Project presentation

Compact REtrofit Advanced Thermal Energy storage

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TNO innovation for life

Event name

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European Commission

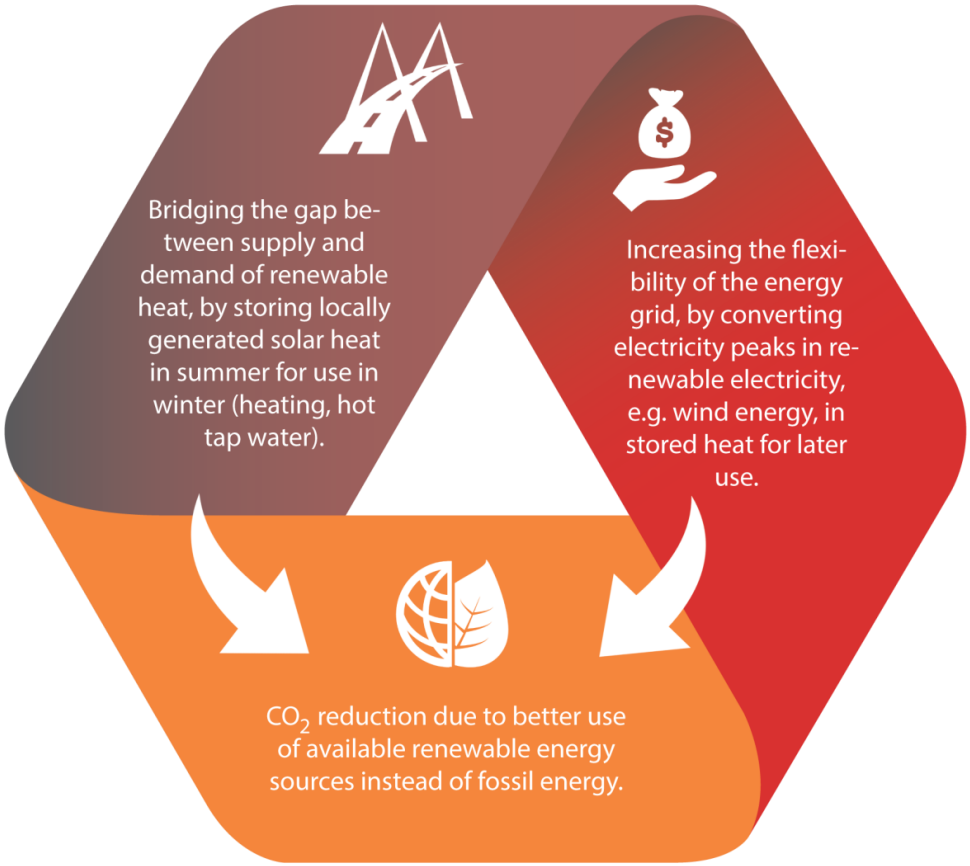
CREATE

Start date: 1st October 2015
Duration: 48 months

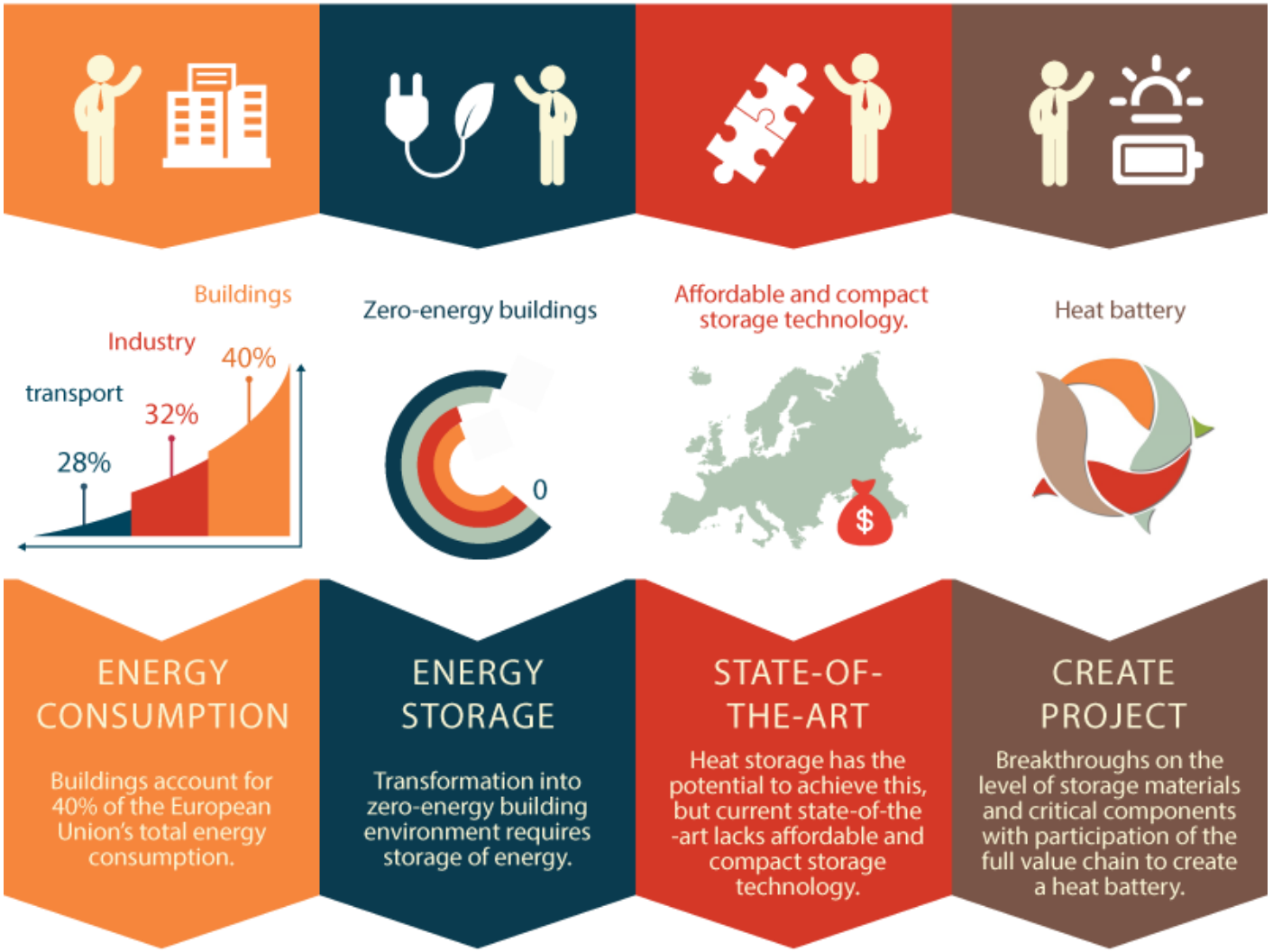
„Compact REtrofit Advanced Thermal Energy storage“

- 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**.

The heat battery allows for better use of available renewables in two ways:

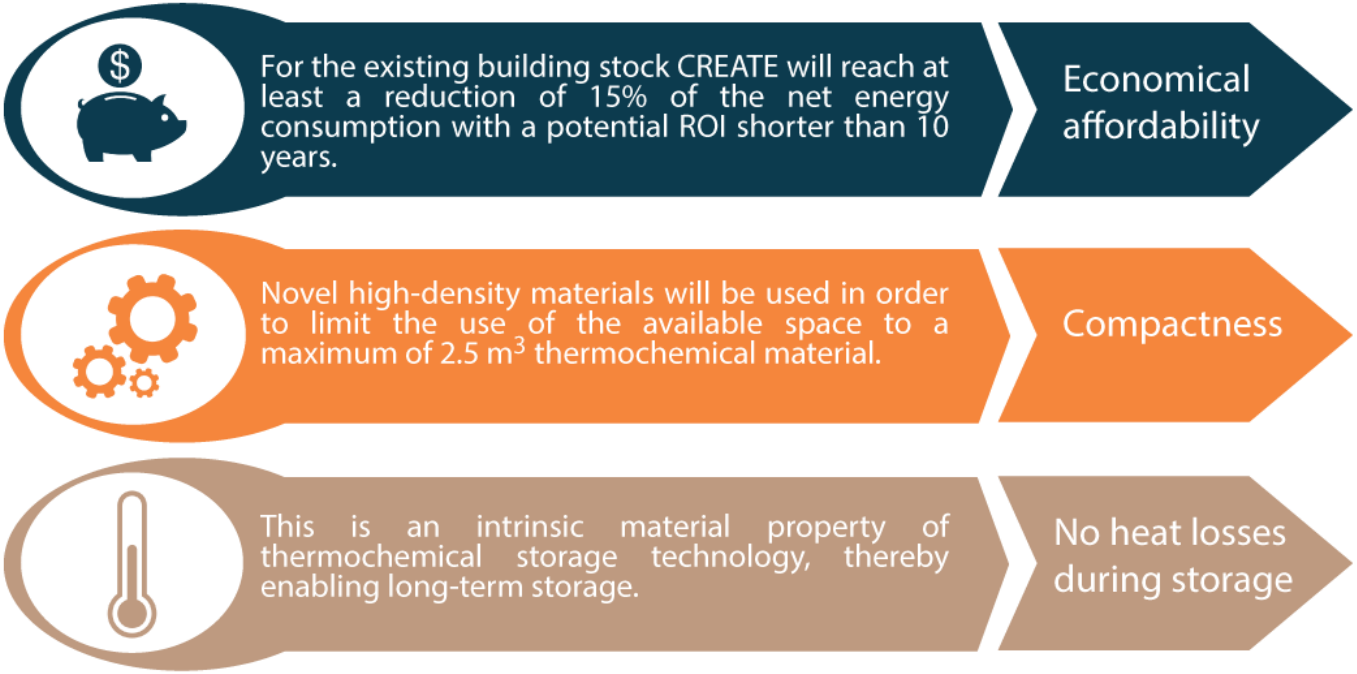


Introduction



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.

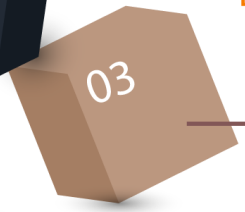
Sub-objectives

STABLE & COMPACT MATERIALS

Energy density of more than 1.5 GJ/m^3 (420 kWh/m^3)

EFFICIENT AND HIGH POWER ENERGY DISCHARGE

Of as high as 5kW for a single family home



LONG LIFETIME

Preparation of TCM/stabilizer composite materials

AFFORDABLE TECHNOLOGY

Total storage system needs to be affordable to allow for rapid market uptake

SAFE AND RELIABLE OPERATION

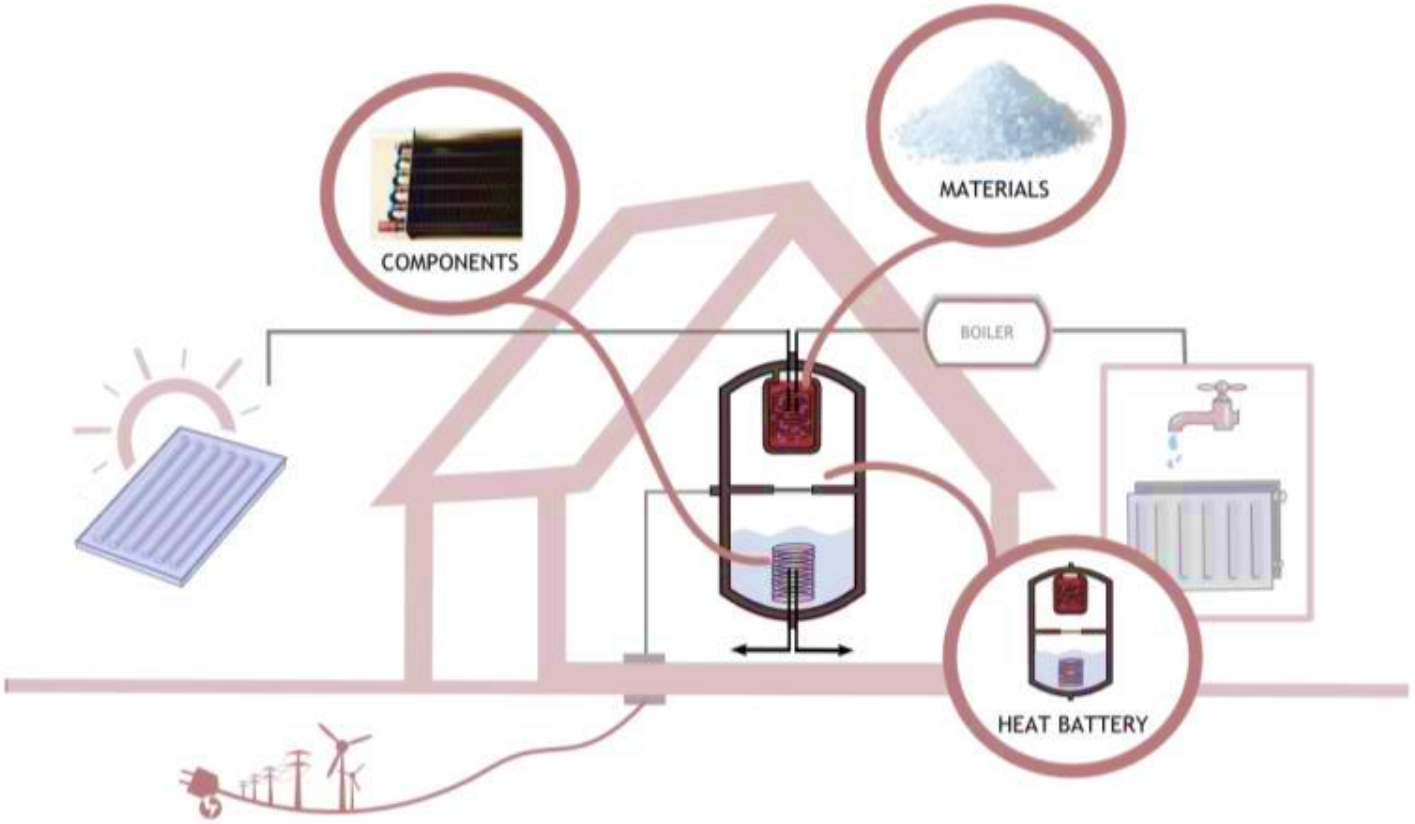
Through full validation and testing against failure modes and effect analysis and by demonstration of compliance

FUTURE VALUE CHAIN

CREATE will mobilize all the required key players in the supply and value chain from the material level up to the system level and the energy grid.

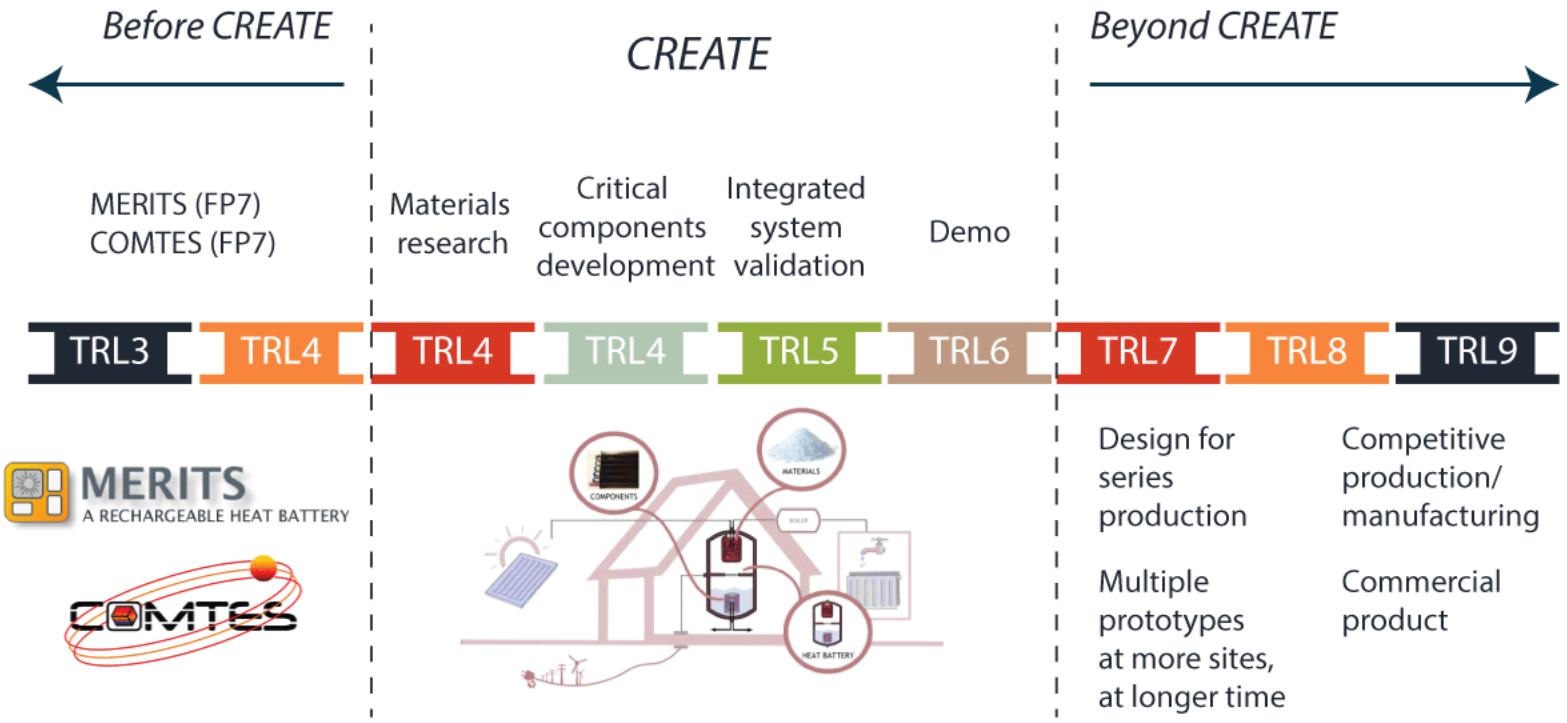
CREATE concept

- 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).



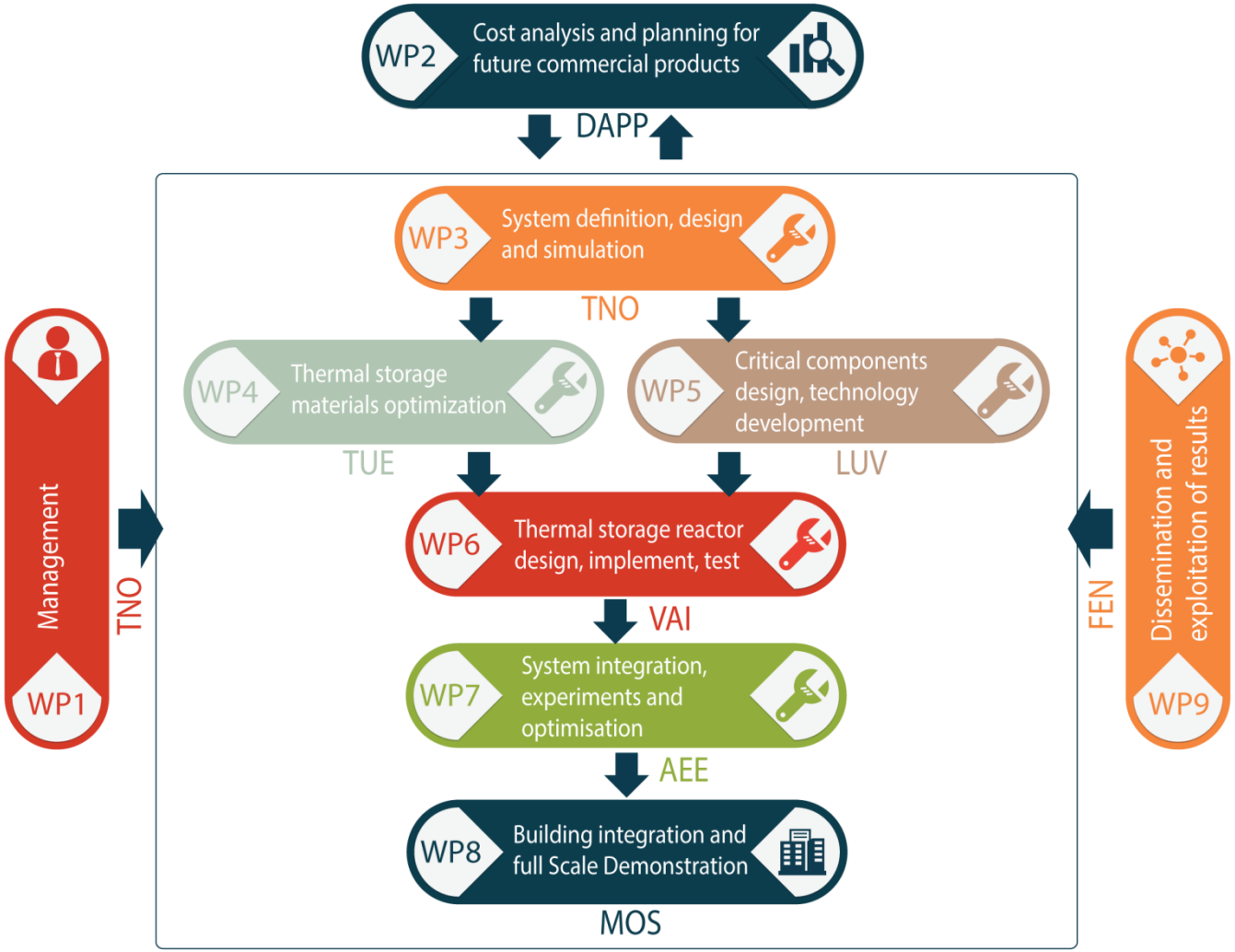
Perspective

- MERITS and COMTES cover R&D up to TRL 4 (lab-validated technology).
- CREATE delivers a demonstration of thermochemical storage for dwelling (TRL 6).
- Based on CREATE results, multiple prototypes to be tested, the design for series manufacturing and competitive production for commercialization will take place.



Workpackages

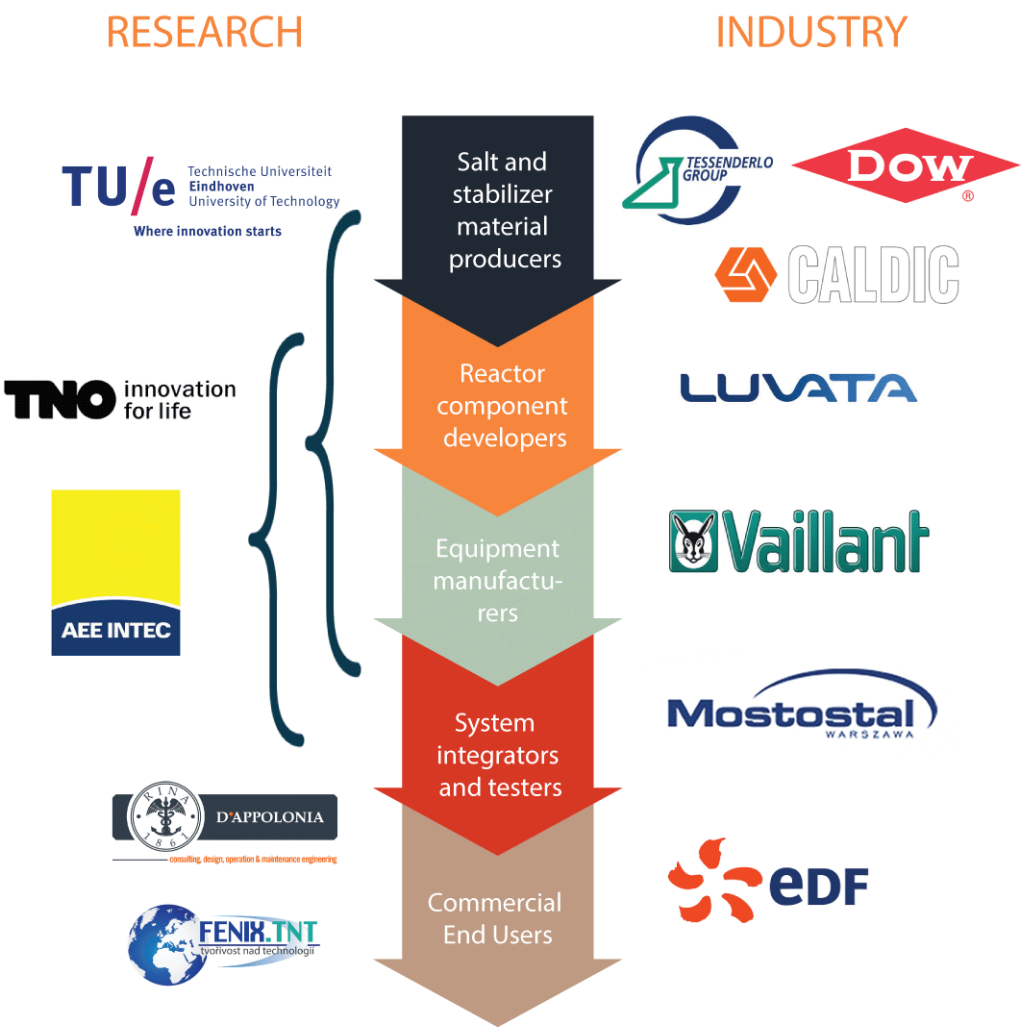
- The R&D work divided in 6 technical Work Packages (WPs).
- Additionally WPs for the project management, for commercial aspects and for dissemination.



Demonstration

- Implementation of the CREATE concept foreseen in typical European dwellings.
- Full scale solar Termochemical storage (TCS) system to be installed into a single family house 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).

Partners



- To ensure successful exploitation, the full knowledge, value, and supply chain are mobilized in the present consortium.
- The consortium consists of multidisciplinary parties, from universities, RTO's, material suppliers and end-user companies, enabling the necessary approach to scale up and commercialization.

Contact info

For further project information, please contact:

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