Project presentation

Compact REtrofit Advanced Thermal Energy storage

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Event name

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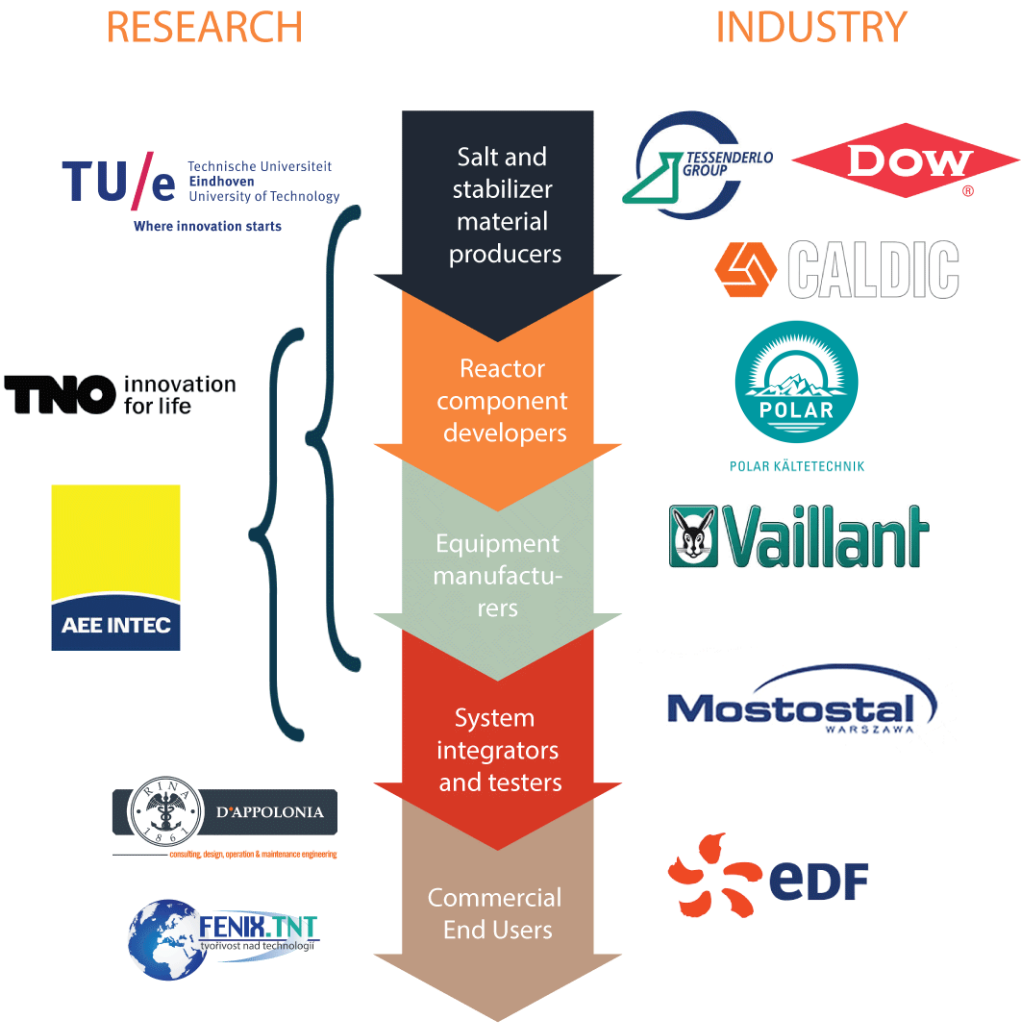
CREATE

Start date: 1st October 2015

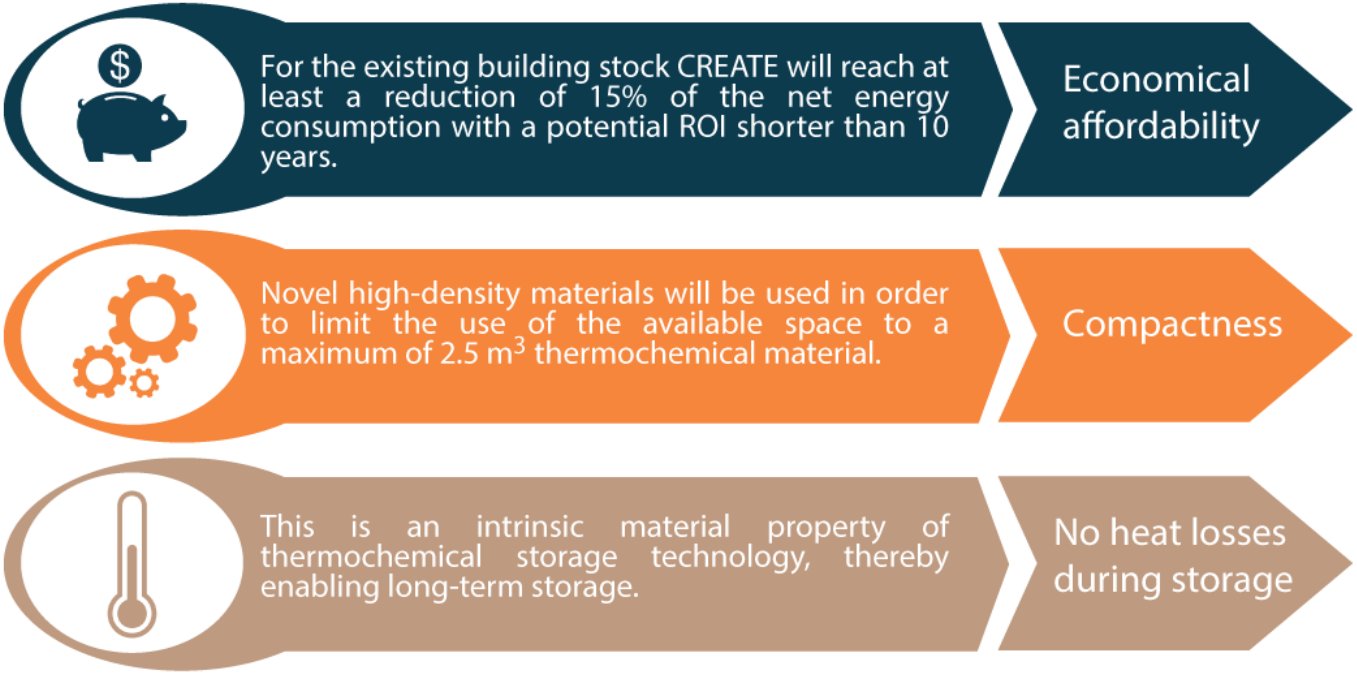
„Compact REtrofit Advanced Thermal Energy storage“

- CREATE is European Union research project under the topic EeB-06-2015 „Integrated solutions of thermal energy storage for building applications“.
- The Project aims to tackle the thermal energy storage challenge for the built environment by developing a **compact heat storage**.



Project objectives

- To develop and demonstrate a **heat battery**, i.e. an advanced thermal storage system based on Thermo-Chemical Materials (TCMs), that enables:

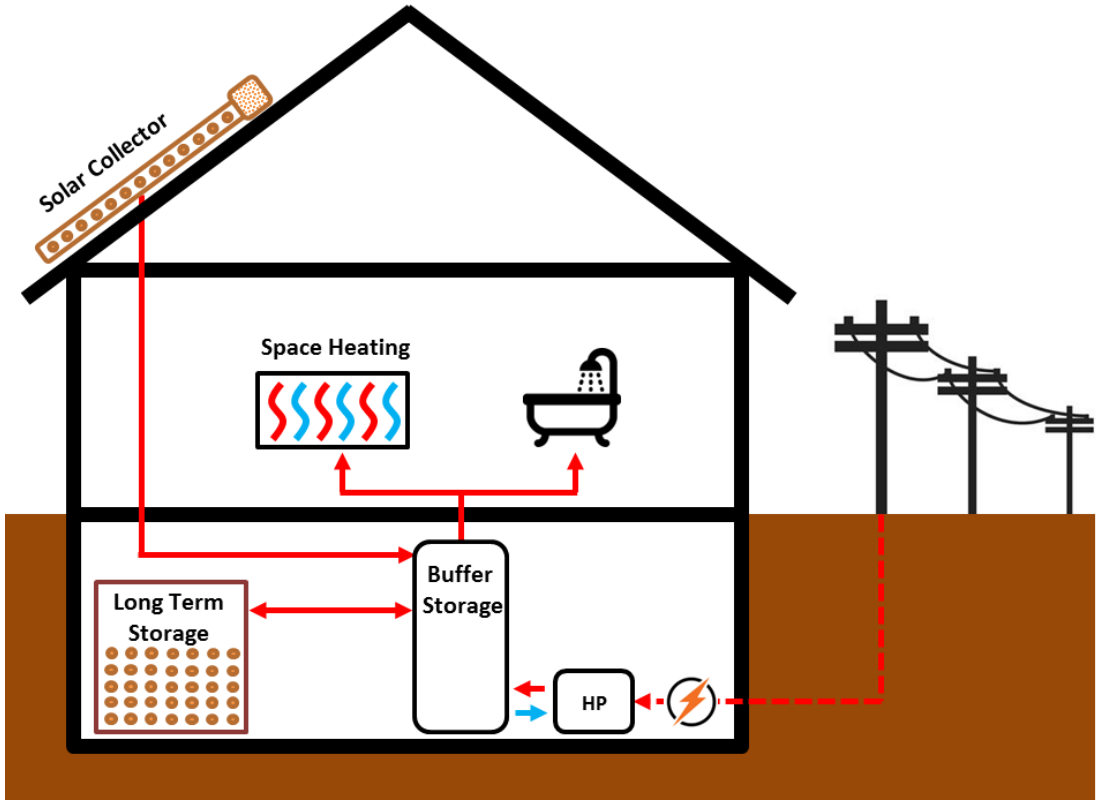


- To develop stabilized storage materials with high storage density, improved stability and low price, and package them in optimized heat exchangers, using optimized storage modules.

CREATE concept

- The heart of the system is the heat storage module, i.e. the heat battery.
- Different sources for heat supply exist (heat generated by solar collectors on the building or heat-pumps fed by excess electricity from the grid).

- Long-term heat storage for hot water preparation and space heating
- Solar thermal collectors for loading the TCM storage
- Heat pump as a supplementary heating system



Technical developments

Material development:

- A database of **600 hydrate** reactions of salt hydrates based on material´s characteristics → K2CO3 (1.3GJ/m³)
- 20 different TCM composites of K2CO3 tested in a lab-scale
- Selection of the composite with the highest energy density in particle beds

Component development:

- Prismatic, modular storage design
- Module size: 1.6m x 0.85m x 0.28m
- Volume of 400liters per module
- Power output of ~2kW.
- Working pressure: ~10mbar
- "Corrugated tube E/C" combines simple and effective design
- Experimental investigation of a storage system with 3 modules in the lab (Hardware in the Loop Experiments)

Demonstration

- Implementation of the CREATE concept in typical European dwellings.
- Full scale solar Termochemical storage (TCS) system installed into orphenage in Warsaw, Poland by MOSTOSTAL.

- Demonstration of the TCS solution applicability and its operation in real life conditions (Polish land climate delivers both cold winters and warm summers).

Contact info

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