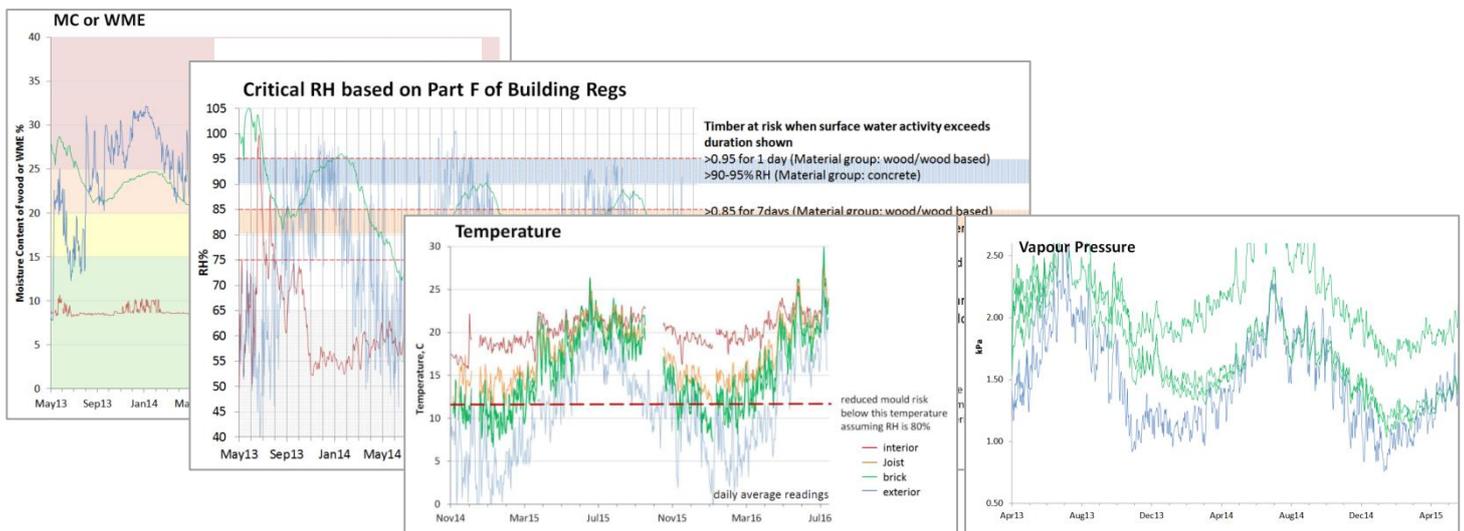The AECB has expertise in installing and troubleshooting sensors, interpreting data and producing graphs. Sensors report their figures automatically via a web based service which removes the need for site visits.

Our software imports data from the website and allows us to quickly specify the date range, sensors and colour of lines. These graph definitions are saved and can be repeated with new data.


Our main graphs (above) are moisture content (also known as Wood Moisture Equivalent, WME), RH, temperature and vapour pressure.

Left: Our software defines graphs flexibly and easily.

We also produce tables to show results for a snapshot in time. This helps interpretation by, for example, showing how mould risk, RH and WME are all related.

	Timber	WME	RH	T	Mould	VP
S13 GF MID AMBIENT (chest height)			63	17	0	1.23
S11+2900mm FF joist end		14	72	13	0	1.07
S12 GF BASE AMBIENT			no	data		
S10+2900mm FF WALL BETWEEN JOIST		11	70	13	0	1.06
S09+1500mm GFwall mid height behind IWI		19	80	13	8	1.17
S08+150mm GFwall base in IWI		34	89	11	1955	1.15
S07+100mm GFwall between joists		27	99	10	4912	1.23
S06+00mm GF Joist End		24	96	11	3817	1.23
S05-20mm BASEMENT WALL JOIST LEVEL into wall plate		27	95	11	3734	1.25
S04a-115mm Basement wall below wall plate		26	98	11	4610	1.30
S04+00mm BASEMENT JOIST END UNDERSIDE		19	94	12	3234	1.28
S03-390mm BASEMENT MID HEIGHT		31	99	11	5463	1.31
S02-765mm Basement base		32	105	11	6197	1.37
S01+00mm Basement Ambient Central		17	84	13	1140	1.28
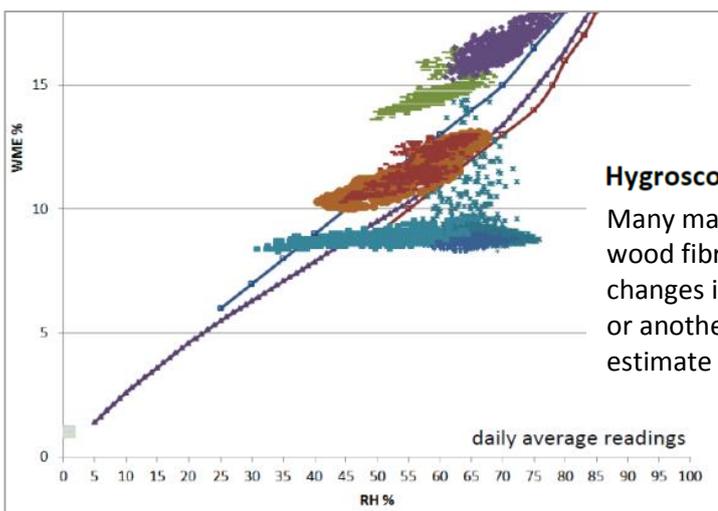
Hygroscopic Effects

Many materials adsorb moisture in a building: timber, cellulose wood fibre and brick. The moisture content in these materials changes in a predictable way, often similar to standard materials or another of our case studies. Monitoring data helps us estimate if the wall is likely to meet safe moisture levels.

Mould Risk

Mould is hard to predict, therefore we compare 2 or 3 criteria for mould according to the situation. They often agree, that doesn't mean that mould is certain, but that the potential risk of it is high. In the tables below red figures indicate a potential problem.

Criteria 1: Johansson et al

RH at sensor position

|	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Timber	70	73	83	77	73	88	75	72	79	57		88	75	72	79	57
Masonry High			74	59			0					83				
Masonry Low	77	0	92	84	87	78	83	94	97	94	93	92				

colour grading:
green=dry, yellow, orange and red= more humid

Criteria 2: Sedlbauers Calculation

Mould Risk at sensor position

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Timber	0	0	220	11	0	785	0	0	1	0		785	0	0	1	0
Masonry High			1	0			0					23				
Masonry Low	0	0	548	34	119	0	3	537	975	842	608	699				

colour grading:
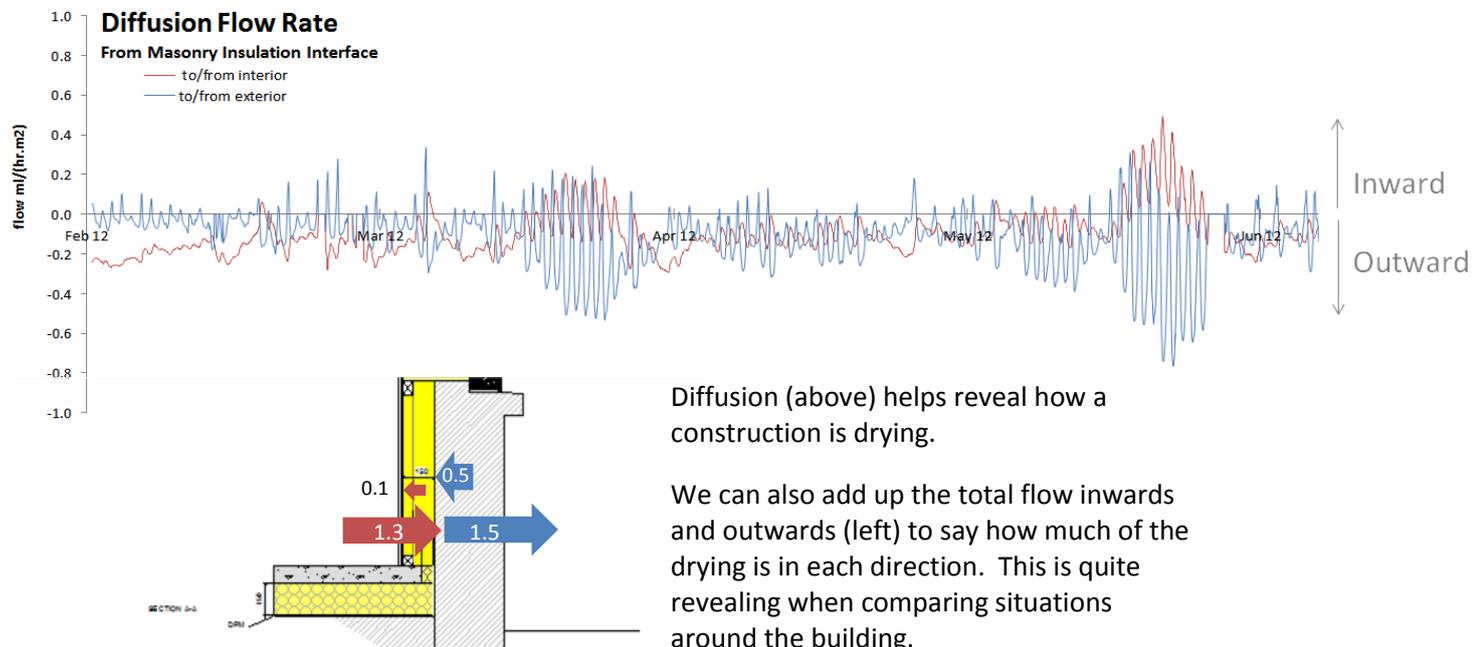green=low risk, yellow, orange and red= higher mould risk

Criteria 3: f$_{Rsi}$ Risk Factor
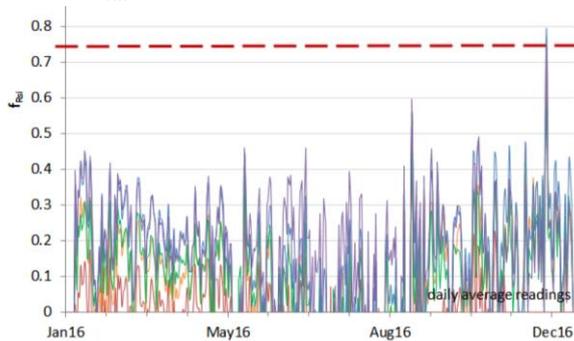
mould risk below this line

If there are thermal bridges or air is allowed to get behind insulation materials we can also calculate an f$_{Rsi}$ Risk Factor from the readings.

Diffusion

Diffusion Flow Rate
From Masonry Insulation Interface
—— to/from interior
—— to/from exterior

Inward

Outward

Diffusion (above) helps reveal how a construction is drying.

We can also add up the total flow inwards and outwards (left) to say how much of the drying is in each direction. This is quite revealing when comparing situations around the building.

AECB building knowledge

AECB Carbon Lite