FH Salzburg

Thermally activated building systems in wooden structures

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LAND SALZBURG

Technik
Gesundheit
Medien

Content

– Thermally activated building systems in the context of 4GDH

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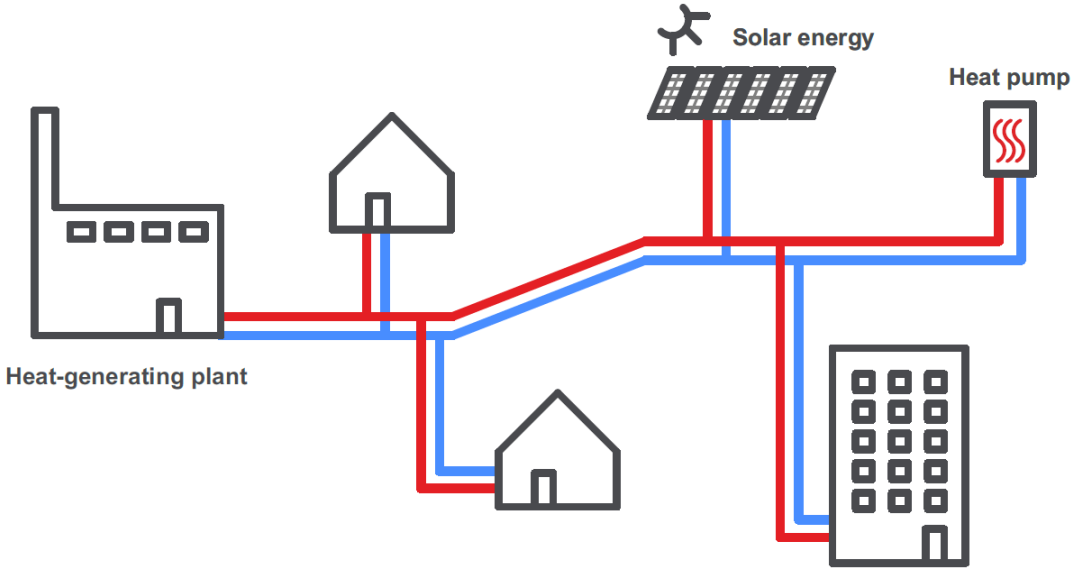
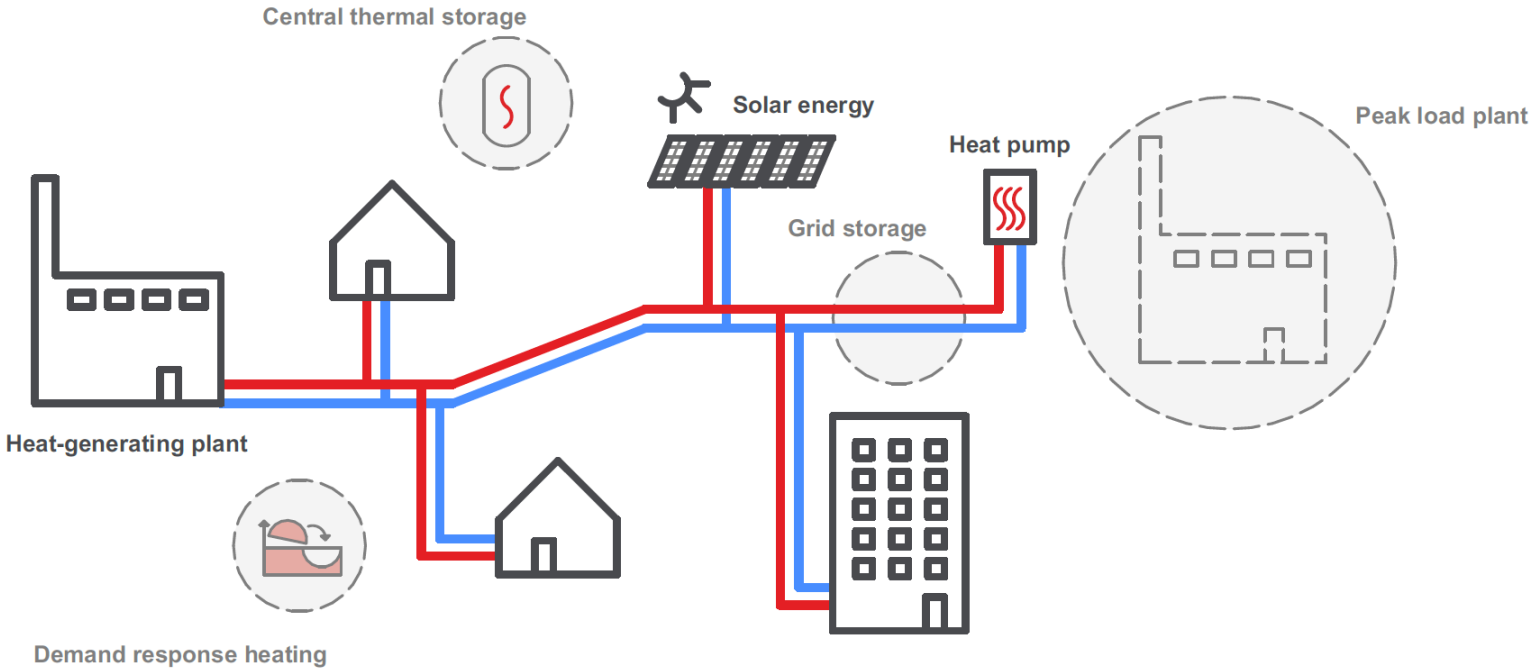
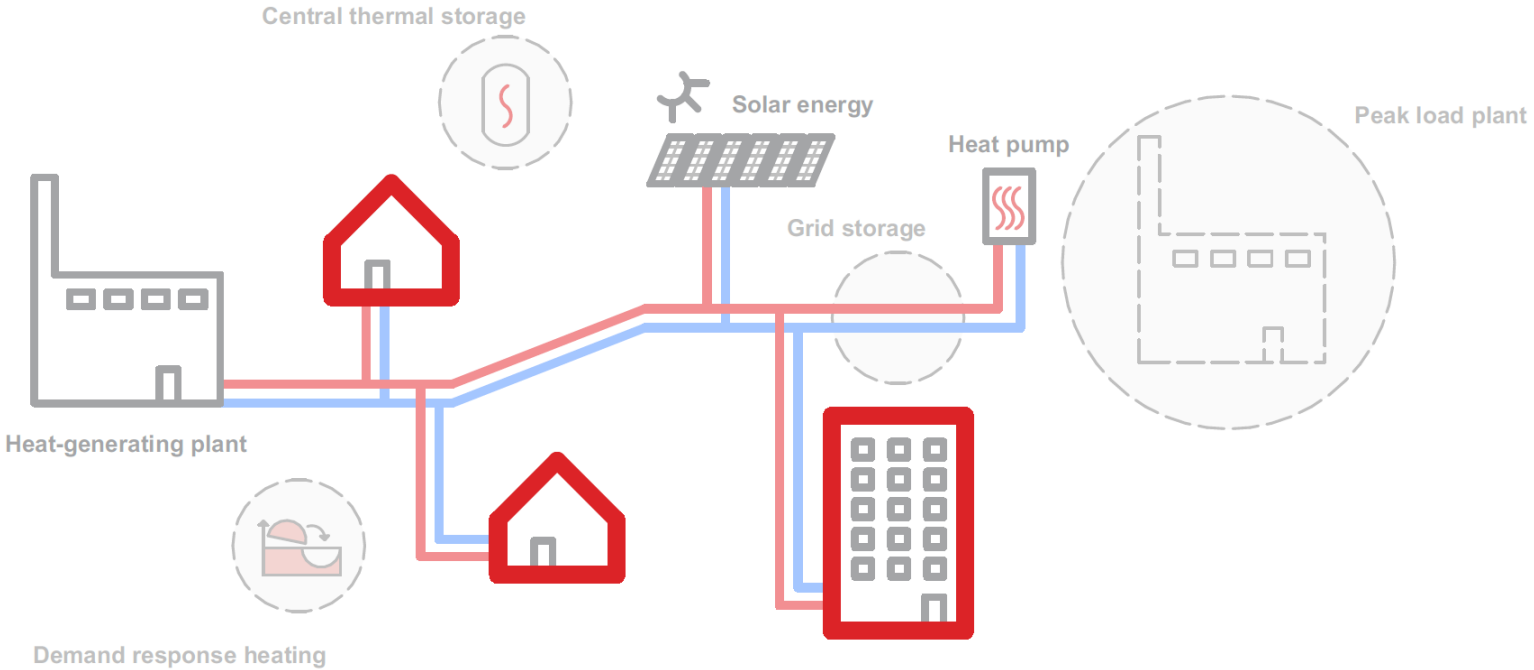
Tabs in the context of 4GDH



Tabs in the context of 4GDH



Tabs in the context of 4GDH



Potential of tabs

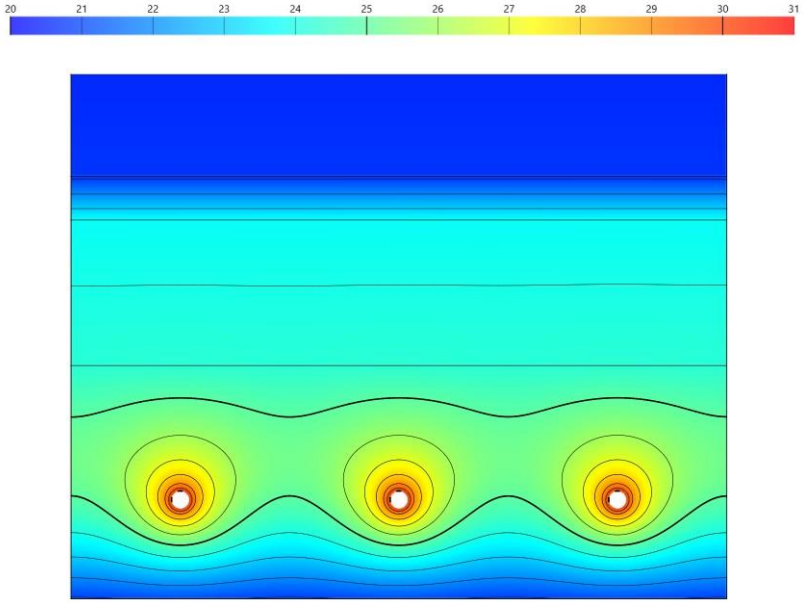
– Low temperature heating

– High temperature cooling

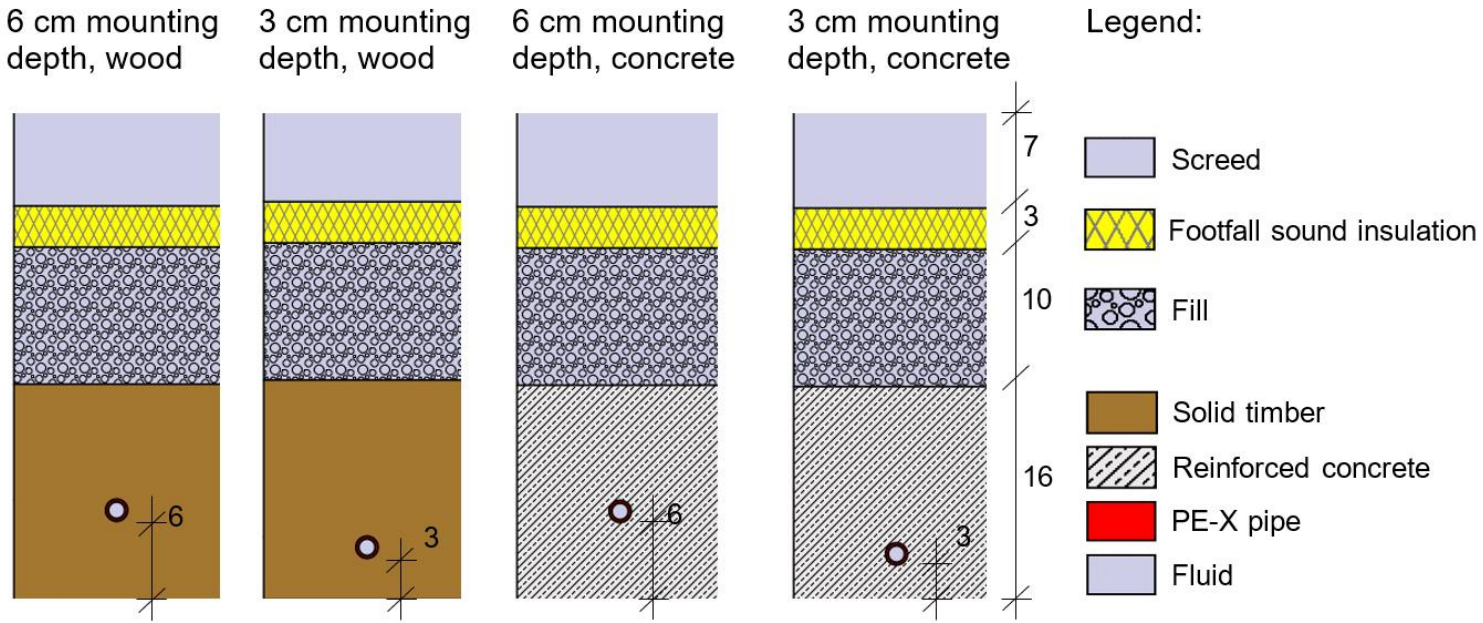
– Integration of renewable energy

– Thermal storage

– Load shifting

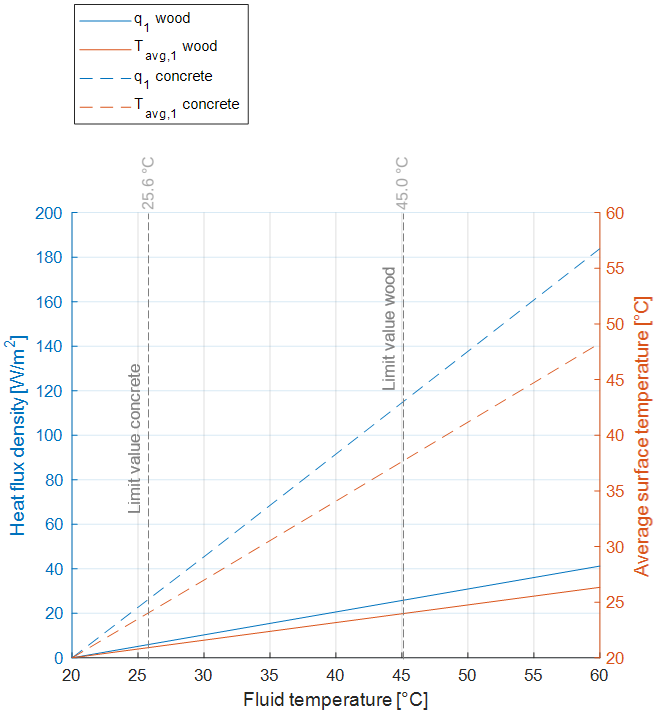


Method

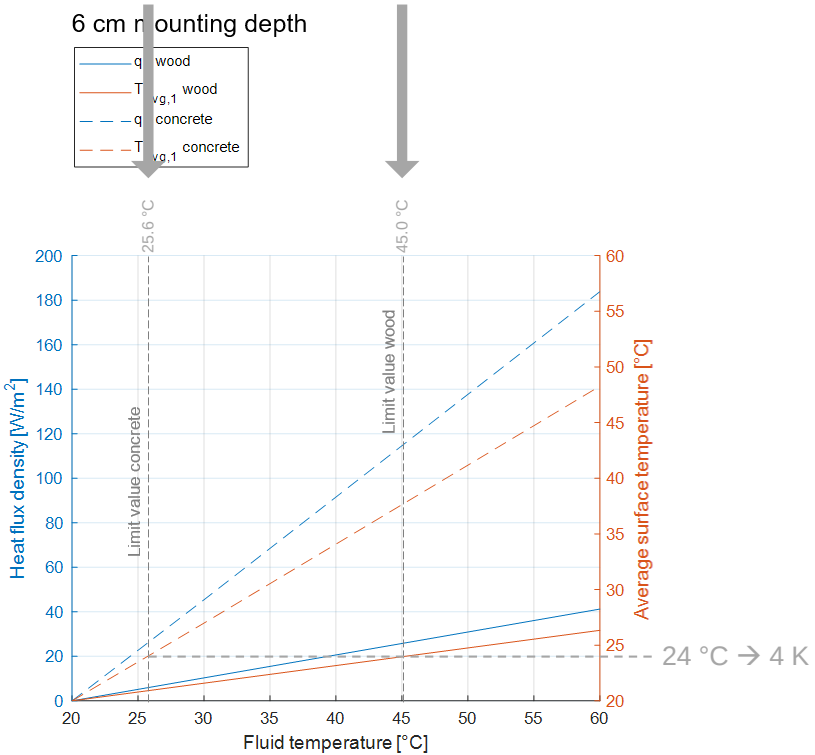

6 cm mounting depth, wood
3 cm mounting depth, wood
6 cm mounting depth, concrete
3 cm mounting depth, concrete
Legend:
7
3
10
16
6
3
6
3
Screed
Footfall sound insulation
Fill
Solid timber
Reinforced concrete
PE-X pipe
Fluid

Results – Steady-state simulations

6 cm mounting depth



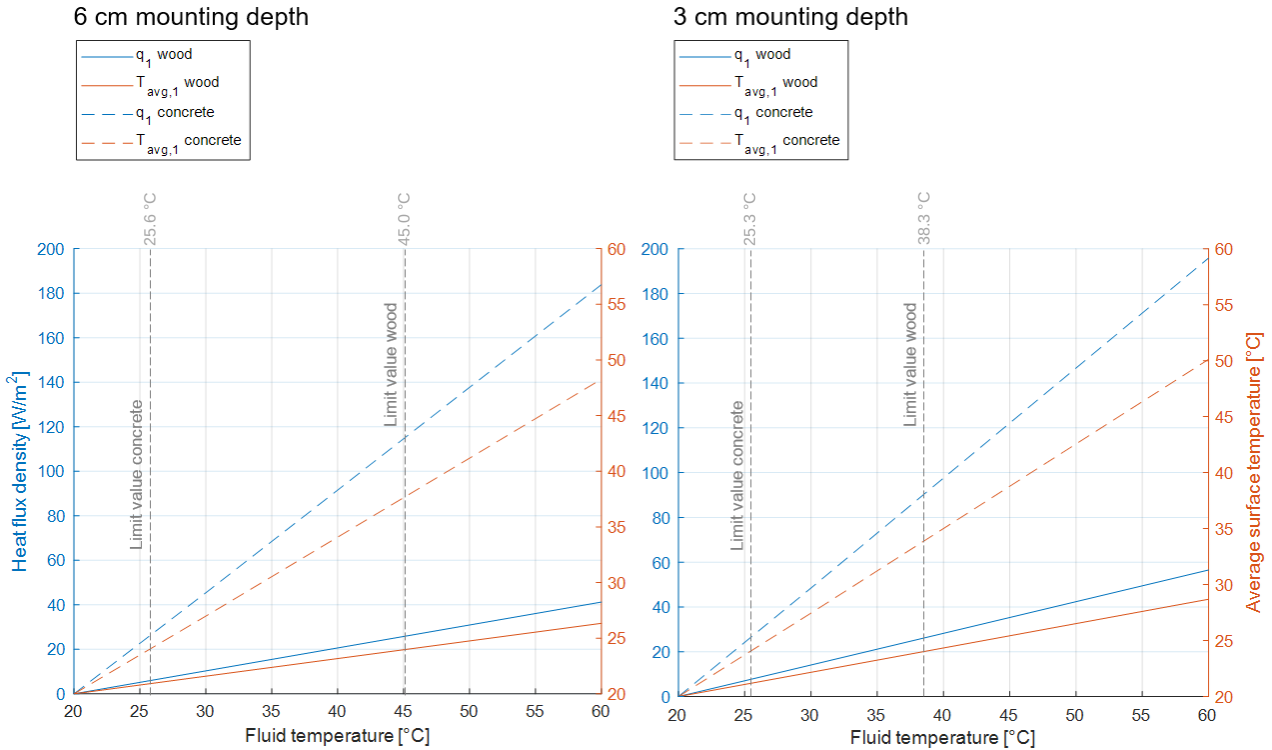
Results – Steady-state simulations



Comfort criterion:

4 K temperature difference between air temperature and surface temperature

Results – Steady-state simulations



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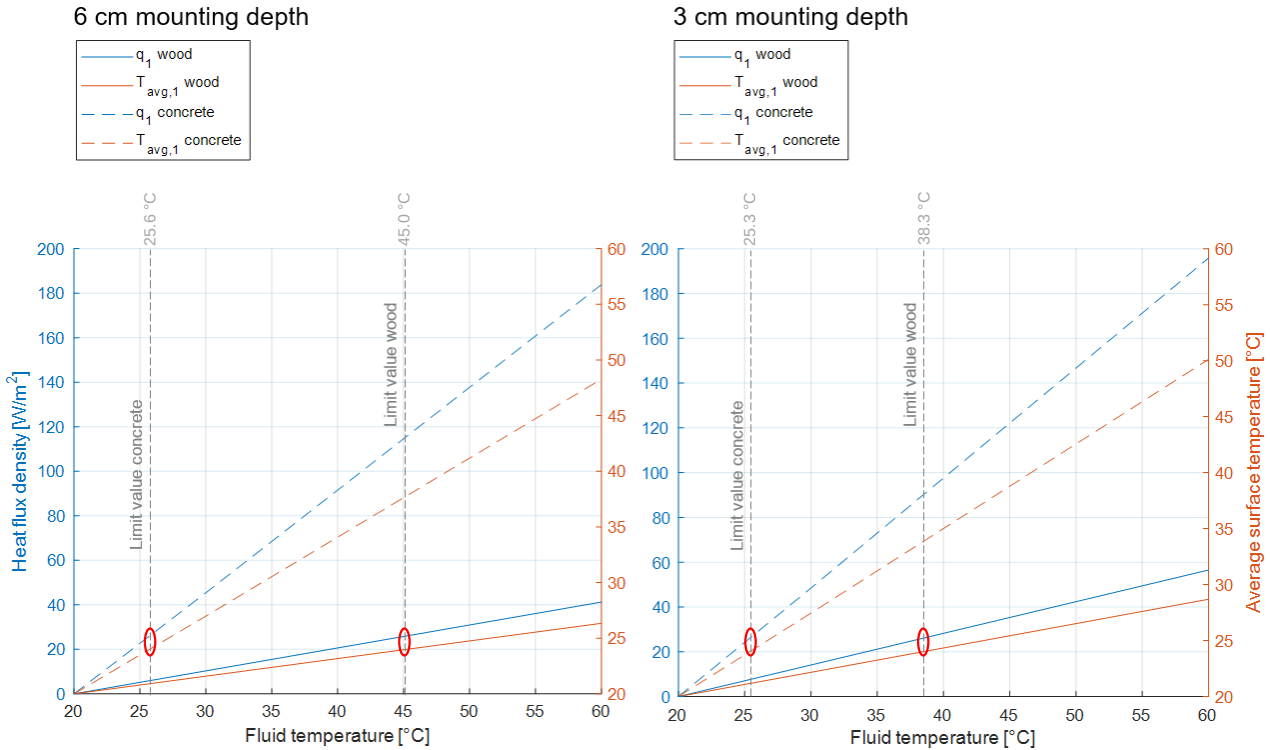
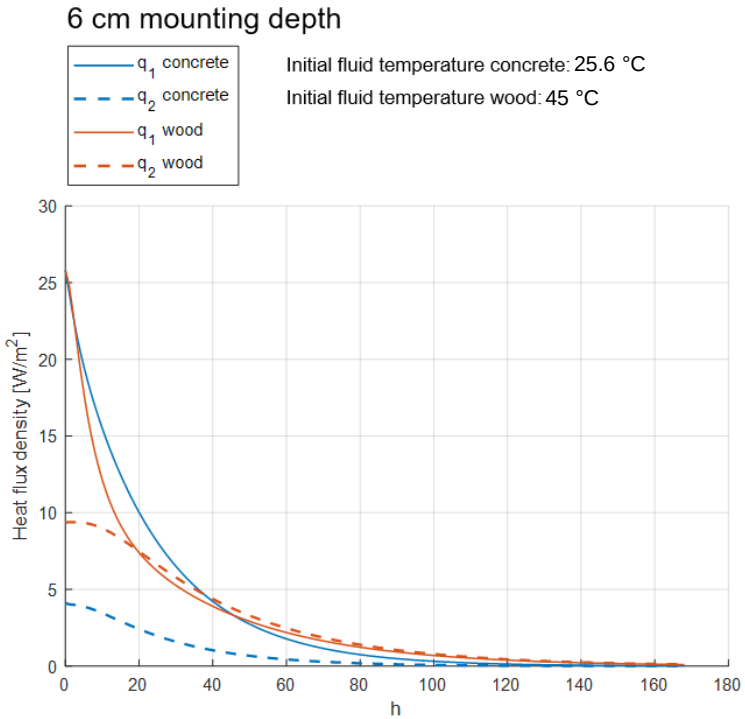


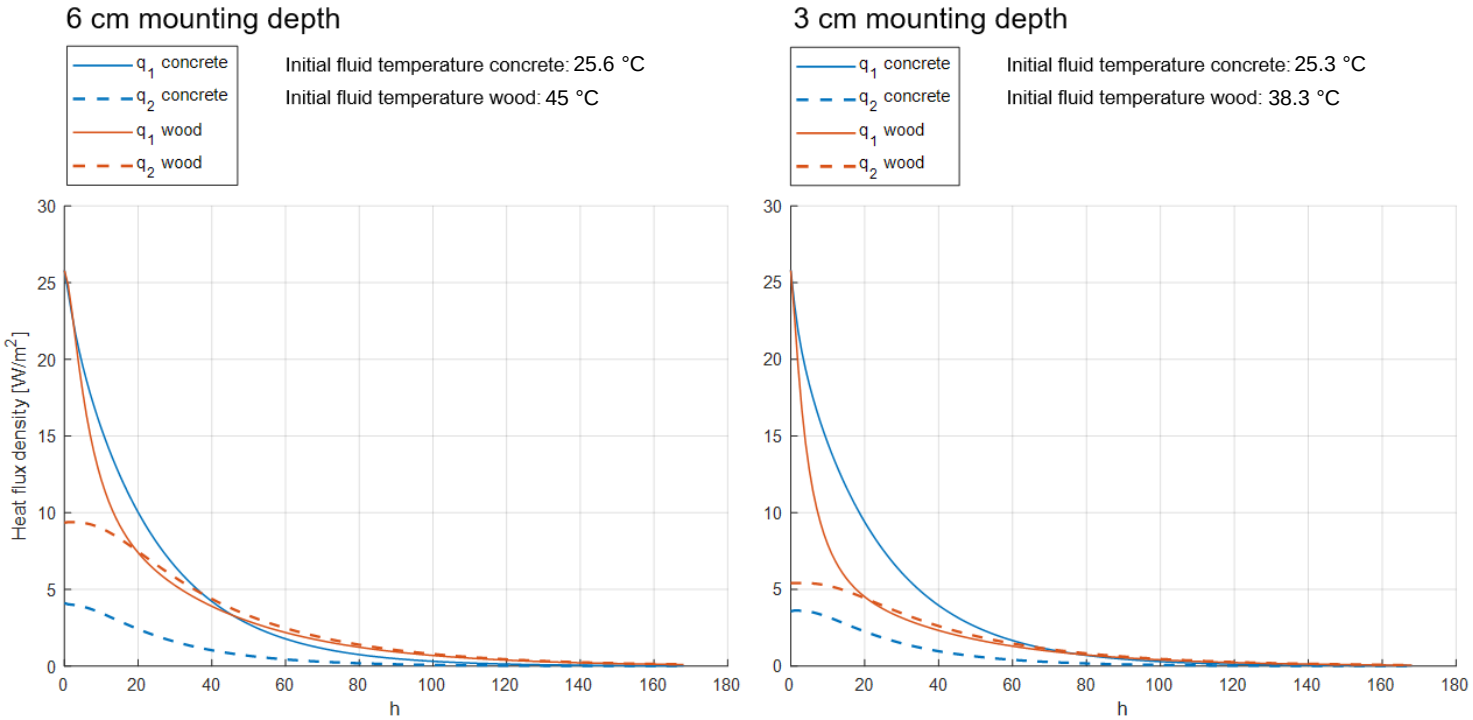
Comfort criterion:

4 K temperature difference between air temperature and surface temperature

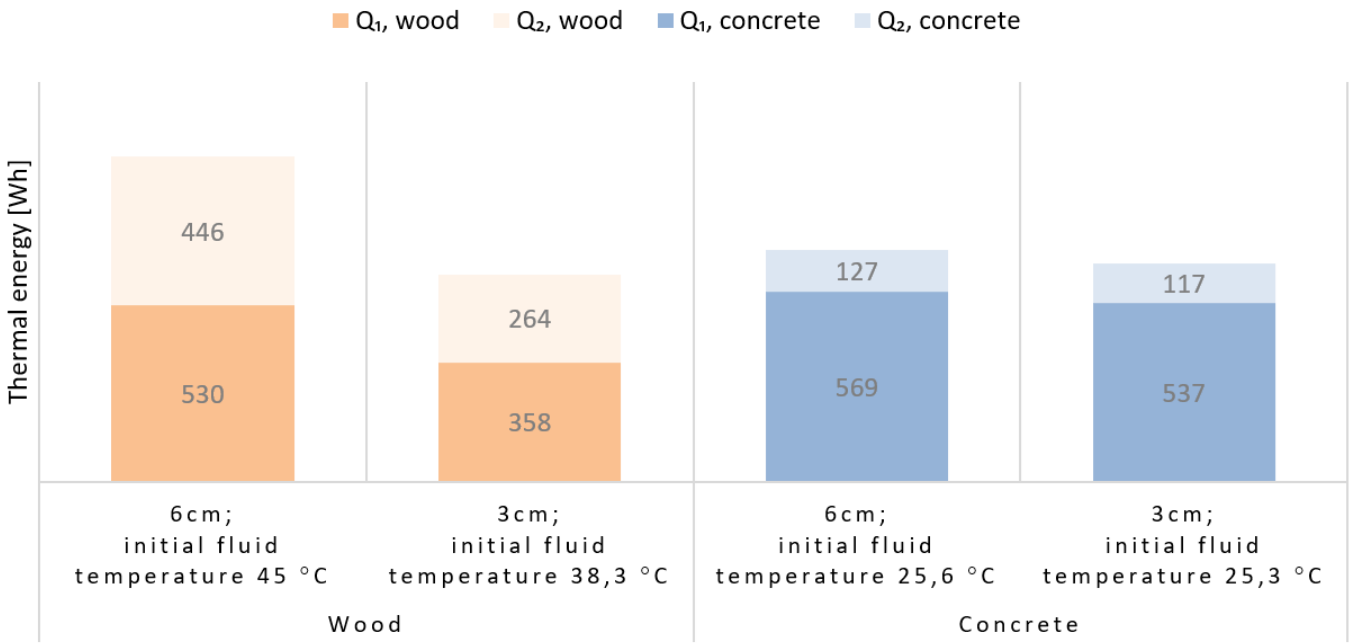
Results – Unsteady simulations



Results – Unsteady simulations



Results – Unsteady simulations



Conclusion

Challenges

- Higher temperatures than in concrete
- Restricted heat dissipation
- Measurement and control

Possibilities

– Low temperature heating and high temperature cooling

– Wooden constructions as thermal storage

– Load shifting potential

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