AEE INTEC

energy storage
IEA Technology Collaboration Programme

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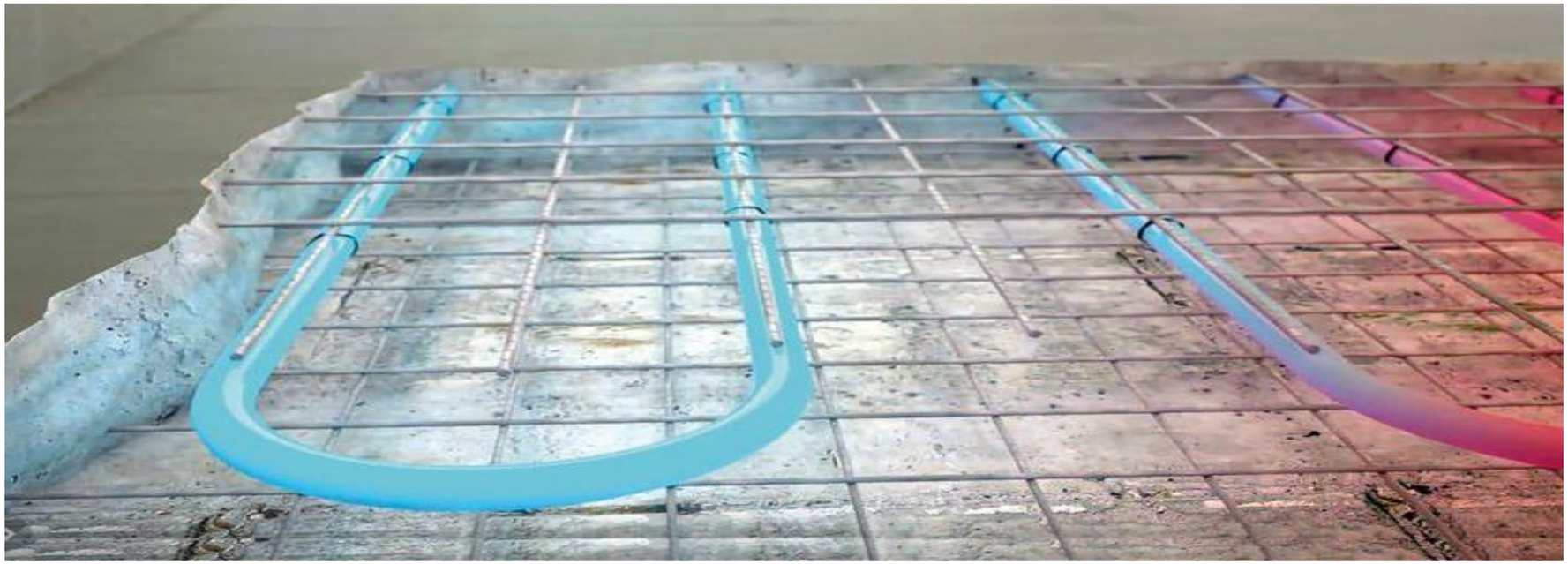

Standardized use of building mass as storage for renewables and grid flexibility

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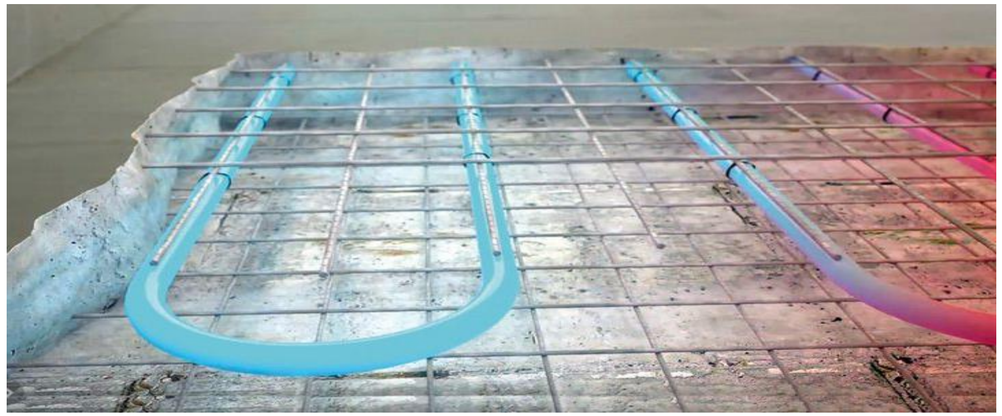
Thermal building mass storage – the technology

Thermal component activation ... refers to systems that use the building masses to **regulate temperature**. These systems are used for the sole or supplementary **cooling** of a building and, to a lesser extent, in some cases also for **heating**[1].



Source: AEE INTEC

→ This allows also for the use of the building masses as abundantly available energy storage

[1]Wikipedia page on thermal building mass activation, 23.11.2021

Task structure - Goals

Prepare thermal activated 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?

Task structure - Subtasks

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Energy in Buildings and Communities Programme

Annex 82
Annex 84

Subtask A
Construction & Materials

Subtask B
System Integration & Control

Subtask C
Non-technical Challenges

Scientifically oriented

KPIs and boundary conditions

Research findings

Subtask D
Standardisation and KPIs

Towards generalization and market interaction

Subtask A: Construction and Materials

Subtask A Leader: TU Dresden (tentative), DE

Countries (6): AT, DE, DK, ES, TR, UK

Institutions (14): University of Southern Denmark, FraunhoferIBP, University of Lleida, Izmir Katip Celebi University, DTU, Hochschule Biberach, TU Dresden, DLR, Innogration GmbH, TU Darmstadt, e7, FH Salzburg, AEE INTEC, Northumbria University Newcastle

DA.1: Report on different materials and material combinations for thermal activated building mass storages (concrete, Wood, clay, hybrid structures), their advantages and disadvantages

DA.2: Report on construction and manufacturing strategies in new buildings

DA.3: Report on construction and manufacturing strategies for refurbishment

DA.4: Strategies for zoning and repurposing of buildings to enable adjustable operation throughout the building life cycle

Subtask B: System Integration and Control

Subtask B Leader: BEST Research, AT

Countries (10): AT, AUS, DE, DK, ES, IRL, NL, NO, SWE, TR

Institutions (21): University of Southern Denmark, University of Lleida, Izmir Katip Celebi University, Hochschule Biberach, e7, FH Salzburg, AEE INTEC, BEST, University of Valladolid, CIEMAT, Vaillant Group, Hochschule München, ENEDI, IERC, NTNU, SINTEF, TU Dresden, AAU, CSIRO, TU Eindhoven, Dalarna University

DB.1: Factsheets for different approaches to modelling and simulating thermally activated buildings

DB.2: Report on system concepts for activated building mass storage at building, district and grid level

DB.3: Report on control strategies at building and district level including load prediction

DB.4: Guidelines for digital interfacing, cyber security and personal data protection

Subtask C: Non-technical Challenges

Subtask C Leader: Aalborg University, DK

Countries (9): AT, DE, DK, ES, IRL, NL, SWE, TR, UK

Institutions (10): University of Southern Denmark, University of Lleida, Izmir Katip Celebi University, AEE INTEC, IERC, AAU, TU Eindhoven, Dalarna University, Öko-Institut, University of Derby

DC.1: Report on regional boundary conditions (economic, legal, social) on local and grid level

DC.2: Collection of successful business models, end user incentives and best practices examples

DC.3: Guidelines for indoor climate

Subtask D: Standardisation und KPIs

Subtask D Leader: Dalarna University, SWE

Countries (6): AT, DE, DK, ES, SWE, UK

Institutions (7): University of Southern Denmark, AEE INTEC, Dalarna University, University of Derby, TU Darmstadt, FraunhoferIBP, CIEMAT + all Partners via Demo Factsheets

DD.1: KPIs for TABs as basis for characterization and future standardization

DD.2: Design guidelines for TAB construction

DD.3: Design guidelines for automation and control

DD.4: Demo factsheets

Heavily interlinked with the other 3 Subtasks!

Committed partners – Status November 2022

30 confirmed institutions from **11** countries

AT, AUS, DE, DK, ES, IRL, NL, NO, SWE, TR, UK

Talks with BEL, CH, IT ongoing

How to join

- The Task will **start in 01- 2023** and run for **3 years**
- The next Task meeting is planned as a hybrid event **in Copenhagen in late October 2023**
- If you are interested in joining the activity are staying UpToDate, contact the Task Manager:

DI Christoph Rohringer
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