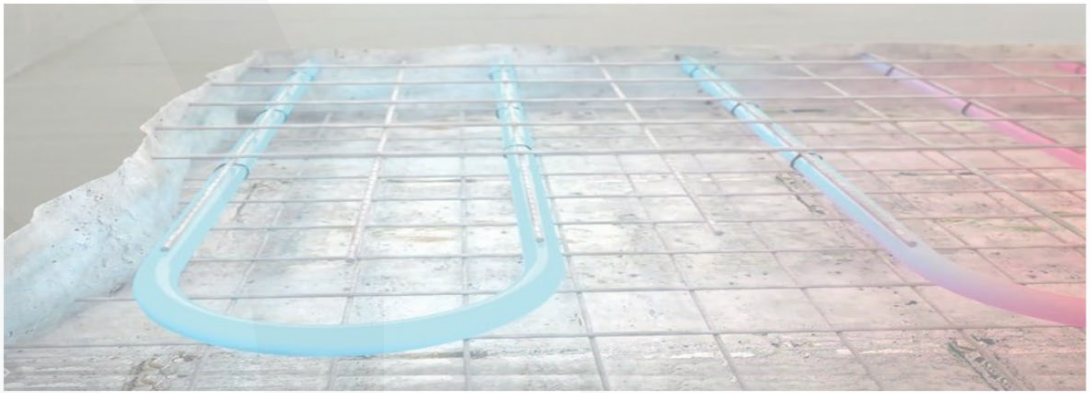
IEA TCP Energy Storage Task 43 Status Report:

Standardized Use of Building Mass as Storage for Renewables and Grid Flexibility

DI Michael Moltinger



Source: AEE INTEC

Agenda

- Salzburg University of Applied Sciences- Department Green Engineering
- IEA Task 43
- Funding program „Bauteilaktivierung“ in Austria
- Problems and Solutions

Research-Alpine Building Center

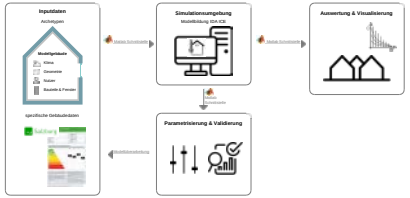
- Test Building Twin²Sim



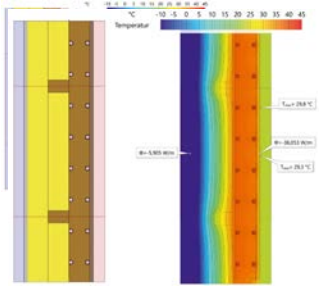
- Construction Systems Wood



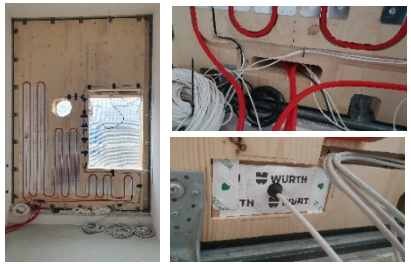
- SimuDis – Energy flexibility tool



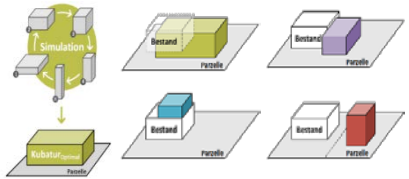
- Component Activation



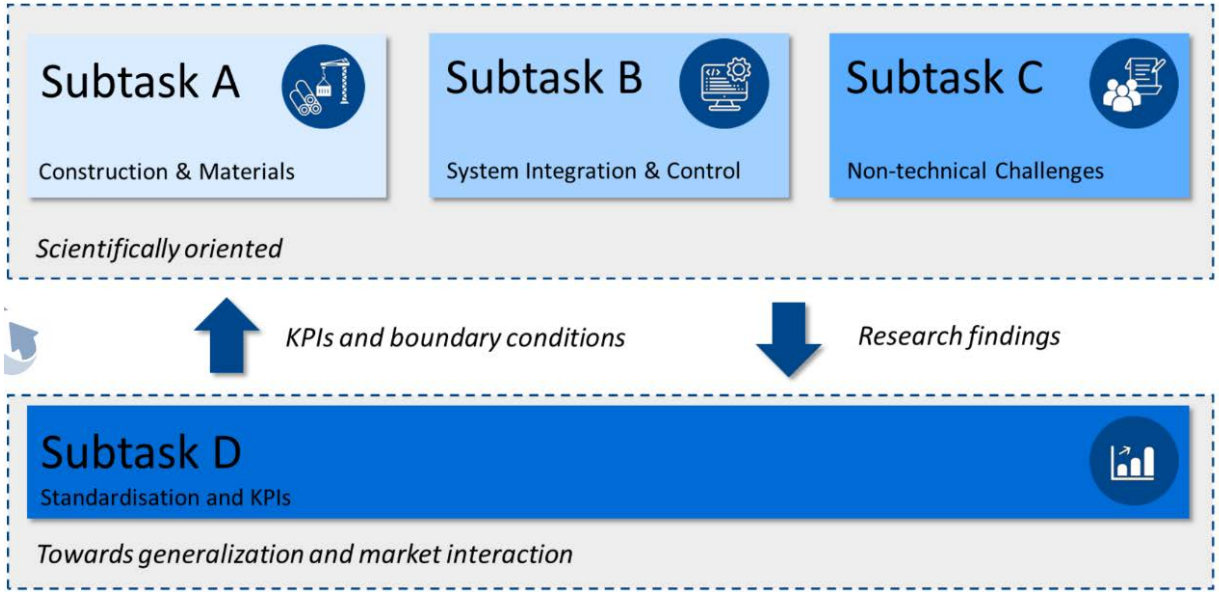
- Multifunctional building envelope



- Densification potential and land management



Task structure and Goals

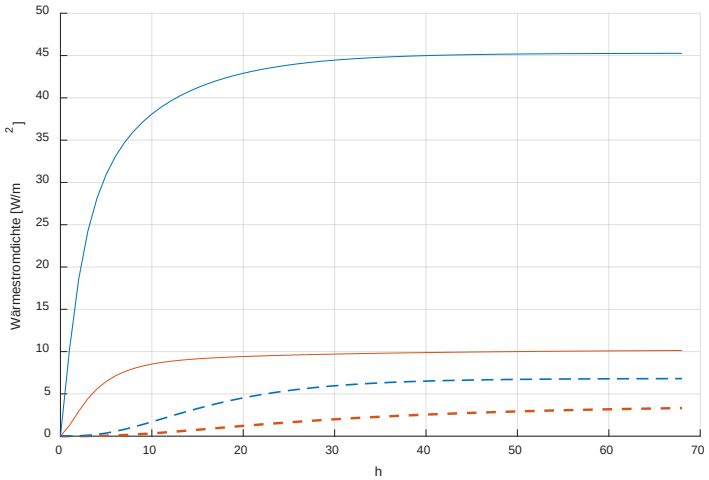


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Subtask B: Dipl.-Ing. Dr.techn. Daniel Muschick
Subtask C: Prof. Dr. Alireza Afshari- Aalborg University
Subtask D: Joscha Reber MSc. TU Darmstadt

Research SUAS- Task 43 Subtask A+B



Research SUAS- Task 43 Subtask A+B



- Heating medium temperature = 30 °C
- Flow velocity = 0,2 m/s
- Insertion: flush
- Pipe spacing = 15 cm
- Overlap = 6cm

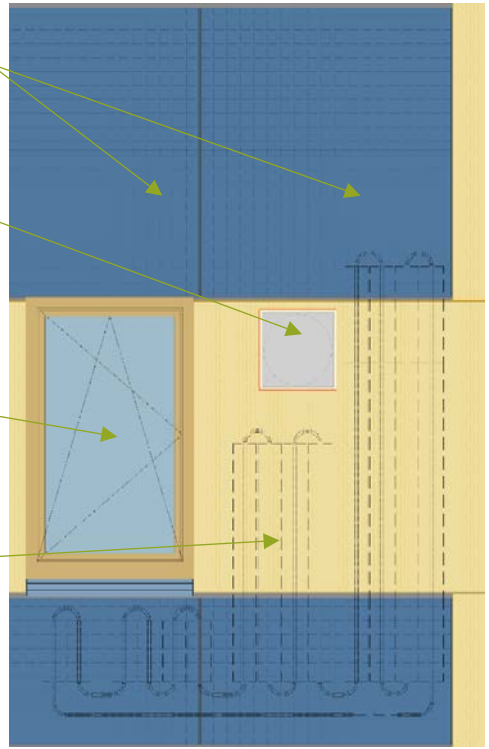
Research SUAS- Task 43 Subtask A+B

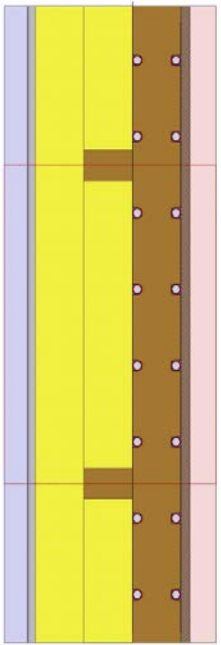
Ventilated facade Photovoltaics

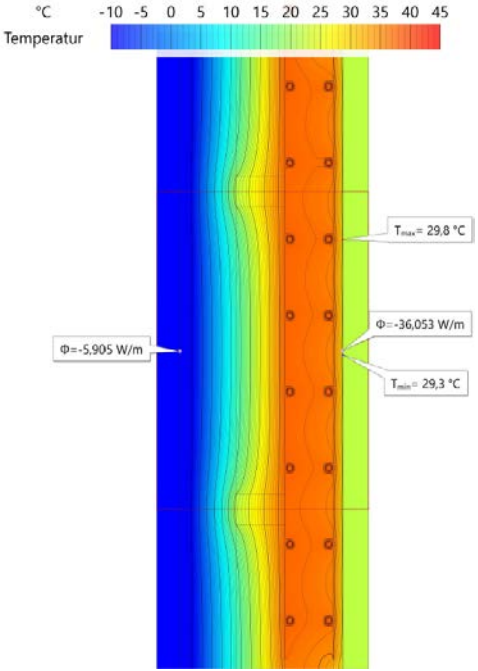
Ventilation unit Heat recovery

Windows mechanic ventilation (tilt motor)

TABS- Heating/cooling







ZENTRUM ALPINES BAUEN

DTU

energy storage

iea

43

Research SUAS- Task 43 Subtask A+B





Research SUAS- Task 43 Subtask A+B









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Funding program „Bauteilaktivierung“

Energy flexibility through thermal component activation

- Optimised use of renewable energy by means of storage with flexibility option.
- The Climate and Energy Fund supports the use of the thermal storage capacity of building components to maximise the use of renewable energy for the thermal conditioning of buildings.

Call closed 12/2023

Funding program „Bauteilaktivierung“

- **Role:** Scientific and technical programme support, support for funding bodies with questions and support in the implementation process

- Analysing the monitoring data

Keyfacts:

19 Projects running

76 000m² thermal activated area

885 flats



Source: Schwarzenbacher Struber

Task structure and Goals

Prepare thermal activates building mass energy storage for widespread, standardized and economically attractive integration

A) How can such storages be **built** in new construction and refurbishment?

B) How can they be **operated** and **integrated** into systems?

C) How to do **business** and satisfy (end) **customers** and **residents**?

D) How to increase **reliability** and **trust** in the technology?

Identified problems

- New construction site processes (intersection of different trades) e.g. plumber and concrete worker- precise scheduling necessary
- Energy performance certificate- No good representation of component activation currently possible
- Other calculation methods required->building simulation
- No legal recognition of the simulation compared to the energy performance certificate

Main Questions

What are main challenges in construction and coupling to the existing walls?

What kind of control (simple vs. complex) is needed to operate the system?

How can acceptance & knowledge be increased for investors, technicians and users?

What is missing to harness the storage capacity of the existing walls in an active way?

1. Planning process needs to be coordinated, Austrian model with pressure to connect pipes to wall (CEPA Concept)
2. Thermal inertia is the key factor, simple control is needed, fast peakload if needed could be done by individual system
3. Clarity in control/reaction time and system operation.
4. (Simple) Simulation Tool for all planners with good quality, Standard way of using storage capacity and optimize practical use with Demoprojects

Proposed solutions

- Standardisation process in the implementation phase is achieved through the funding program and the implementation projects
- Energy performance certificate- New EPBD directive
- Simplification of subsidies such as a one-stop shop
- Increase perception and awareness of the technology Building part activation and promotion to improve market share
- Demo projects and as many implementation projects as possible

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