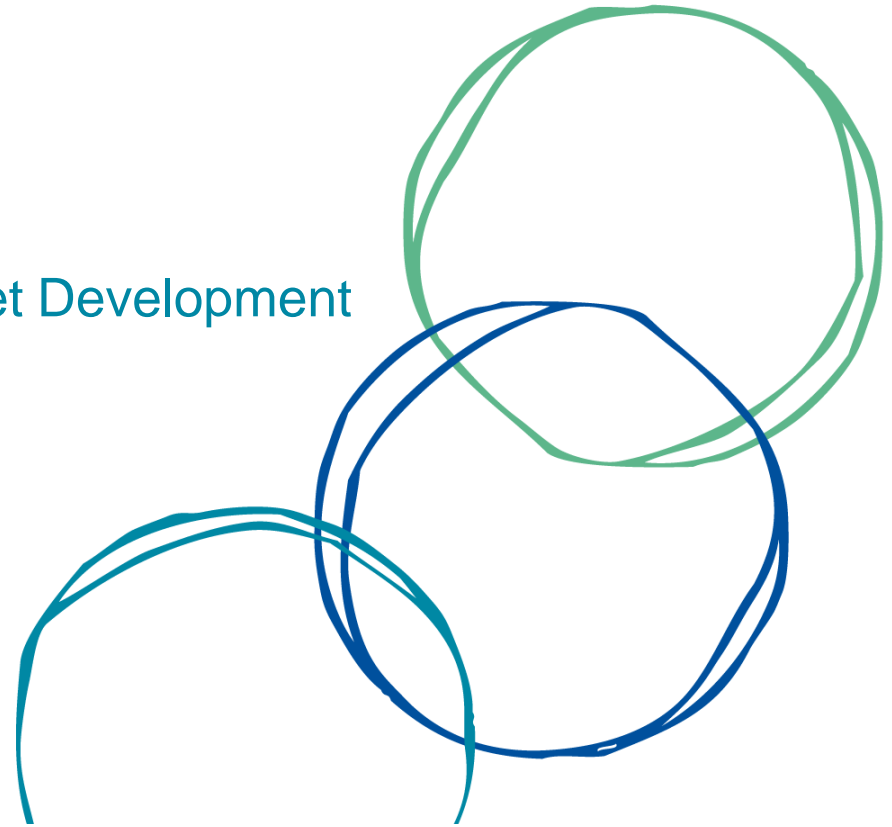


Creating Demand for High Performance Housing



Ray Thompson
General Manager – Innovation & Market Development
CSR Building Products

13 November 2014



CSR is engaged in 4 CRC projects:

1. CSR House
2. Comfort Index
3. Renewable Heating and Cooling
4. EnergyFit Homes

CSR HOUSE

BUILDING RESEARCH CENTRE

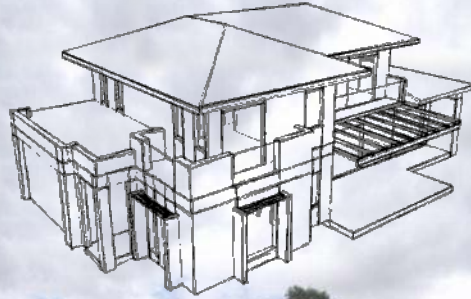


Knowledge you can build on



HOW DO WE ACHIEVE BETTER BUILDING PERFORMANCE?

Design



Build



Live



FEATURES OF A COMFORTABLE HOME

IMPROVED AIR QUALITY



THERMALLY STABLE



REDUCED DRAFTS



LIVEABLE HOMES ARE HEALTHY AND FEEL GREAT

GREAT ACOUSTICS



IMPROVED DAMP RESISTANCE



NATURAL DAYLIGHT



LOWER OPERATING COSTS



CSR

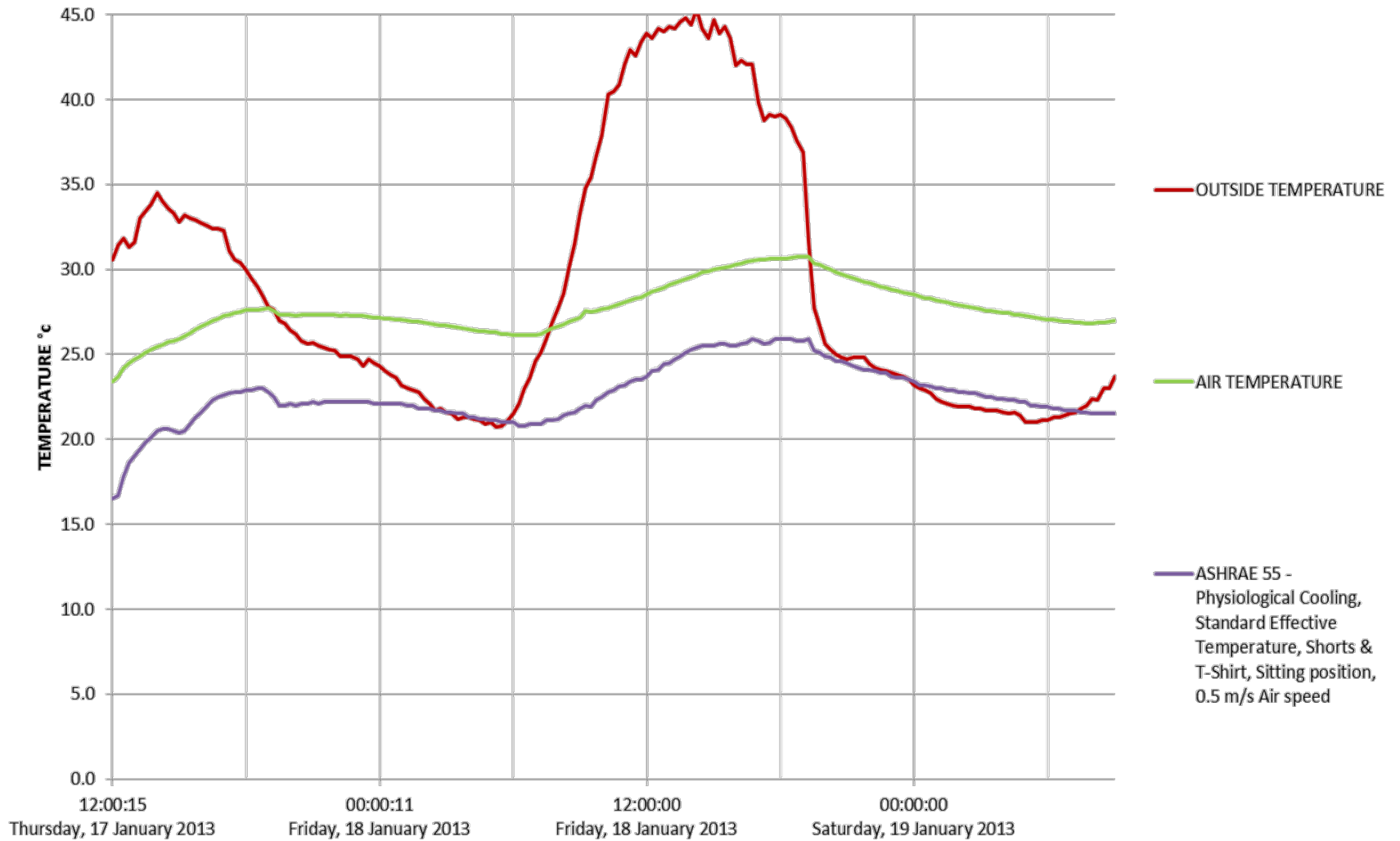
WHAT MAKES A HOME MORE COMFORTABLE?



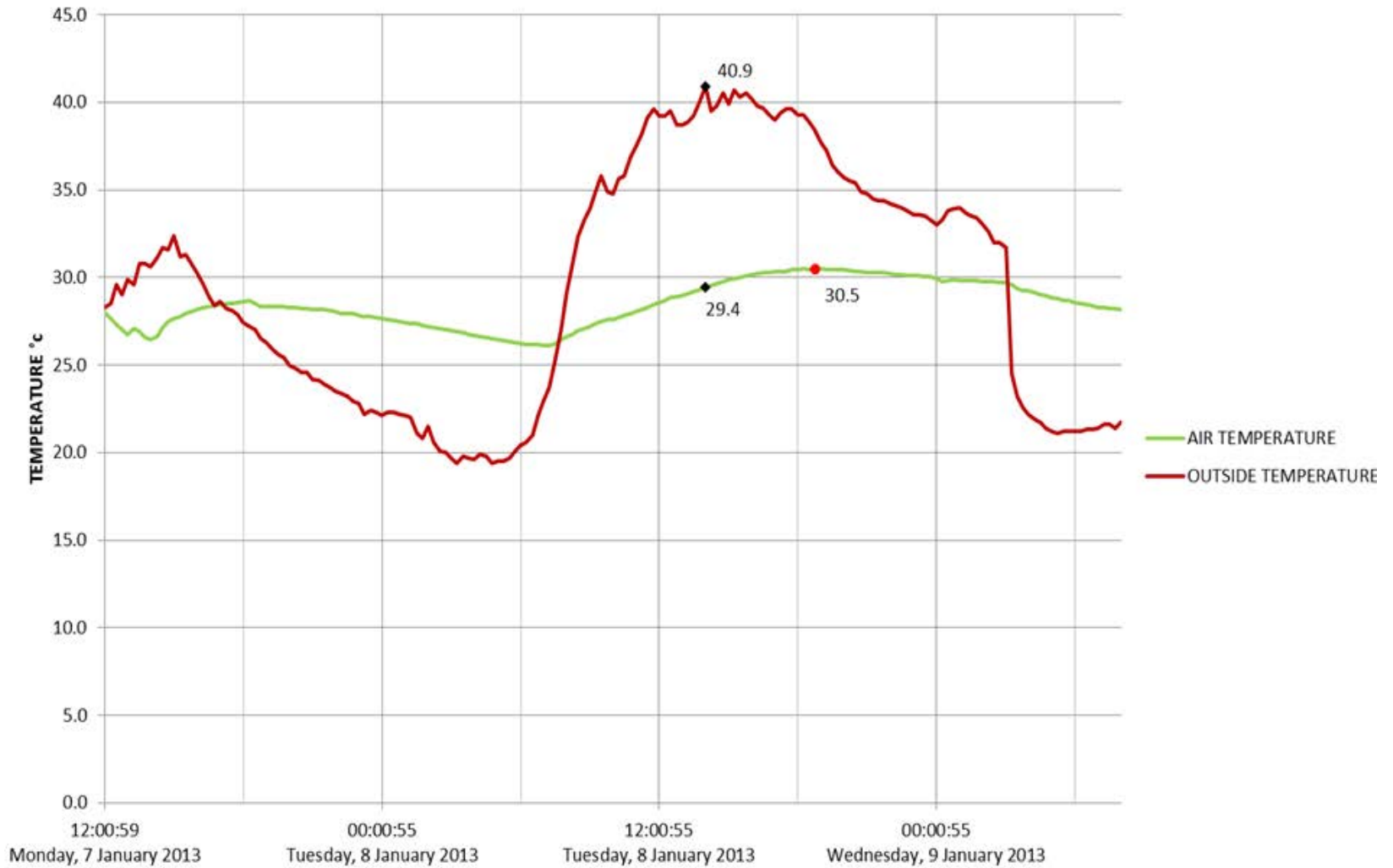
CSR House Learnings....so far

- Energy efficient homes **FEEL** better
- Air tightness is a **hot** climate issue as well
- We rarely need **A/C** in high performing homes
- Managing **ventilation** is really important – Know your cavity!
- Glazing awareness is extremely low
- Most houses in Australia are **poorly built**
- Most **Australians** do not realise this

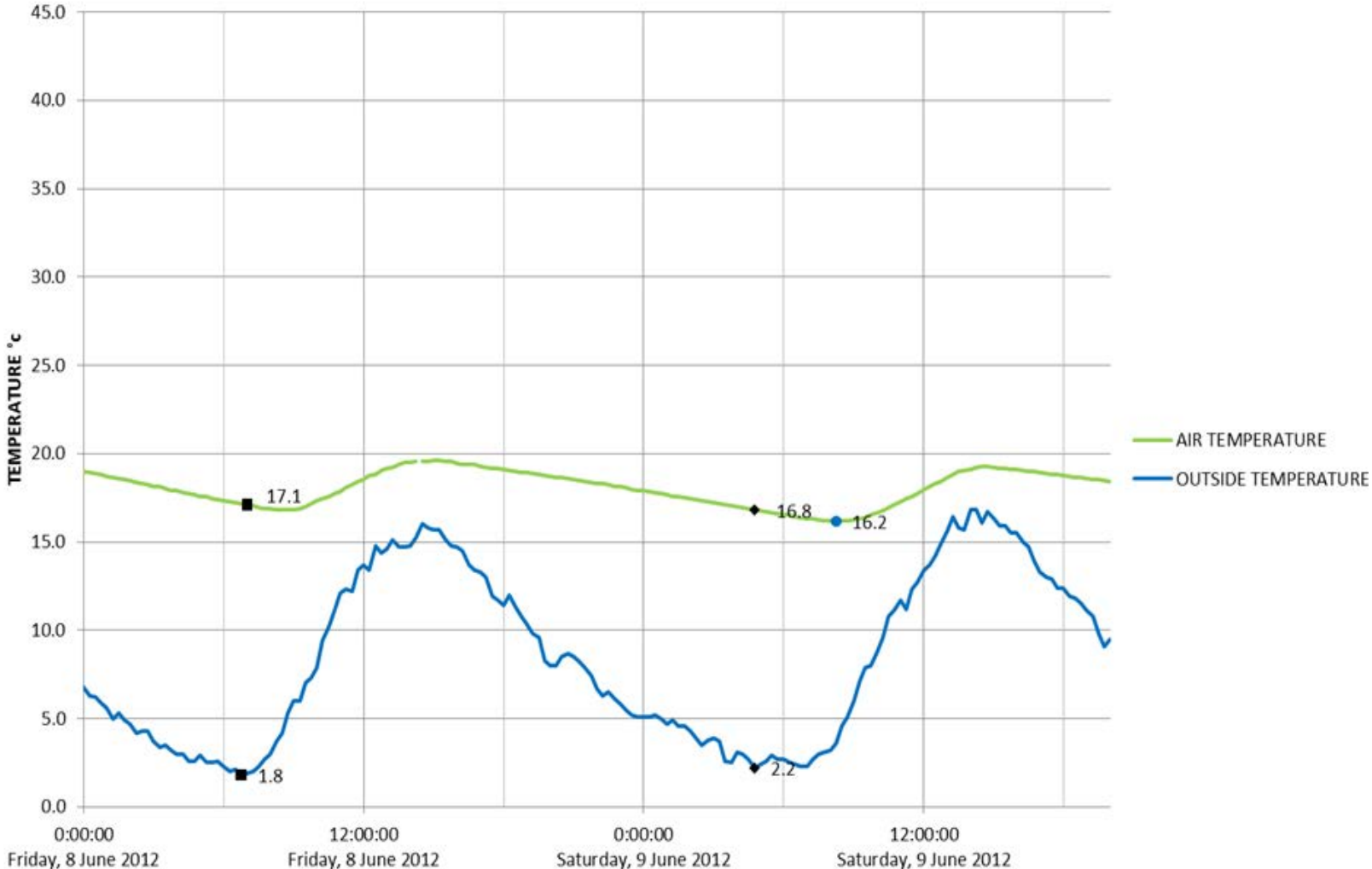
CSR House



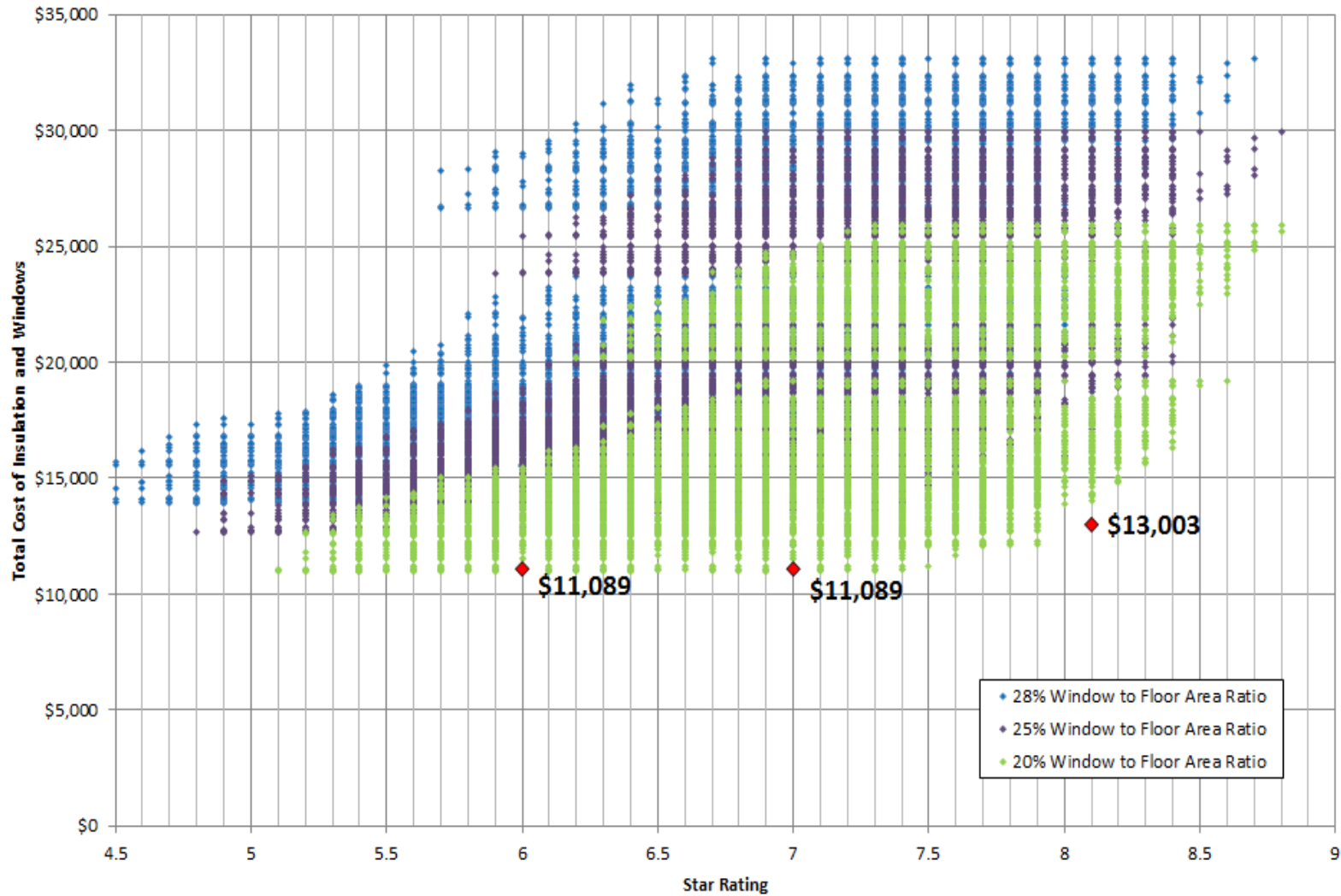
Summer Conditions



Winter Conditions



CSR House – Design Optimisation



CSR Odyssey



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CSR Odyssey

CSR House – Odyssey “Smoke” Test stills (Test 1) Friday 4th October 2013



CSR House – Kitchen T1, Odyssey on 00:00



CSR House – Kitchen T1, Odyssey on +03:55



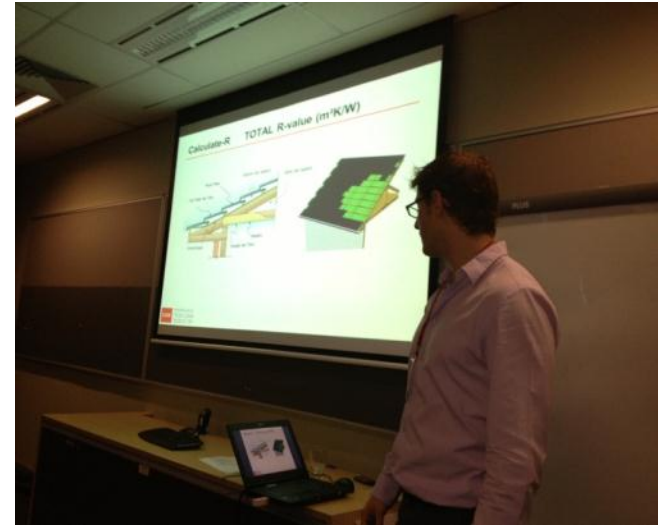
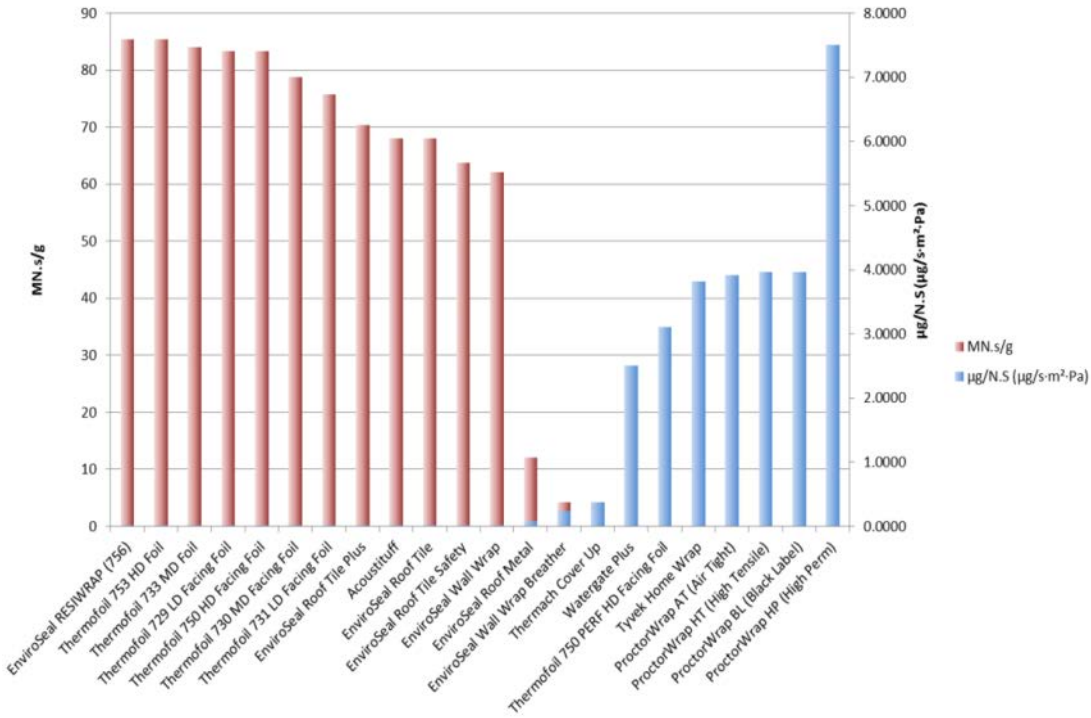
CSR House – Kitchen T1, Odyssey on +07:45



CSR House – Kitchen T1, Odyssey on +11:35

Moisture

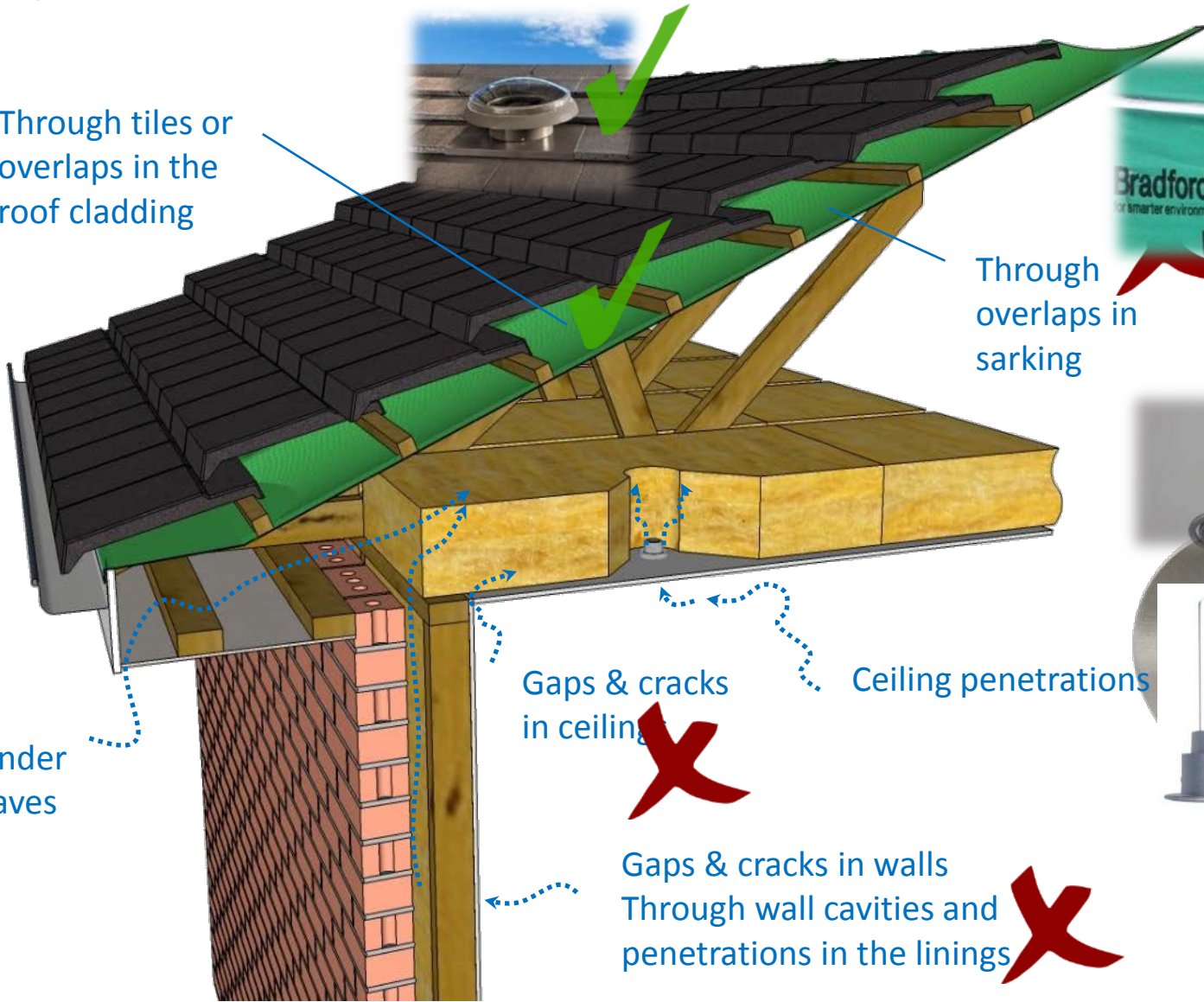
Vapour Resistance Vs Permeability



Moisture - Air



Through tiles or overlaps in the roof cladding



Through overlaps in sarking



Under Eaves

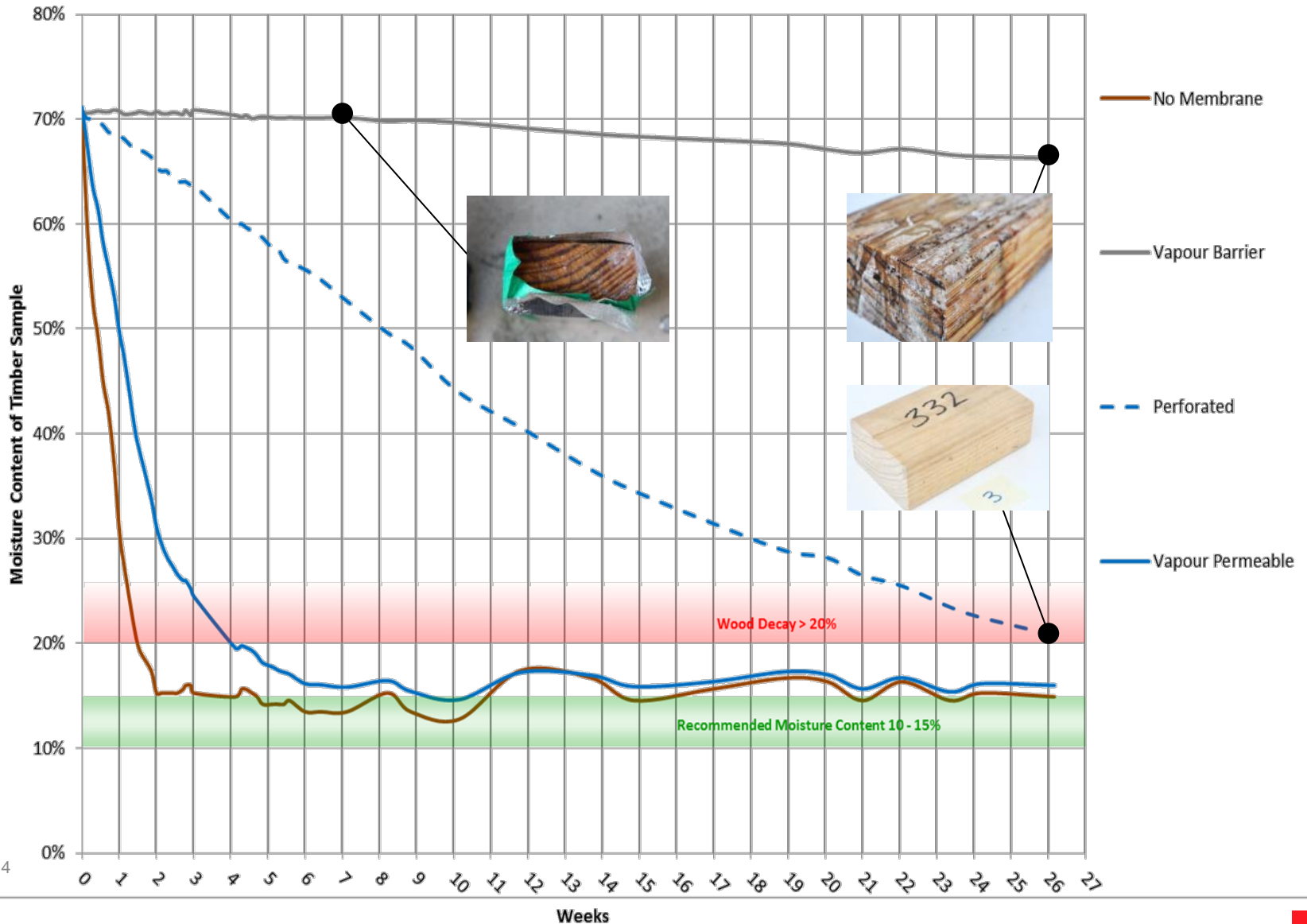
Gaps & cracks in ceiling

Ceiling penetrations

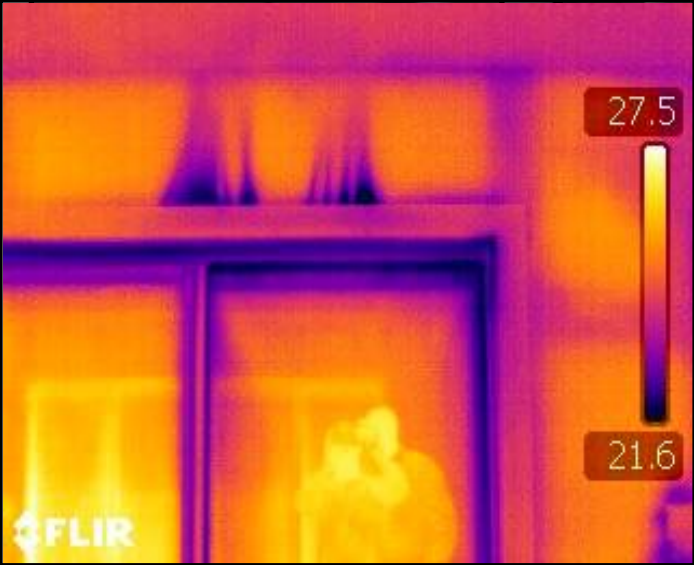
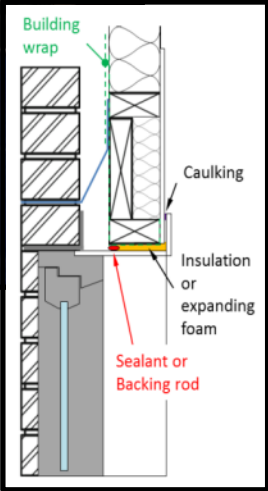
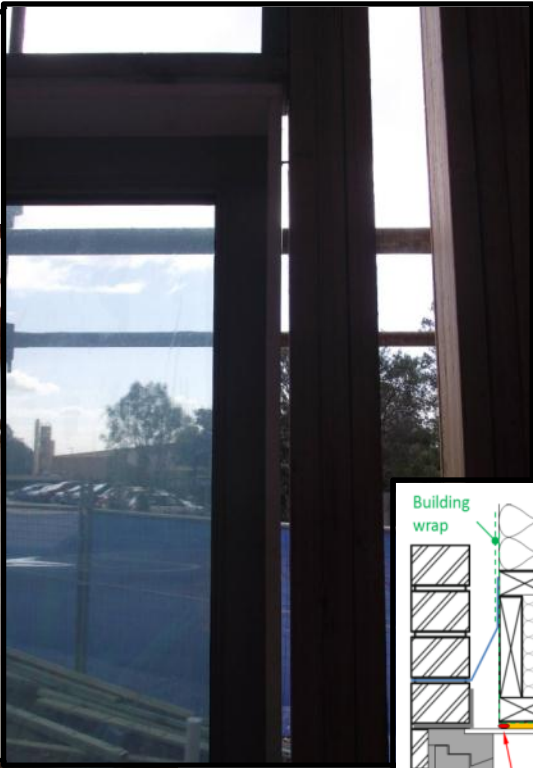
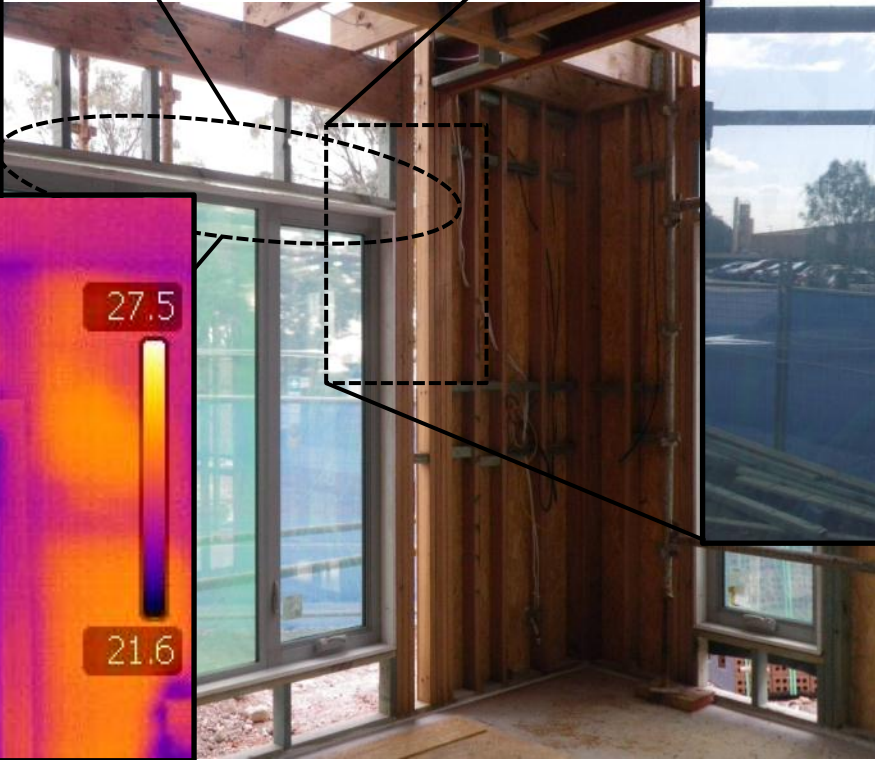
Gaps & cracks in walls
Through wall cavities and penetrations in the linings



Resilience to Moisture Damage



Air Infiltration



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CRC - Co-heating test & daylight



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BCA Minimum Compliance



~14% Window:Floor Ratio



~21% Window:Floor Ratio



~24% Window:Floor Ratio



~39% Window:Floor Ratio



418Lux



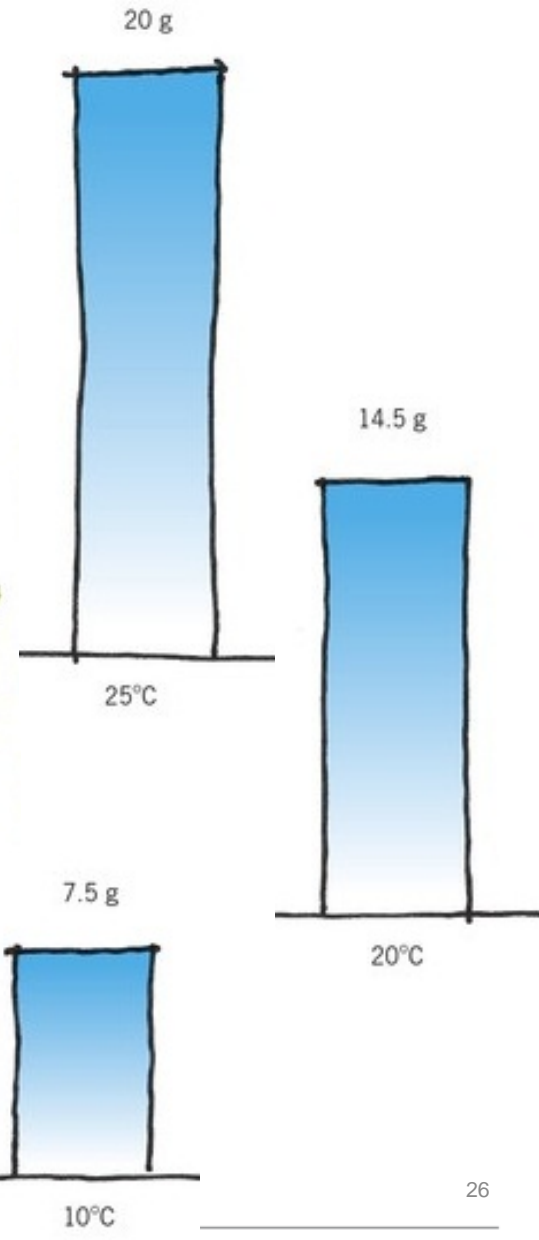
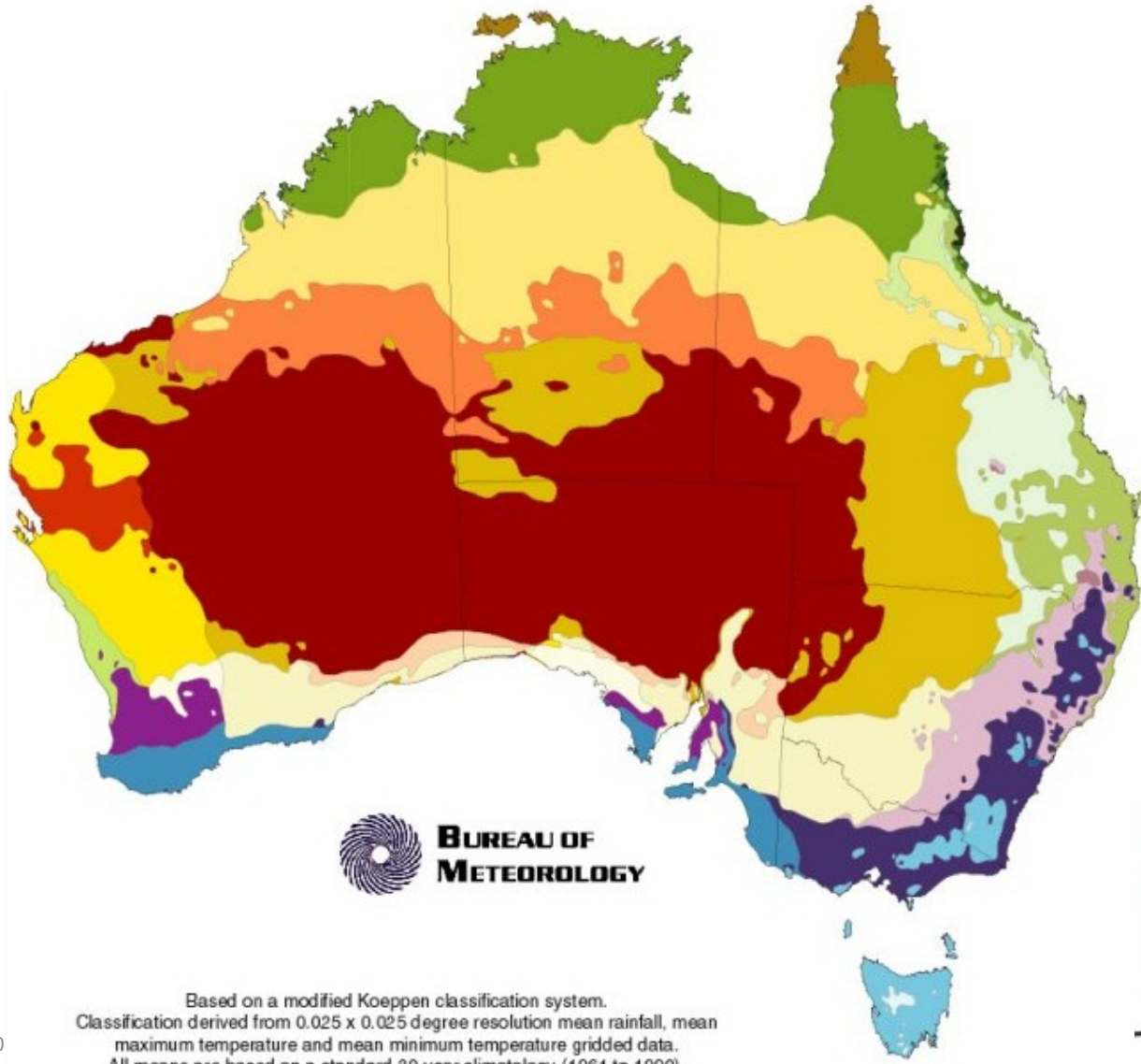
Validation and System Development



11/19/2014

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Climate

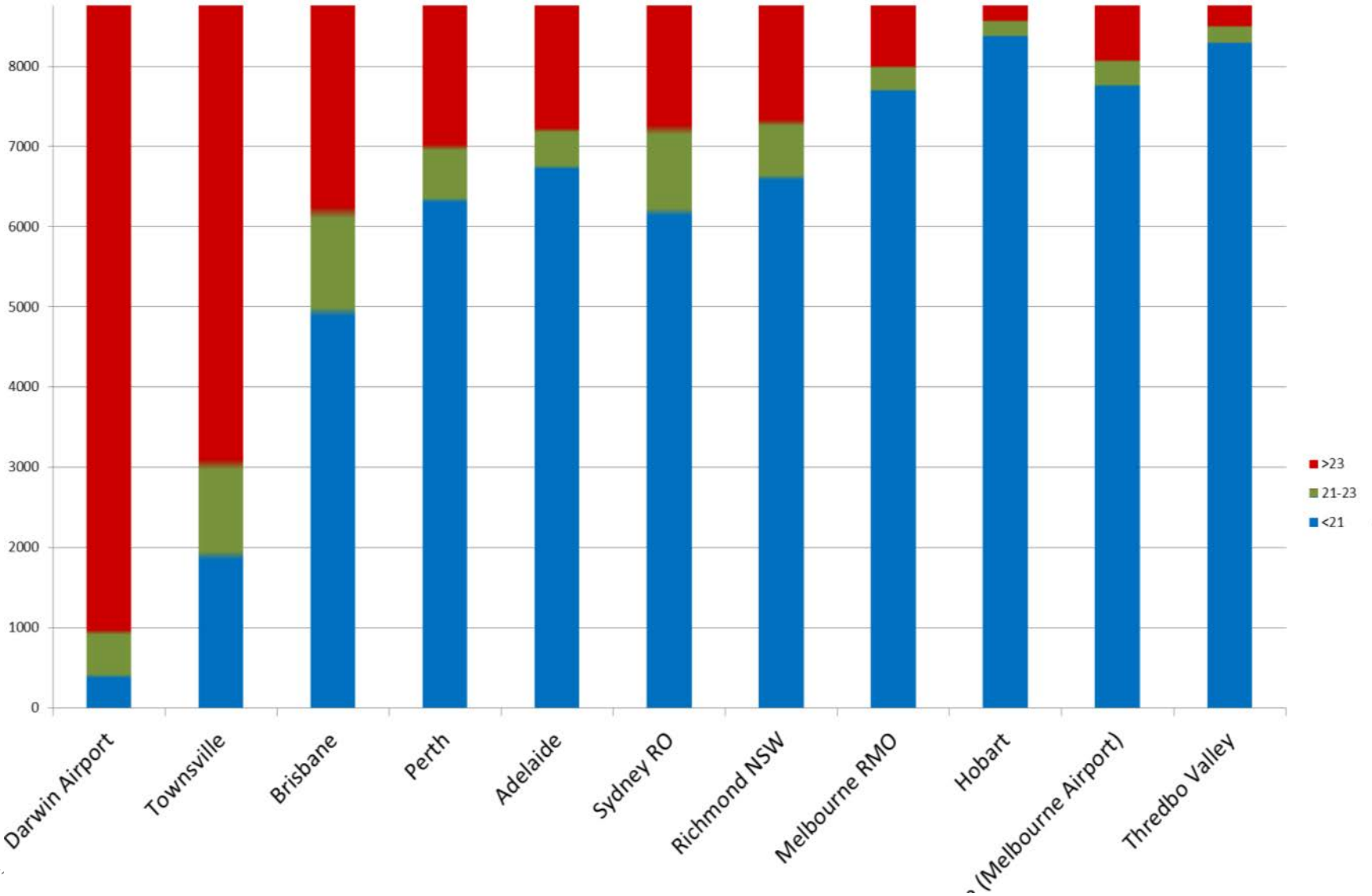


Based on a modified Koeppen classification system.
Classification derived from 0.025 x 0.025 degree resolution mean rainfall, mean maximum temperature and mean minimum temperature gridded data.
All means are based on a standard 30-year climatology (1961 to 1990).

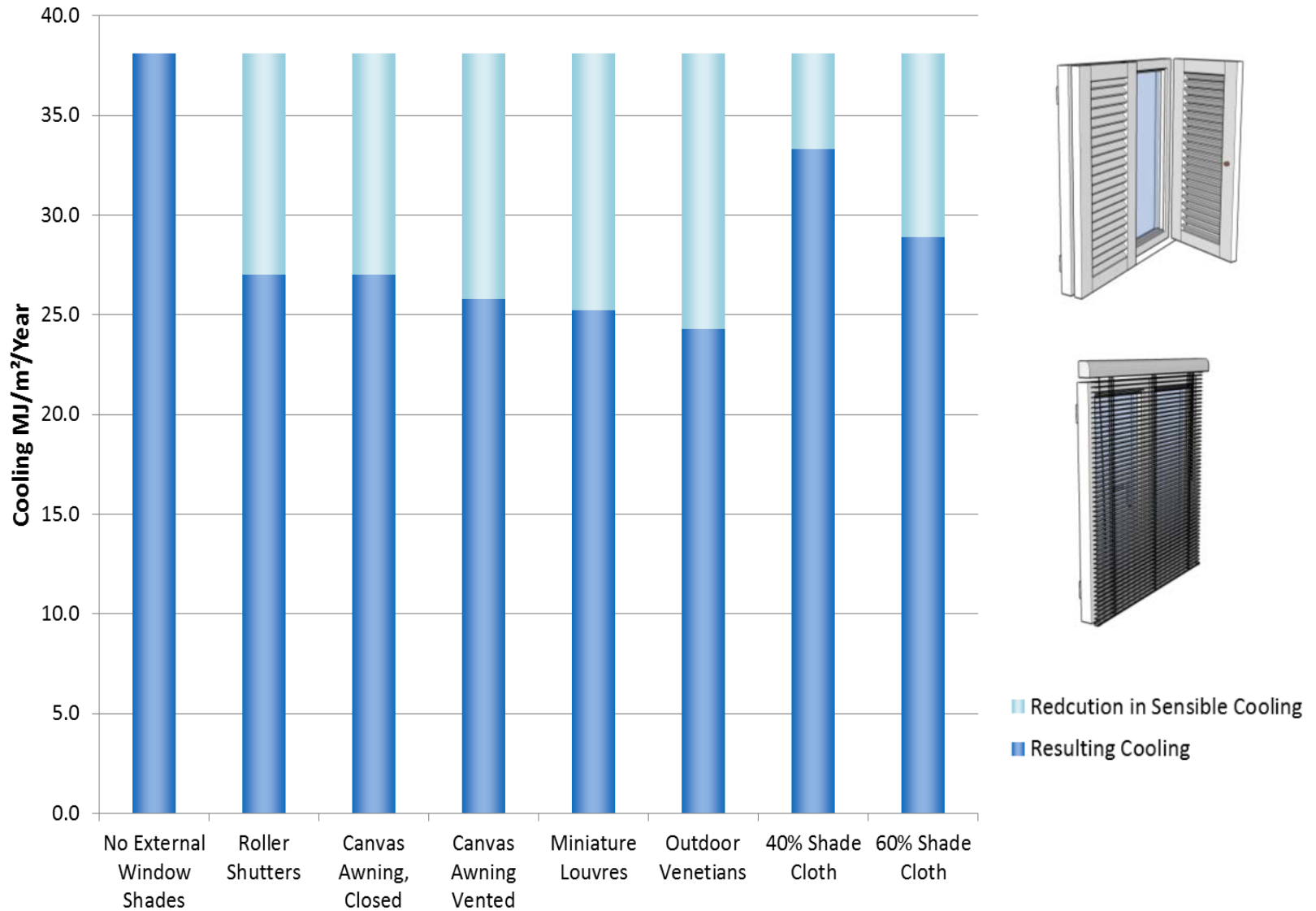
11/19/20

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Climate – Comfort 22



Heat Control - Shading



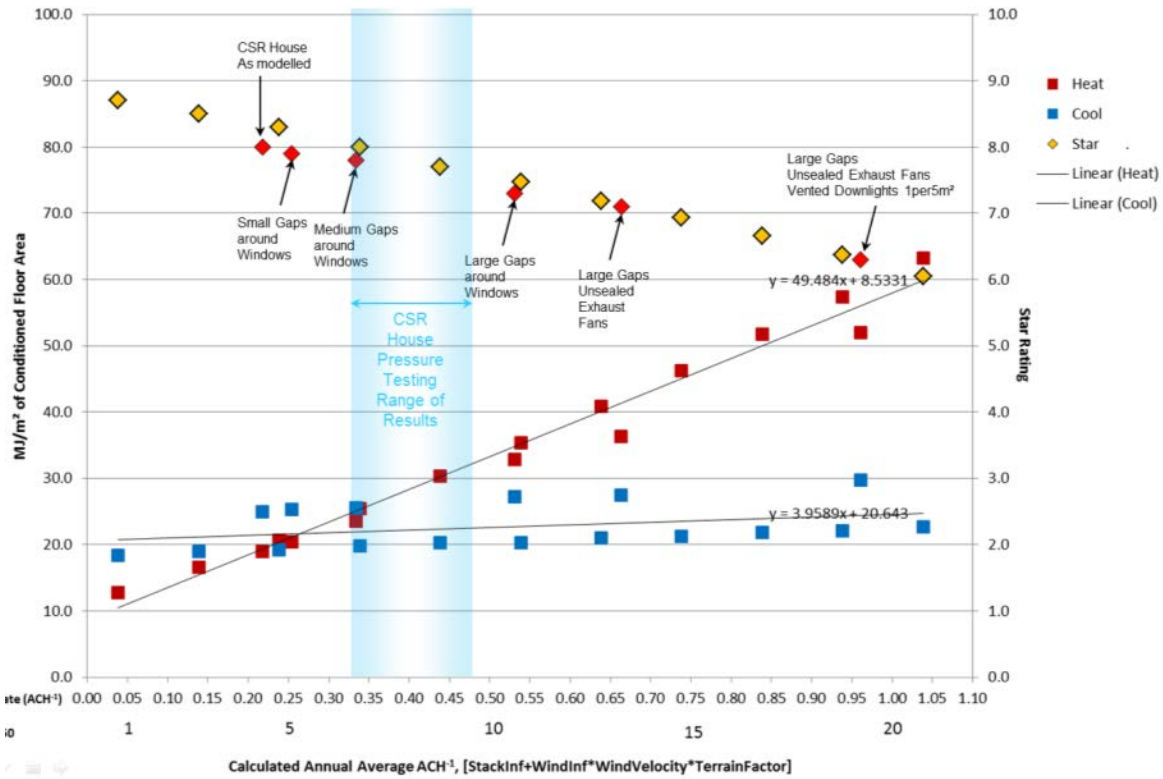
iQueenslander – counter intuitive!



11/19/2014

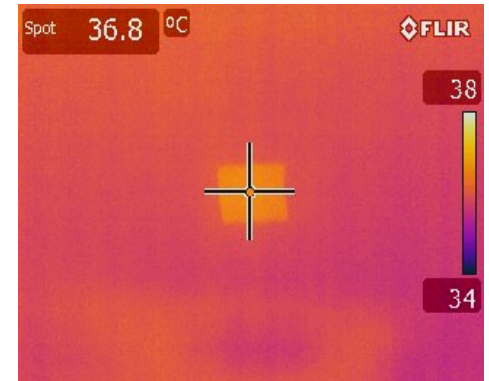
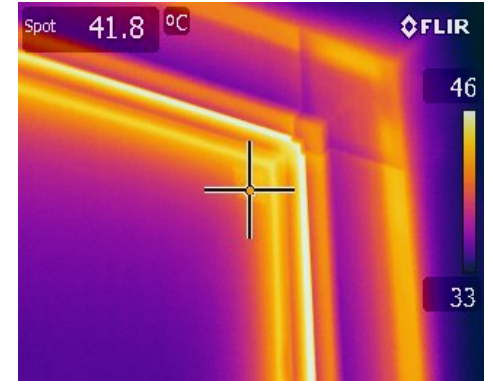
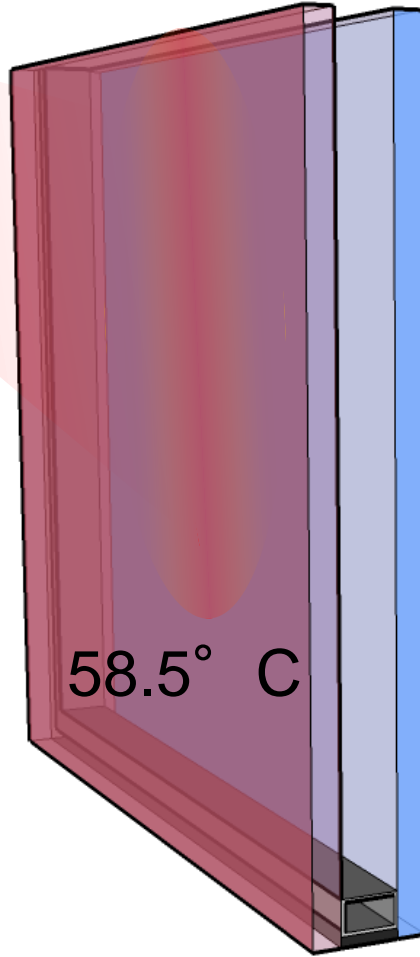
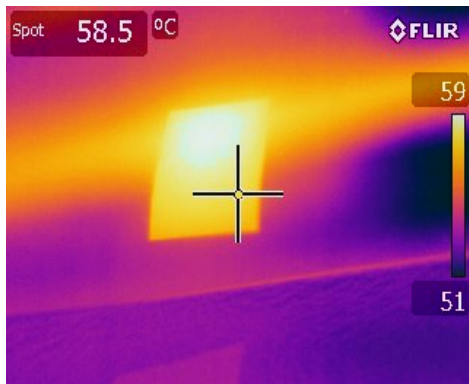
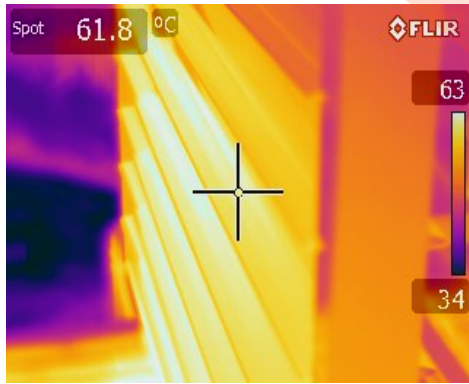
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iQueenslander – Is it Counter Intuitive?



Assumptions in AccuRate may not be delivered on site!!

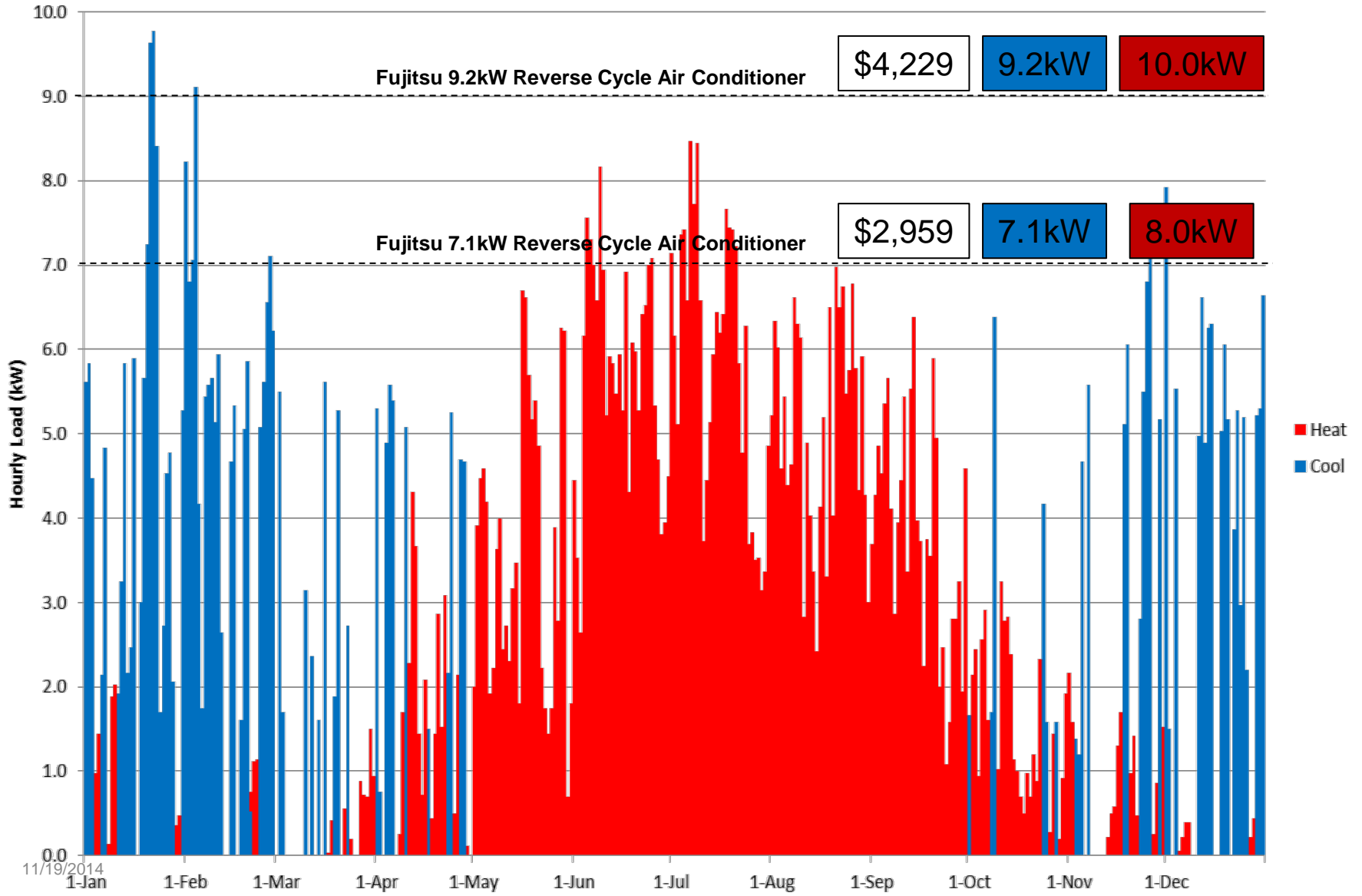
Heat Control - Windows



Heat Control - Insulation

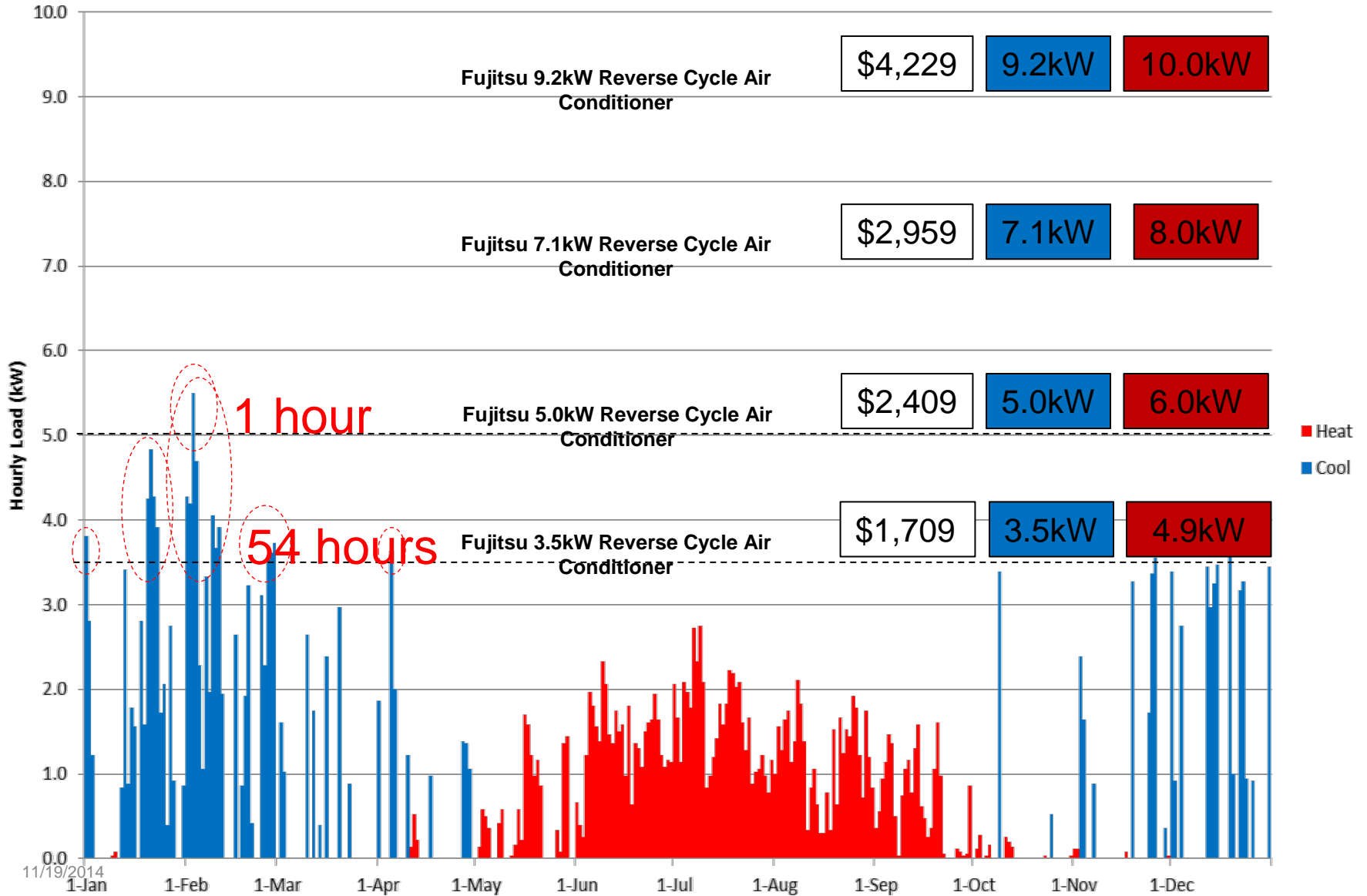


Uninsulated & Unsealed



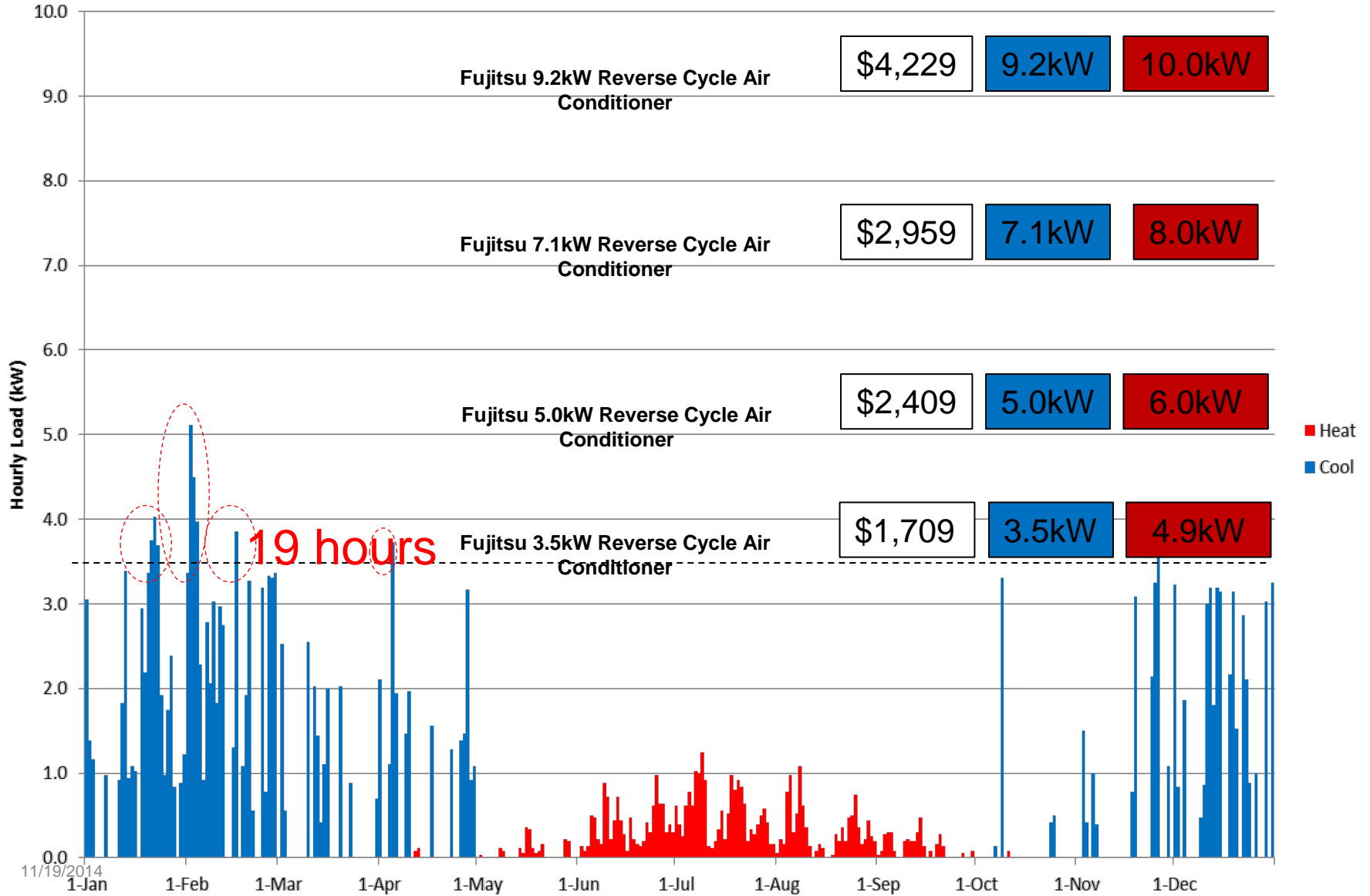
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8 Star House – Unsealed



11/19/2014

8 Star House with Air Control



Thermal Mass

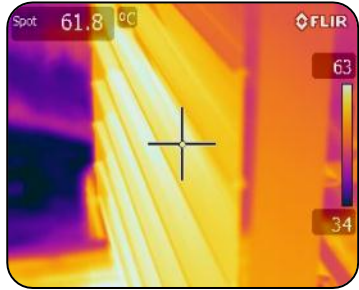


11/19/2014

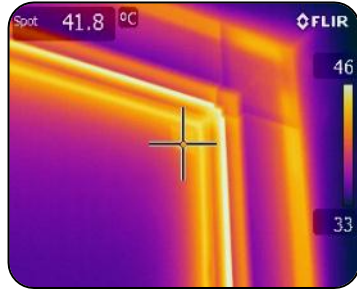
36

Engineered Systems

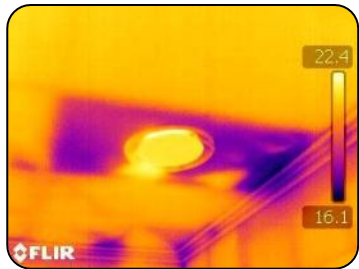
Heat



Shading



Windows

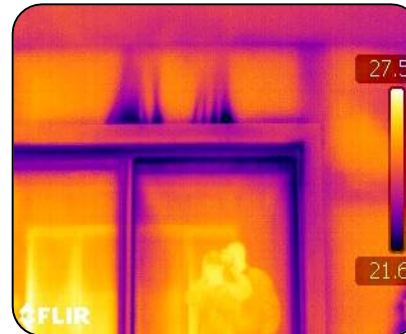
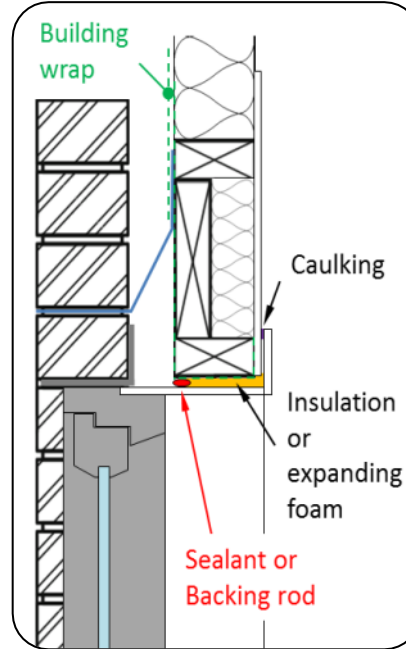


Insulation

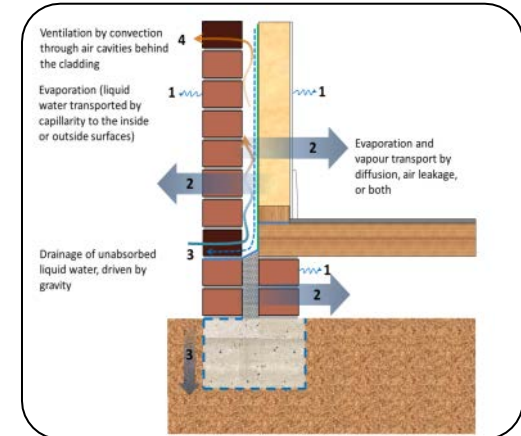
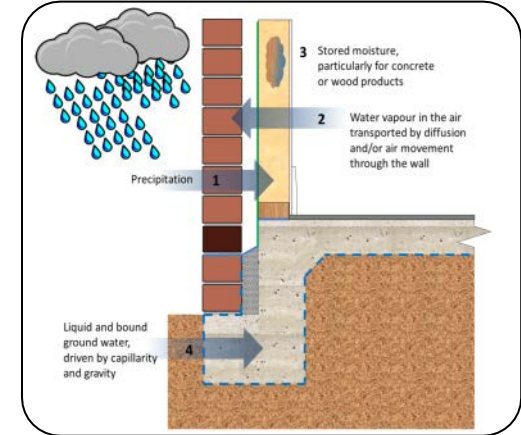


Mass

Air



Moisture



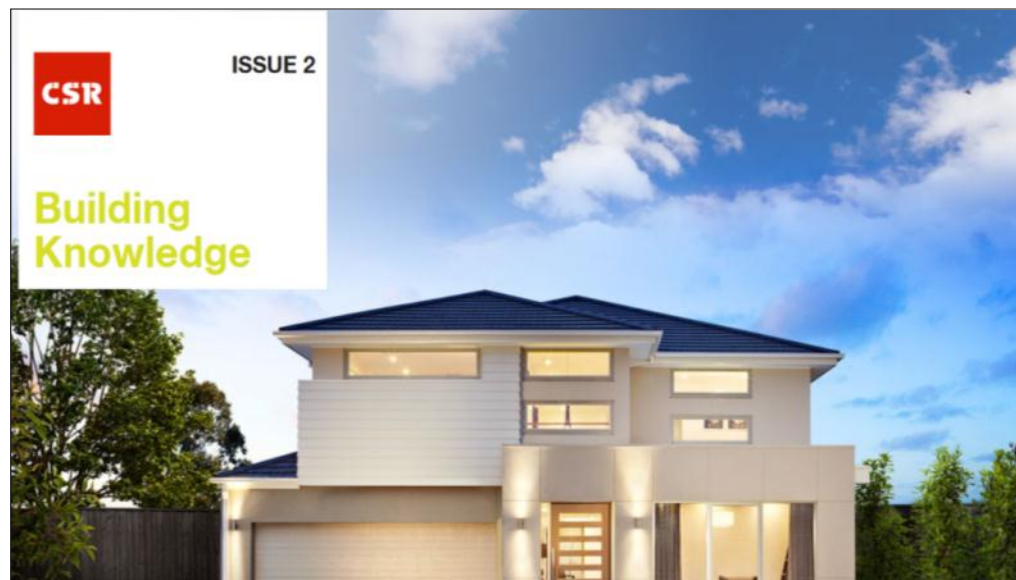
CSR Velocity – Factory Engineered Housing Elements



11/19/2014

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CSR Building Knowledge



To register: csr.swwipe.com

Thank you

To find out more, contact:

[CRC for Low Carbon Living Ltd](http://www.lowcarbonlivingcrc.com.au)
www.lowcarbonlivingcrc.com.au

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