Application example

Timber construction detail - optimization of condensation risk at window connection

Engineering office - DI Daniel Rüdisser

www.htflux.com
HTflux Simulation Software – extensive information on many levels

Materials

Temperatures

Heat flux

Humidity

Partial press.

Vapor flux

$T_{\text{min}} = 13.2\, ^\circ\text{C}$

$T_{\text{max}} = 15.1\, ^\circ\text{C}$
Example: Window connection

Initial detail
CAD drawing

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Window connection
Thermal analysis

- Thermal bridging calculation $\Psi$ value
- Minimum internal surface temperature (avoid condensation or mould growth)
Condensation analysis

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Window connection
vapor diffusion & condensation

3 condensation spots!!
• OSB / facing insulation
• Vapor barrier
• Shutter-box surface
Window connection

first reflex: add insulation (wood fibre-board)

→ ineffective, even counterproductive
Window connection

Add some timber and leave air cavity?

works! dry.
Window connection

Try variations.

Find best constructive solution.
Window connection

Try variations.

Find best constructive solution.
Window connection

Try variations.

Find best constructive solution.
Window connection

Best solution found.

No condensation risk.

Resulting additional heat-flux is minor.
Window connection

Final optimized detail.

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