Task67/Task40
Compact thermal energy storage materials within components within systems

Wim van Helden, AEE INTEC, Austria
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Joint Task

Task67/Task40 is a joint Task between the IEA programmes

Solar Heating and Cooling (SHC) and Energy Storage (ES)

More than 60 experts from 14 countries worldwide collaborate in the T67T40

Start: June 2021; End: June 2024
Scope

• CTES (Compact Thermal Energy Storage) materials
  - Phase Change Materials (PCM)
  - Thermochemical Materials (TCM)

• CTES material…
  …characterization
  …development
  …improvement
  …testing in components (heat exchangers, reactors)
Goals

• to have a better understanding of the factors that influence the storage density and the performance degradation of CTES materials
• to be able to characterize these materials in a reliable and reproducible manner
• to have methods to effectively determine the state of charge of a CTES
• to have better knowledge on how to design optimized heat exchangers and reactors or CTES technologies
Approach

• Determine application boundary conditions (ABC) (temperatures, powers, cycles, contact with other materials, mechanical conditions, ...)
• Use these to improve storage materials
• Test materials performance on small scale; are tests suited?
• Use ABC for component development
• Determine material – component interaction; can we improve the design process?
## Task structure

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<td>Daniel Lager, AIT, Austria</td>
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<td>B CTES Material Improvement</td>
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| C State of Charge – SoC Determination | Gerald Englmaier, DTU, Denmark (for PCM)  
Reda Djebar, NRCan, Canada (for TCM) |
| D Stability of PCM and TCM | Christoph Rathgeber, ZAE Bayern, Germany |
| E Effective Component Performance With Innovative Materials | Benjamin Fumey, Empa, Switzerland (for TCM);  
Ana Lazaro, Univ. of Zaragoza, Spain and Andreas König-Haagen, Univ. Basque Country, Spain (for PCM) |
Webinar

Three topics further deepened in this webinar:

• How can we test material properties reliably and replicably?
• How can we determine the State of Charge (SoC) of a compact thermal storage?
• Which factors determine the stability of the storage material?
Enjoy the Webinar!

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