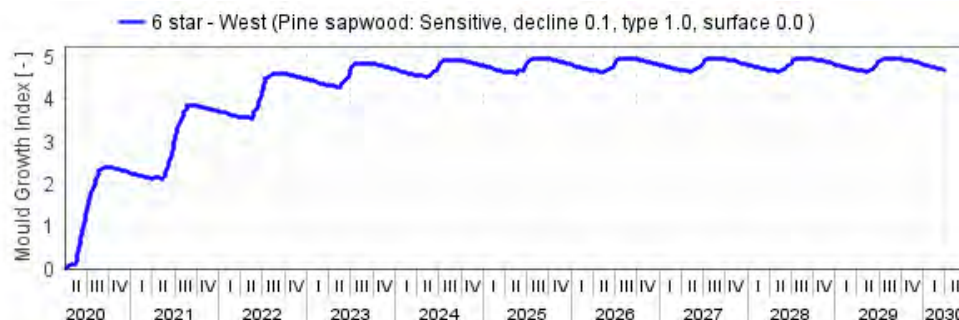


Figure 52: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

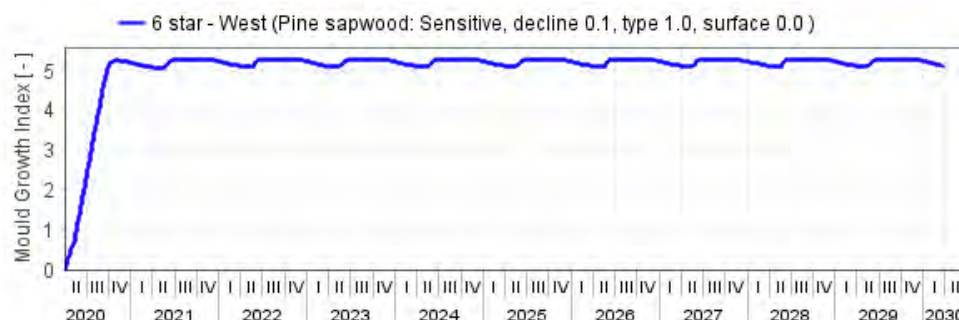


Figure 53: NatHERS CZ 61 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

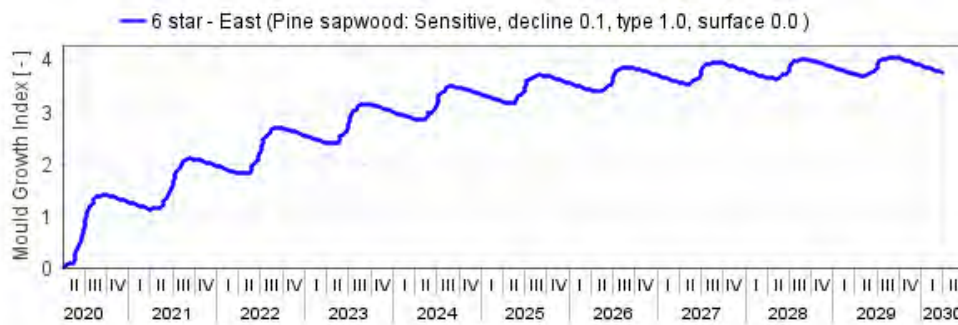


Figure 54: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

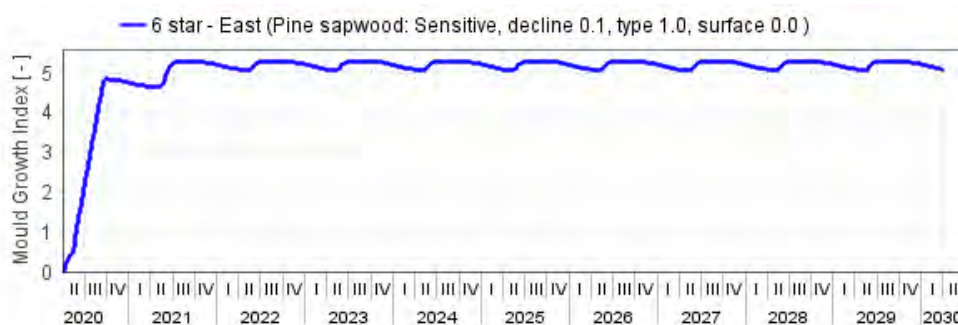


Figure 55: NatHERS CZ 61 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

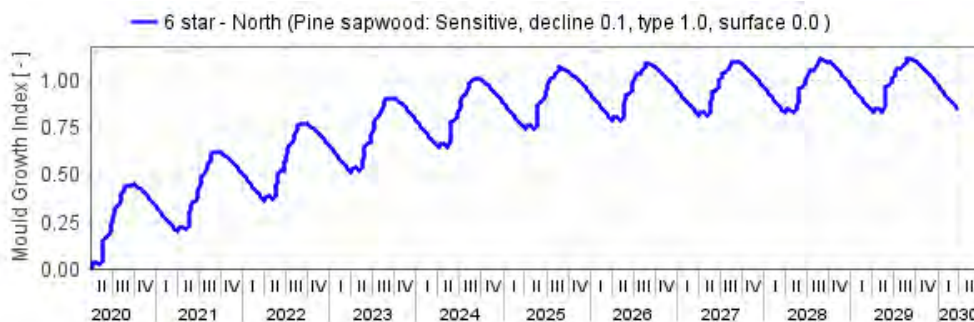


Figure 56: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

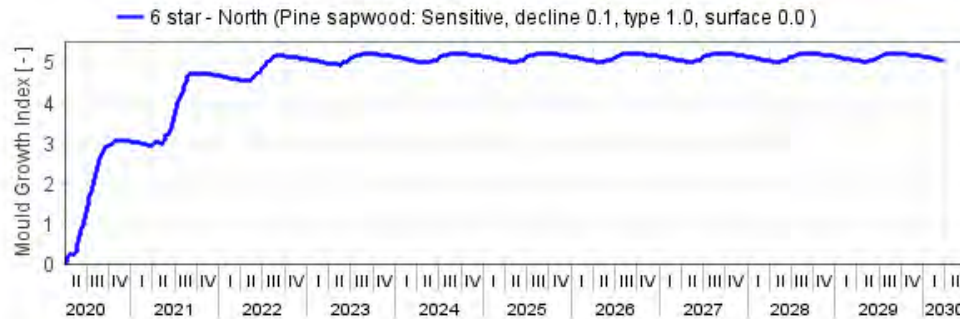


Figure 57: NatHERS CZ 61 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

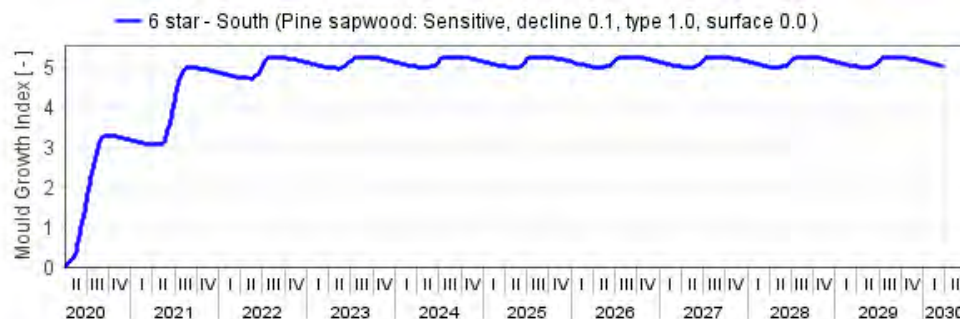


Figure 58: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

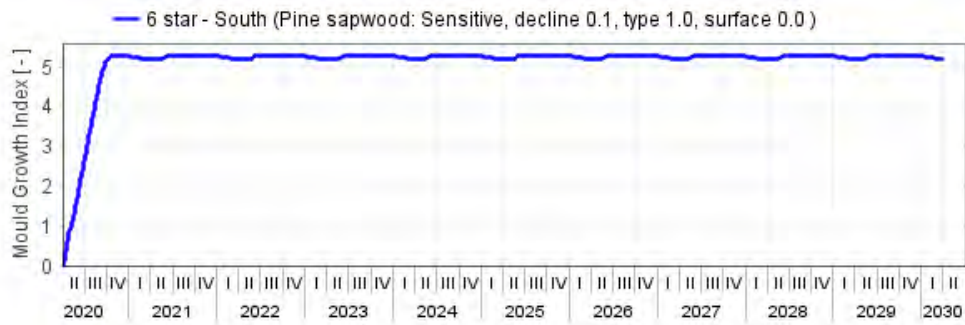


Figure 59: NatHERS CZ 61 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

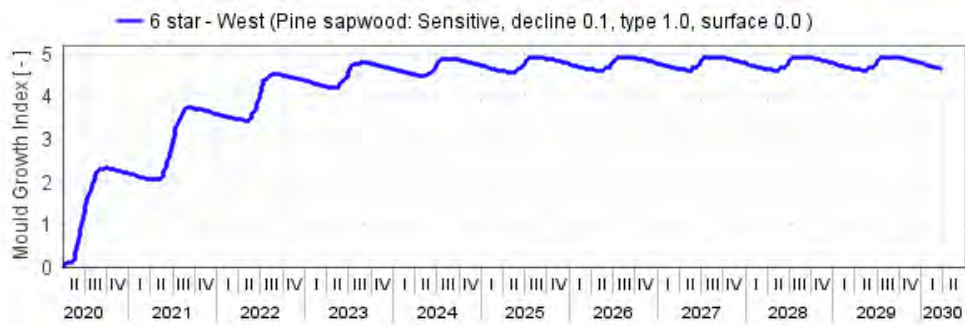


Figure 60: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

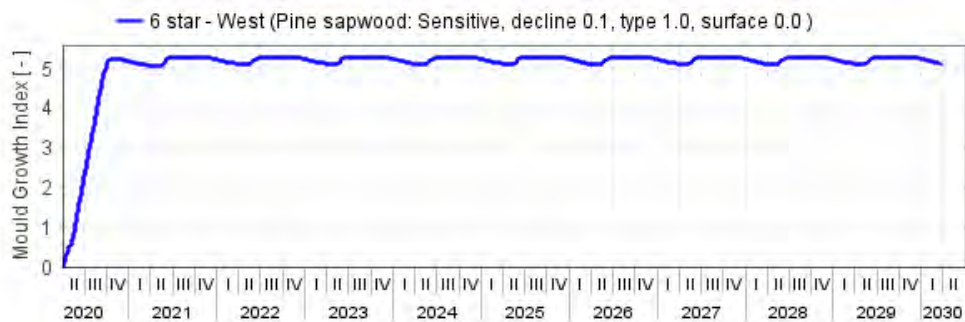


Figure 61: NatHERS CZ 61 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

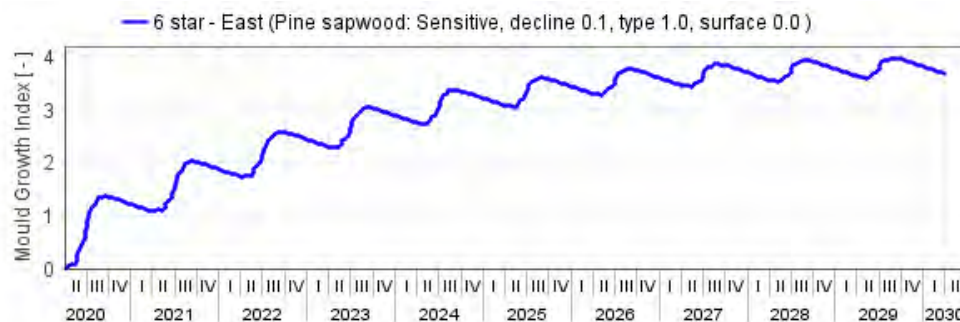


Figure 62: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

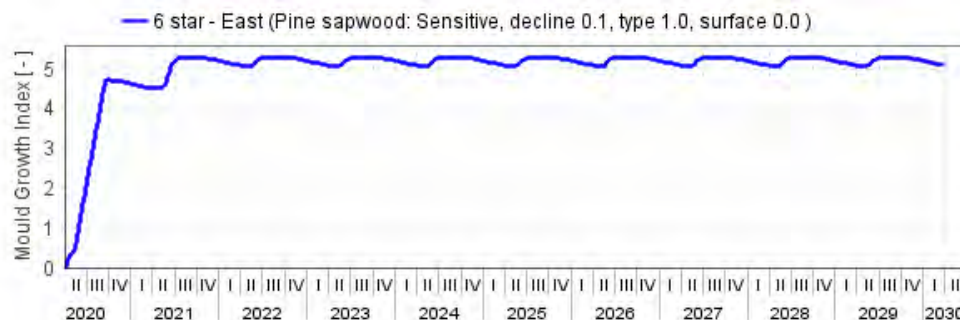


Figure 63: NatHERS CZ 61 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

6. Climate zone 63

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

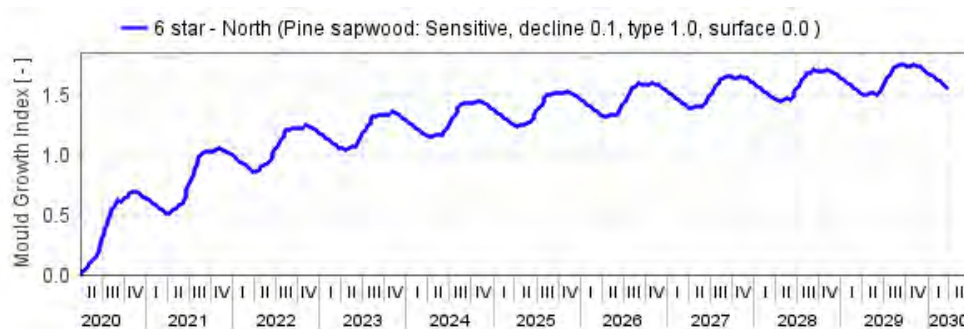


Figure 64: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

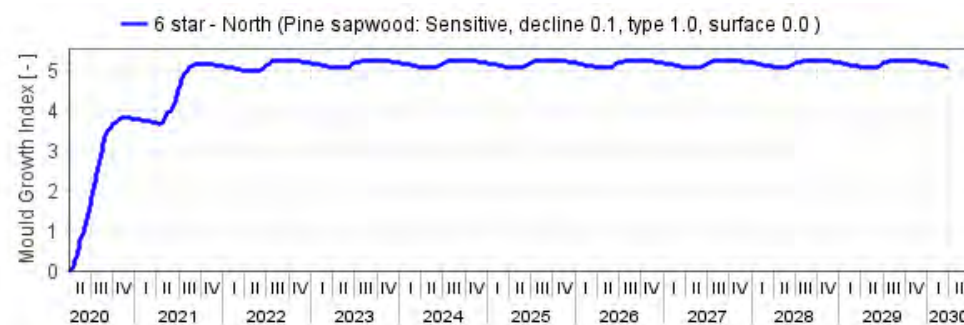


Figure 65: NatHERS CZ 63 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

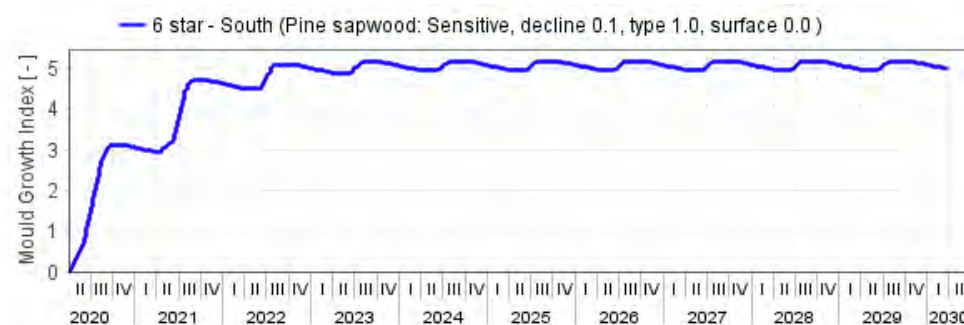


Figure 66: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

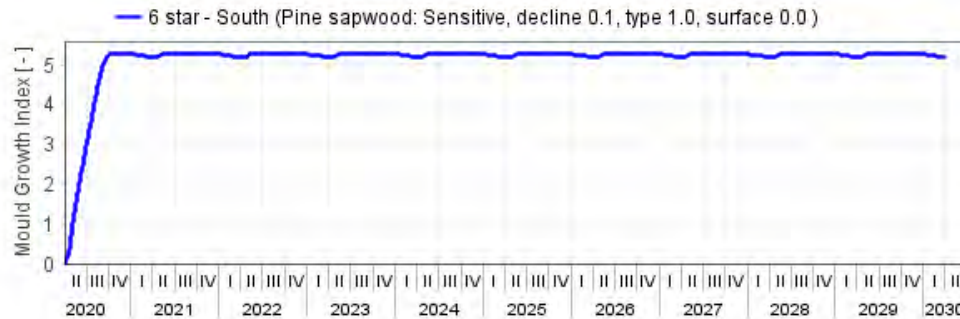


Figure 67: NatHERS CZ 63 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

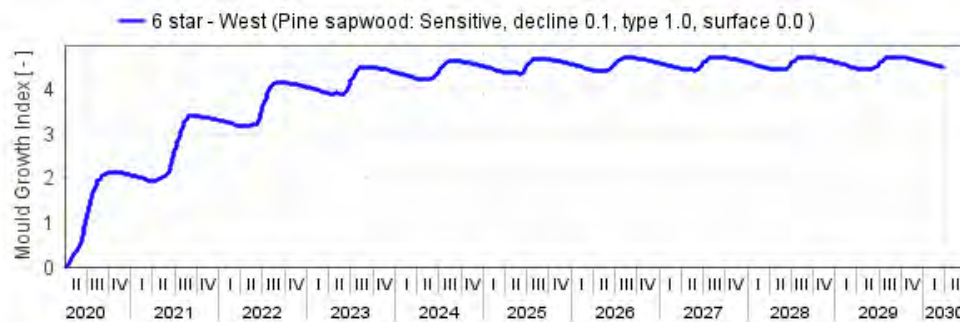


Figure 68: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

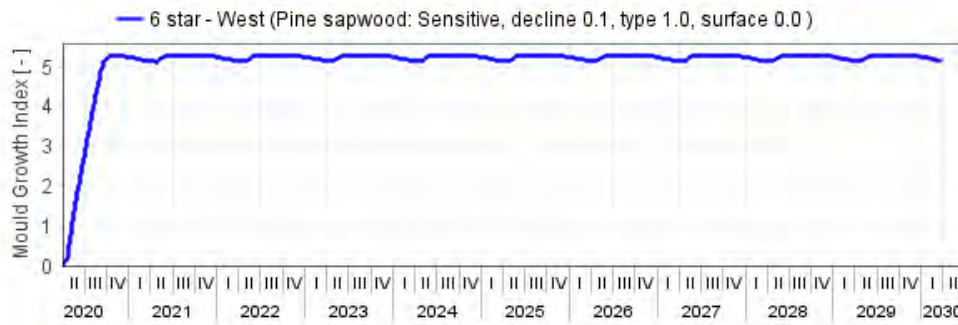


Figure 69: NatHERS CZ 63 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

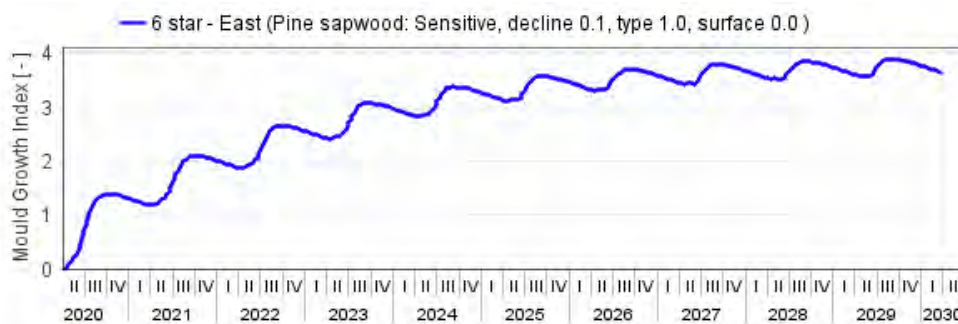


Figure 70: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

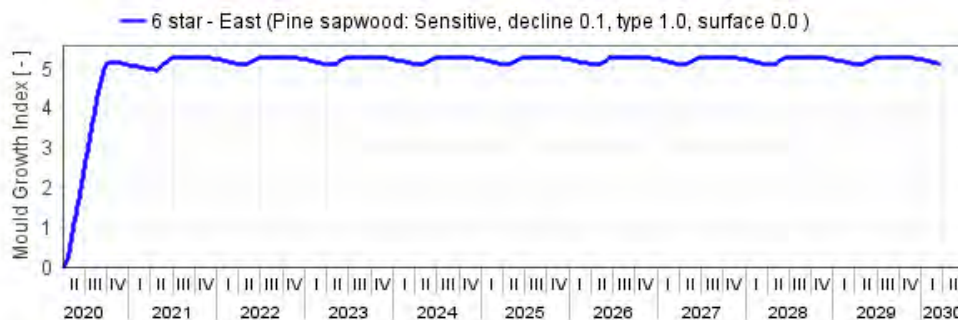


Figure 71: NatHERS CZ 63 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

7. Climate zone 64

NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

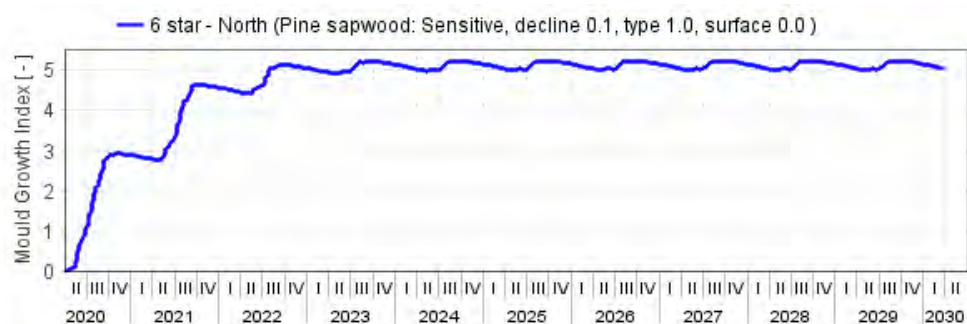


Figure 72: NatHERS CZ 64 / NCC CZ 6-7 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fifth year.

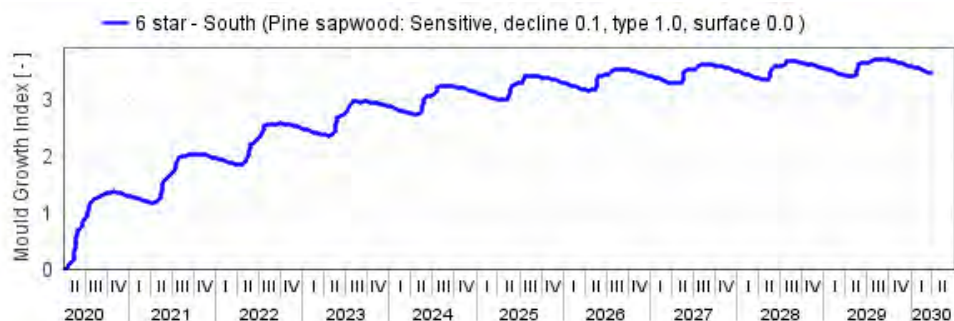


Figure 73: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

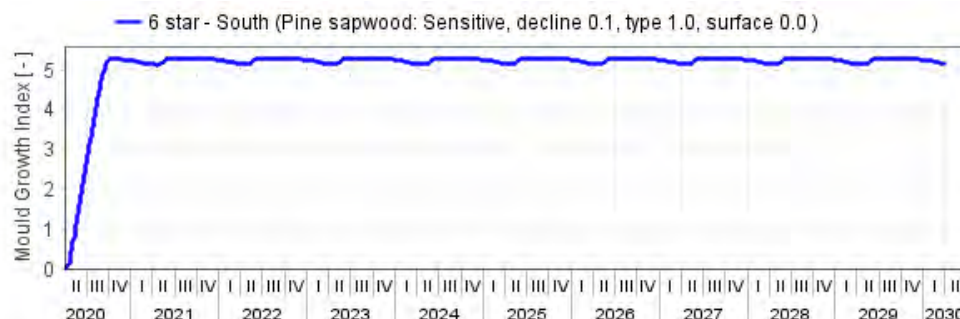


Figure 74: NatHERS CZ 64 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

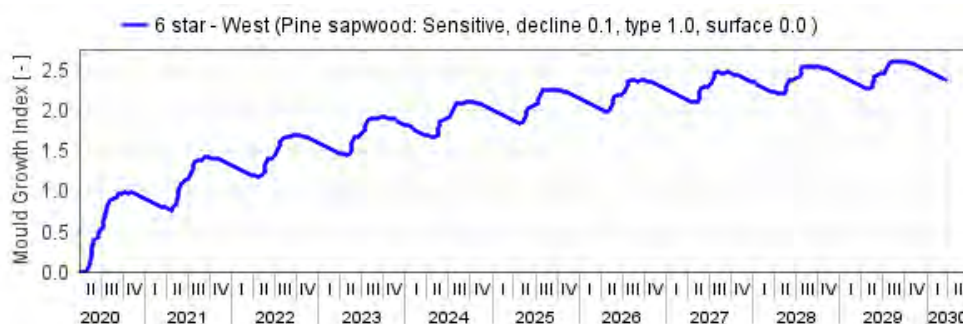


Figure 75: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

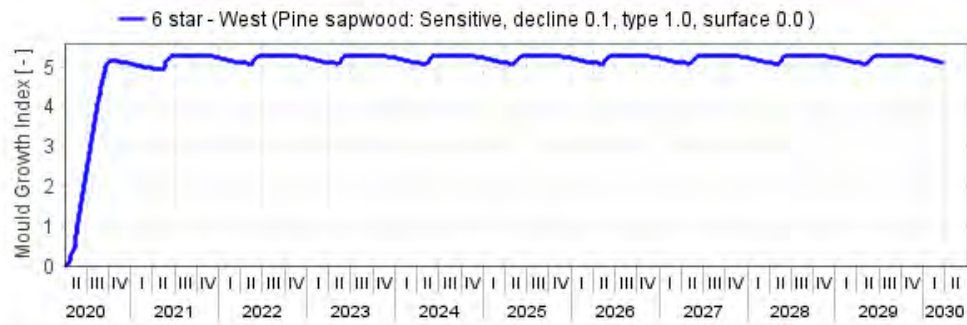


Figure 76: NatHERS CZ 64 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

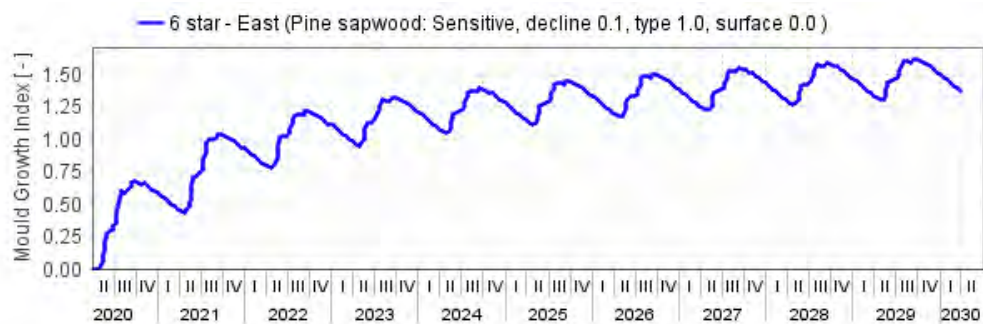


Figure 77: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

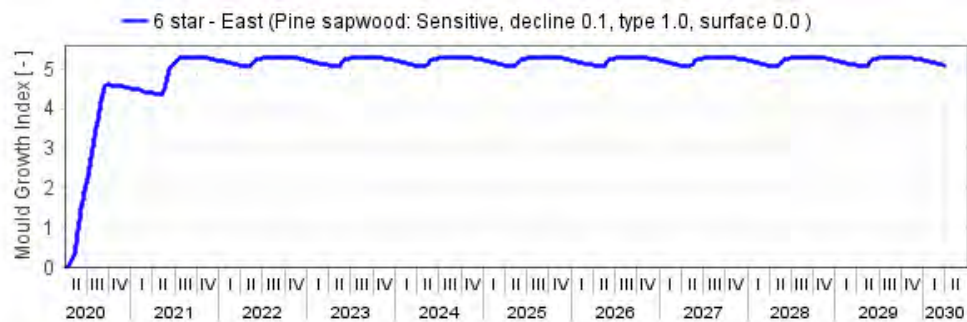


Figure 78: NatHERS CZ 64 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: NIL

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

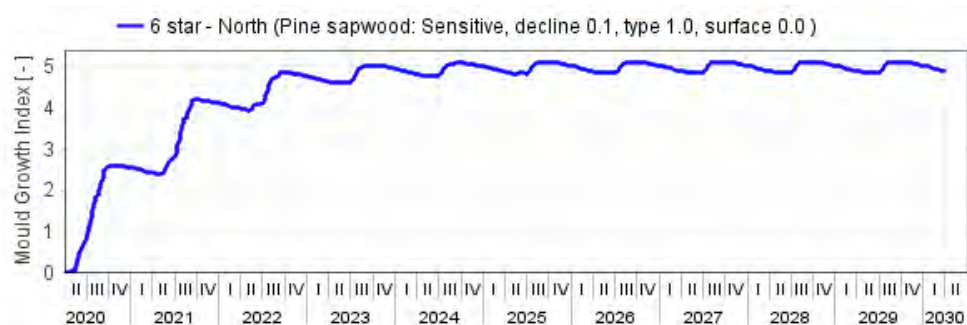


Figure 79: NatHERS CZ 64 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

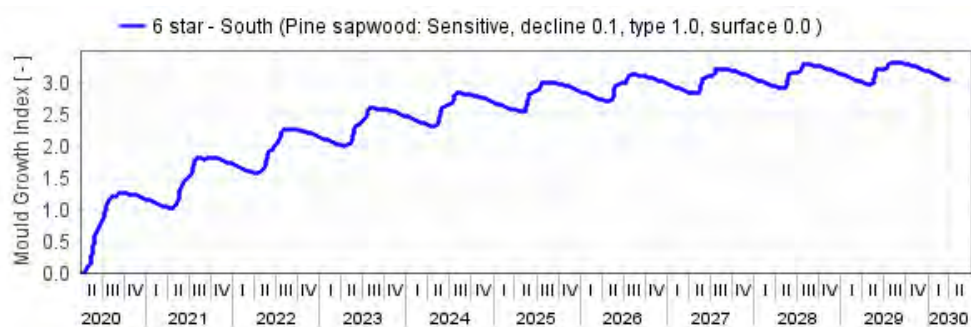


Figure 80: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

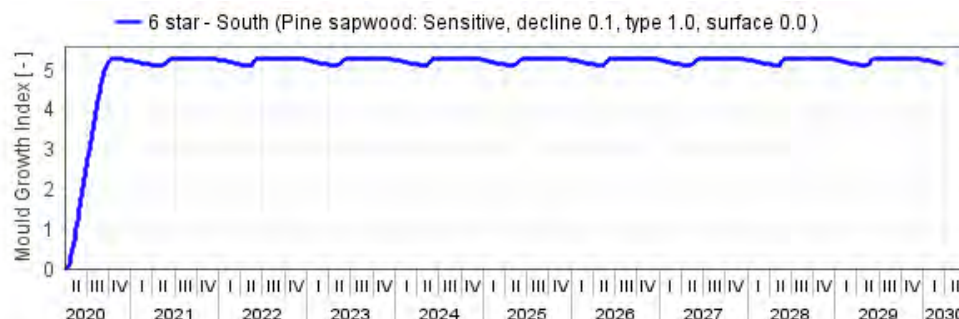


Figure 81: NatHERS CZ 64 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the second year. This wall system requires further investigation.

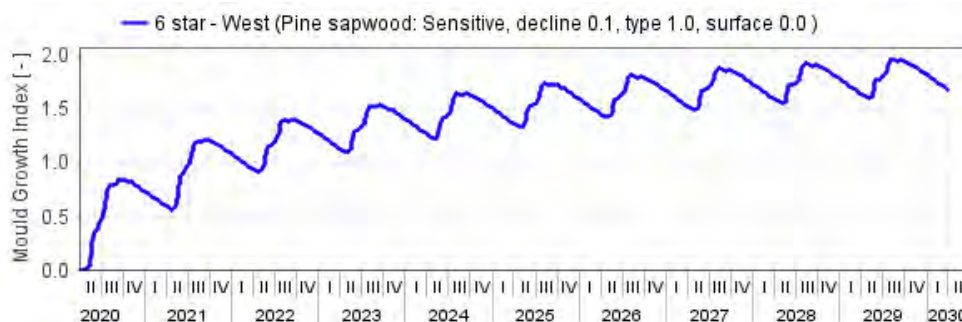


Figure 82: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

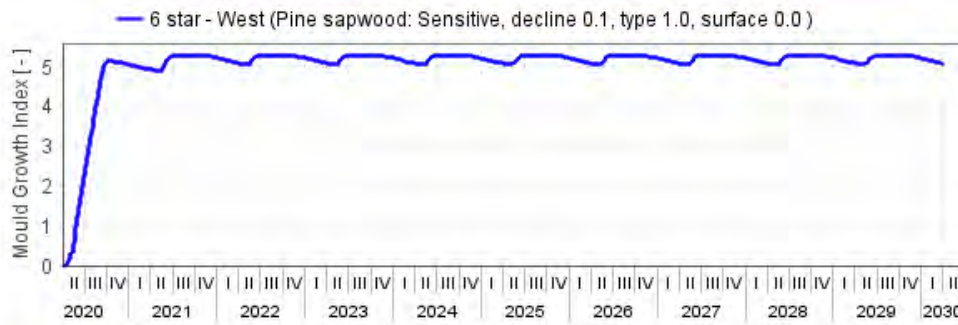


Figure 83: NatHERS CZ 64 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: Nil

Mould growth: Mould growth occurs within the insulated timber frame. However, the Mould Growth Index exceeds 1.0 in the fifth year. This wall system requires further investigation.

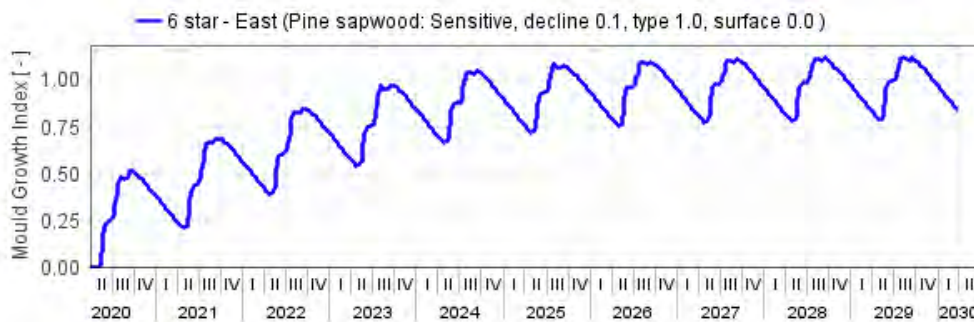


Figure 84: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

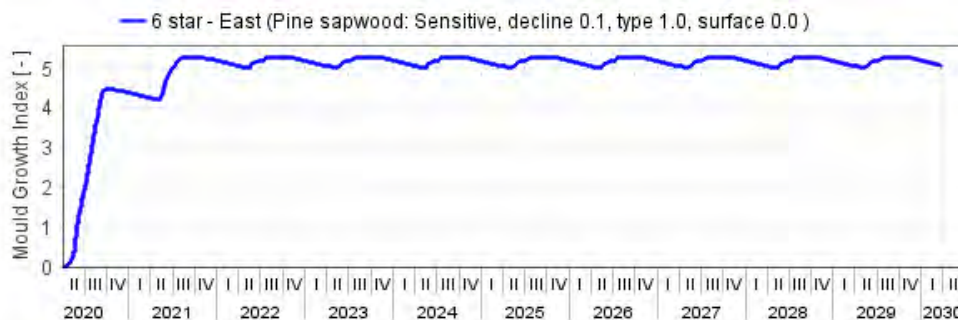


Figure 85: NatHERS CZ 64 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5

8. Climate zone 66

NCC CZ 4

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.

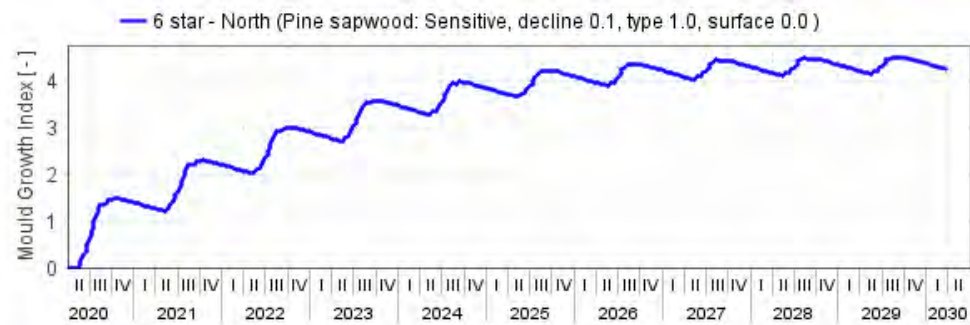


Figure 86: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

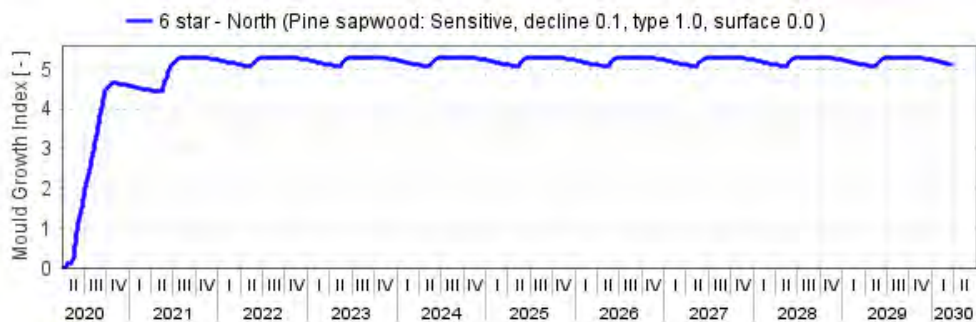


Figure 87: NatHERS CZ 66 / NCC CZ 4 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

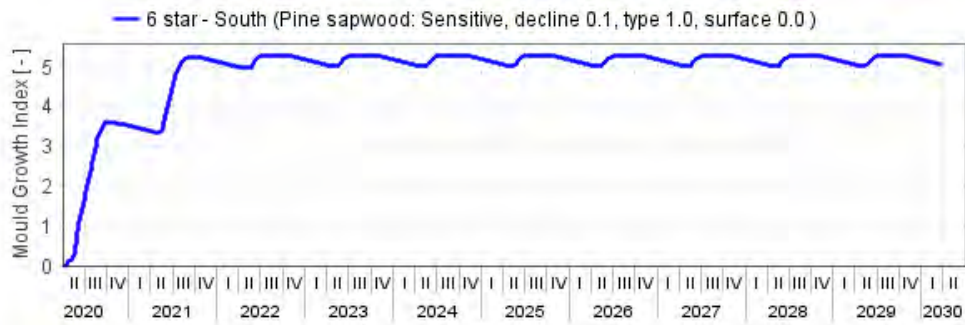


Figure 88: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

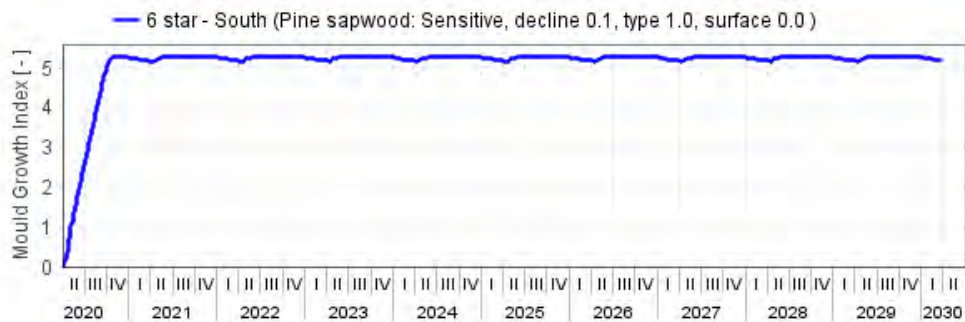


Figure 89: NatHERS CZ 66 / NCC CZ 4 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

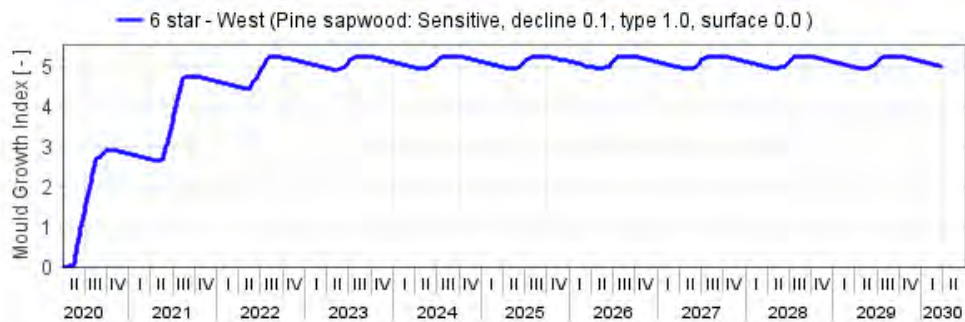


Figure 90: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

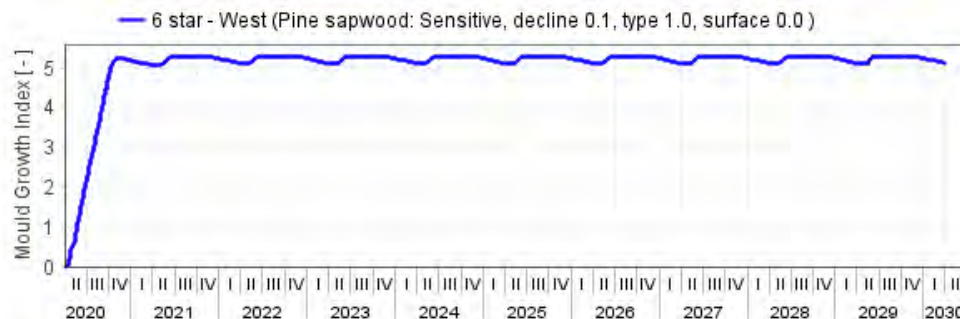


Figure 91: NatHERS CZ 66 / NCC CZ 4 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

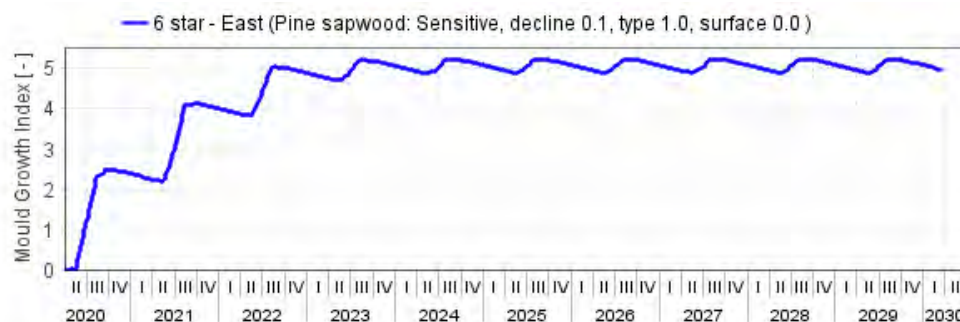
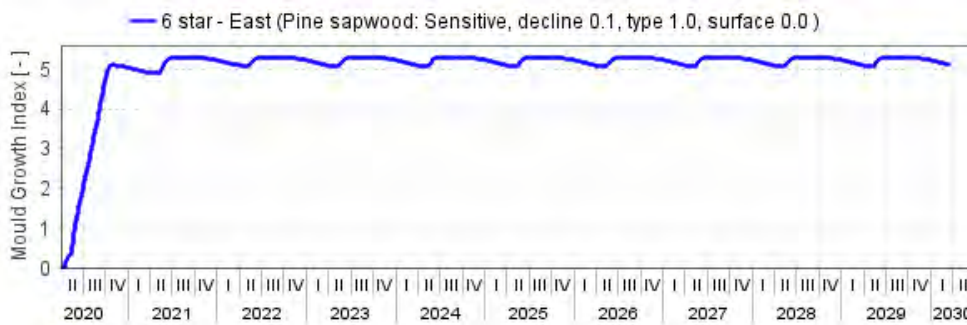


Figure 92: NatHERS CZ 66 / NCC CZ 4 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.



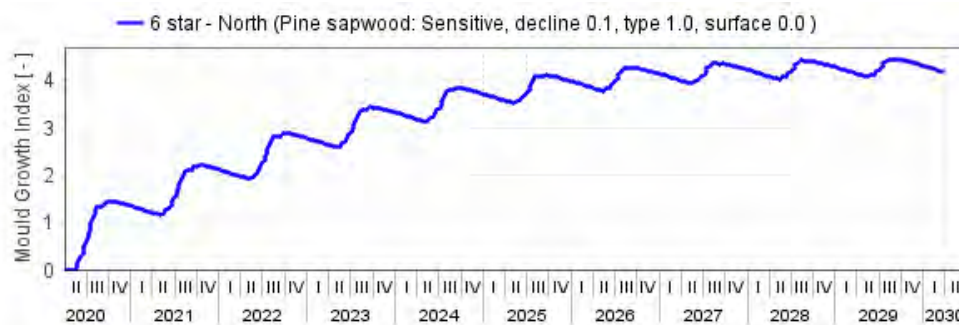
NCC CZ 6-7

North

Air change rate variable 10.0

Moisture accumulation: NIL

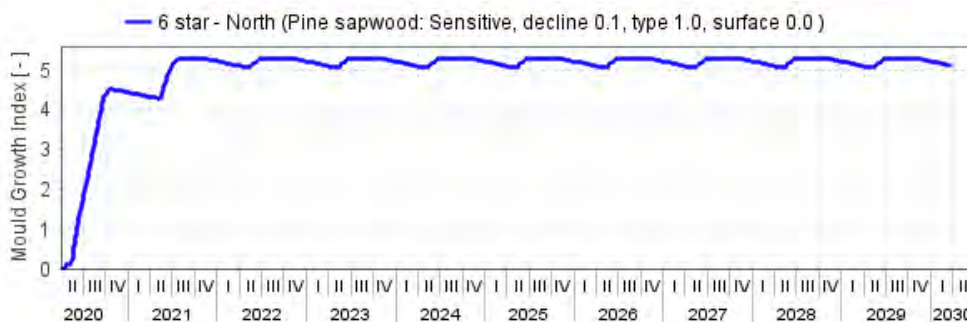
Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the fourth year.



Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.



South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

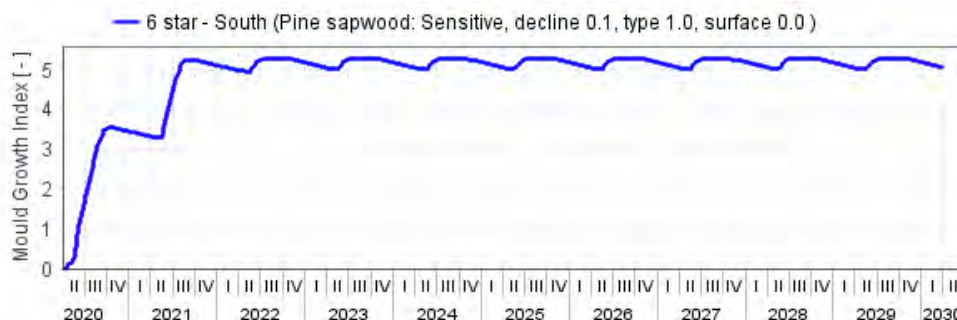


Figure 96: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

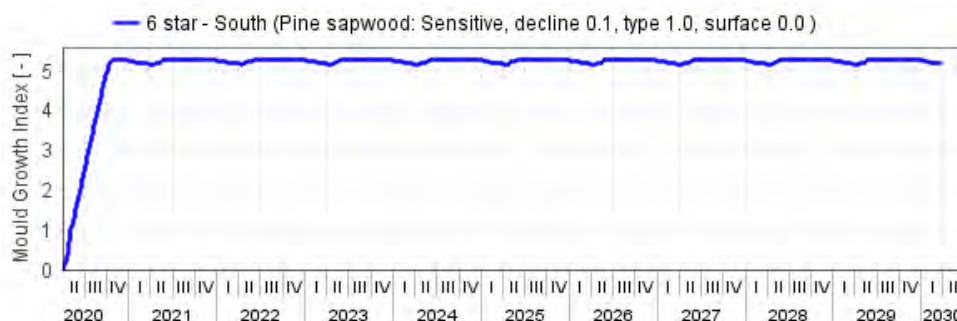


Figure 97: NatHERS CZ 66 / NCC CZ 6-7 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

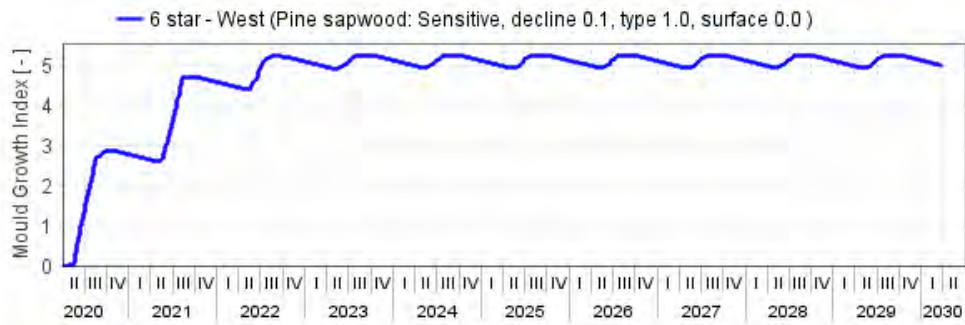


Figure 98: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

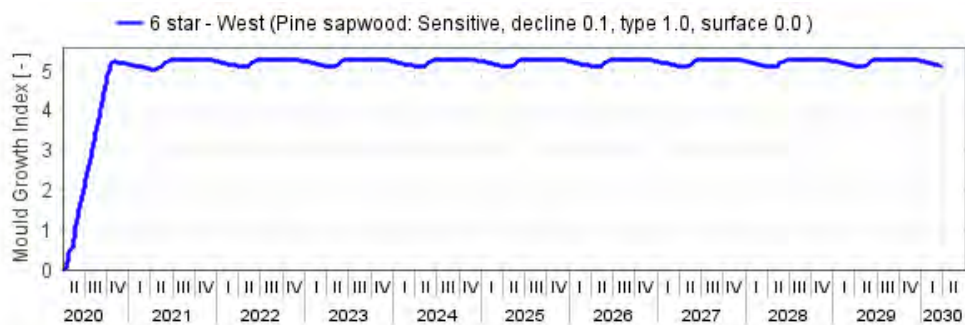


Figure 99: NatHERS CZ 66 / NCC CZ 6-7 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

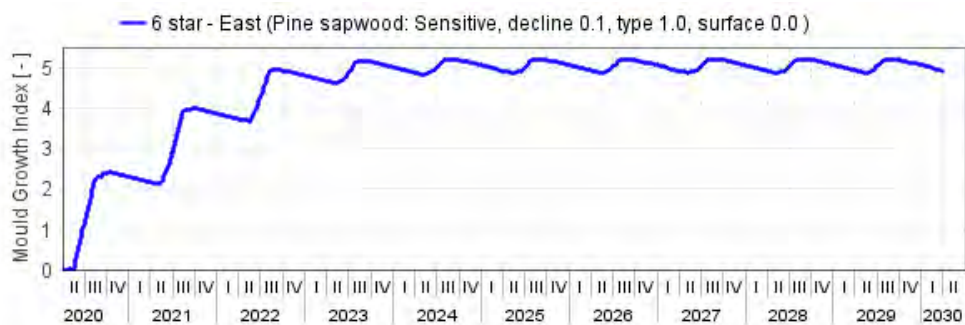


Figure 100: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

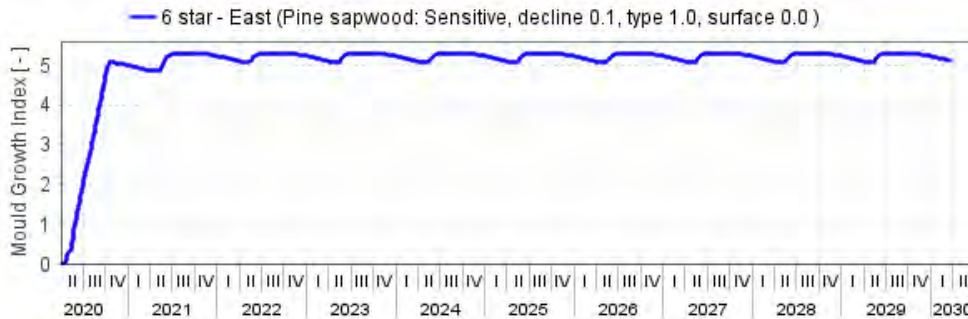


Figure 101: NatHERS CZ 66 / NCC CZ 6-7 eastern orientation - mould growth within insulated timber frame ACR 5

NCC CZ 8

North

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the sixth year.

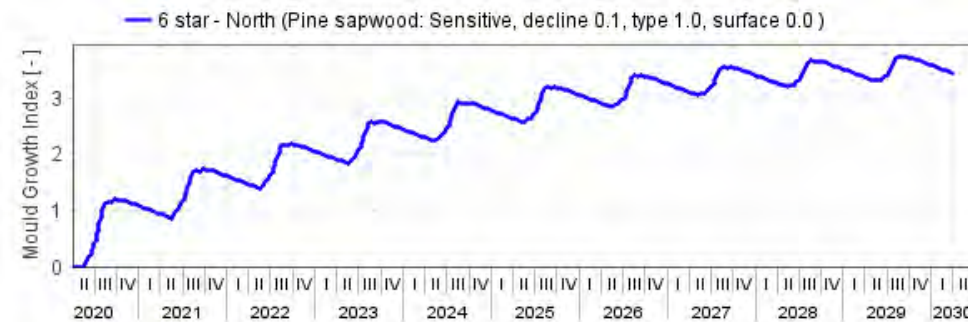


Figure 102: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

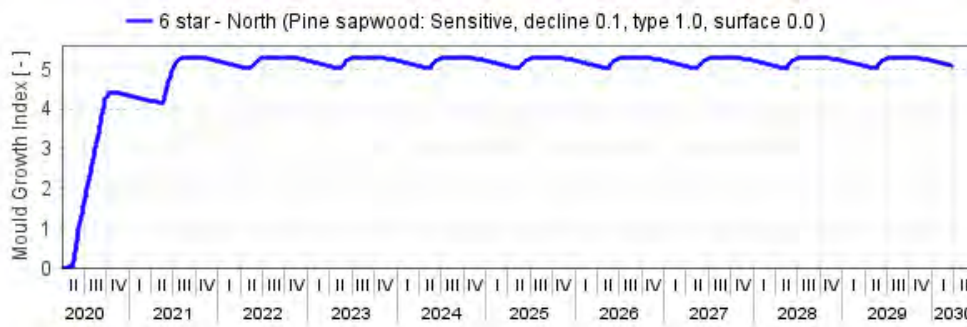


Figure 103: NatHERS CZ 66 / NCC CZ 8 northern orientation - mould growth within insulated timber frame ACR 5

South

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

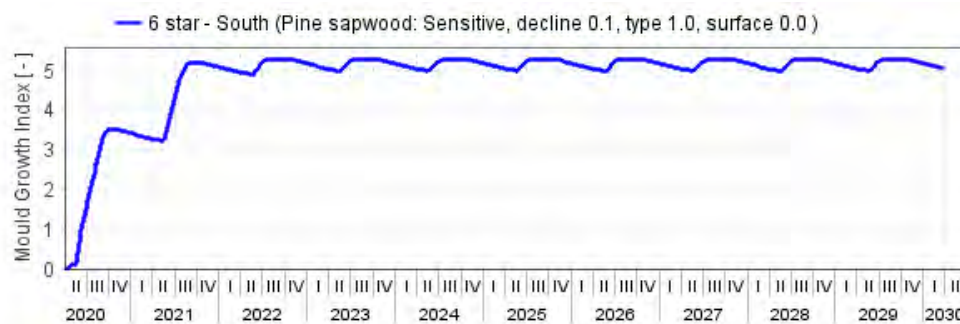


Figure 104: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

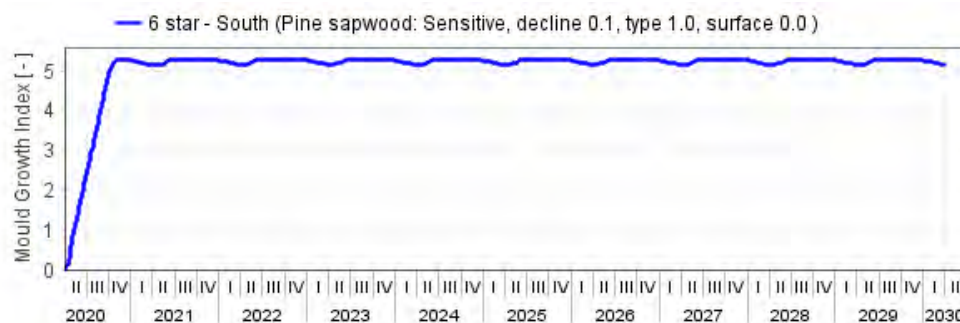


Figure 105: NatHERS CZ 66 / NCC CZ 8 southern orientation - mould growth within insulated timber frame ACR 5

West

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

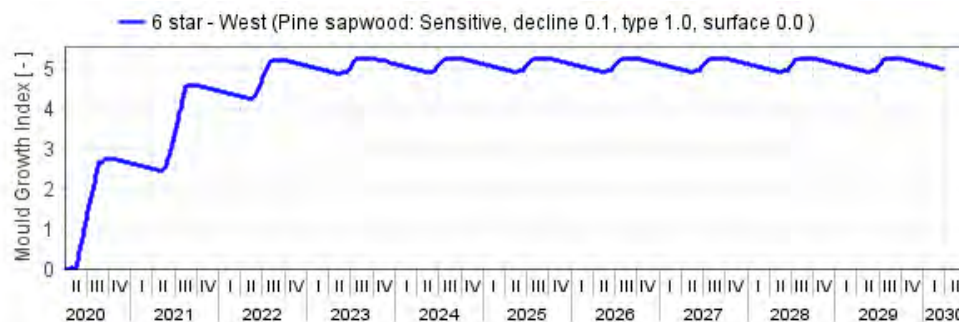


Figure 106: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

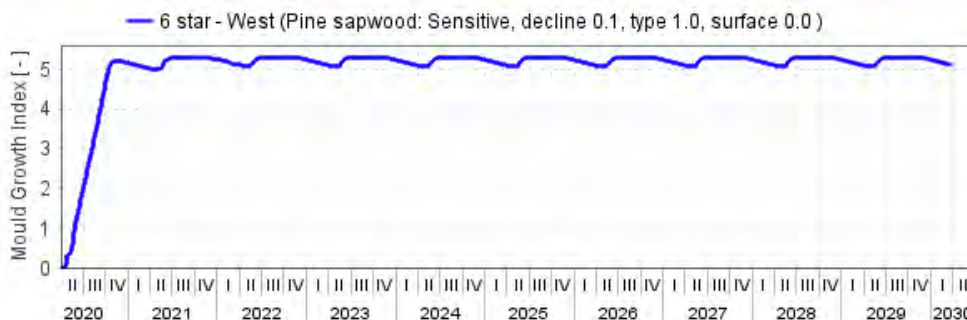


Figure 107: NatHERS CZ 66 / NCC CZ 8 western orientation - mould growth within insulated timber frame ACR 5

East

Air change rate variable 10.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the second year.

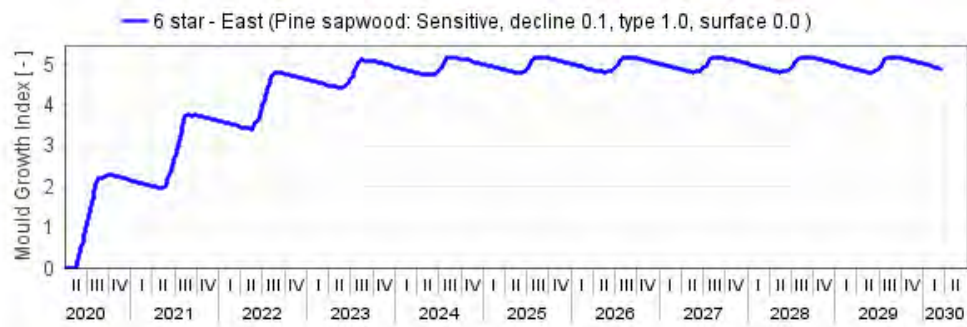


Figure 108: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 10

Air Change rate variable 5.0

Moisture accumulation: NIL

Mould growth: Mould growth occurs within the insulated timber frame, with a Mould Growth Index that exceeds 3.0 in the first year.

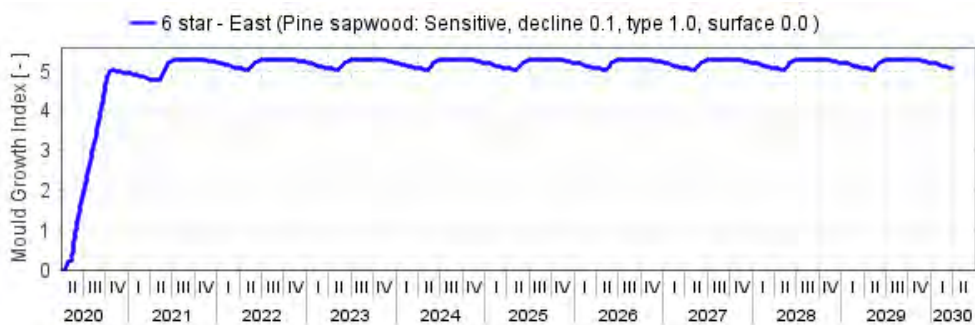


Figure 109: NatHERS CZ 66 / NCC CZ 8 eastern orientation - mould growth within insulated timber frame ACR 5