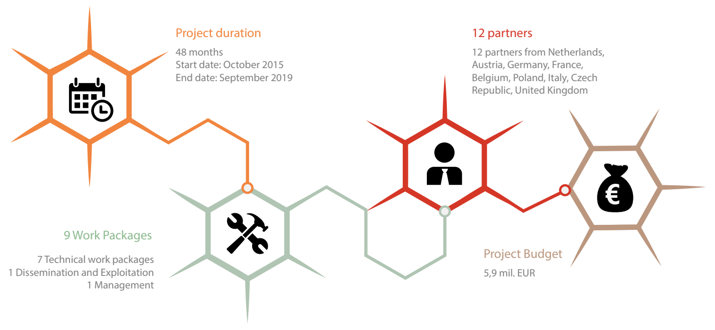
June 2016, n°1

Dear Reader,
Welcome to our first newsletter, which aims to give an introduction about the research and innovation of the CREATE project. The 48 months European Commission funded project comprises of 12 partners and focuses on developing a heat battery.

CREATE

Compact REtrofit Advanced Thermal Energy storage

An economically affordable, compact and loss-free heat battery for existing buildings



Project duration
48 months
Start date: October 2015
End date: September 2019

12 partners
12 partners from Netherlands, Austria, Germany, France, Belgium, Poland, Italy, Czech Republic, United Kingdom

9 Work Packages
7 Technical work packages
1 Dissemination and Exploitation
1 Management

Project Budget
5,9 mil. EUR

CHALLENGE

The buildings sector accounts for the largest share of energy consumption (Europe wide approx. **37%**). As two third of the building stock in 2050 is made up of currently existing buildings, the solution should be realized with the current building stock. The CREATE project aims to tackle this challenge by developing a compact heat storage module.

The CREATE technology is the game changer in the transformation of our existing building stock towards near-zero energy buildings.

The CREATE concept is based on advanced compact thermal storage for existing dwellings using thermochemical storage materials. The heart of the system consists of a vessel that contains a salt that is hydrated and dehydrated, which generates an energy effect. In the time between dehydration and hydration the energy is stored in the salt. We envision two applications for the heat battery:

01 decentral thermal energy storage bridging supply and demand of renewable thermal energy.
02 decentral grid-connected storage for increasing energy efficiency and introducing flexibility in the electricity grid, e.g. using a heat pump.

CONCEPT

The main aim of CREATE is to develop and demonstrate a heat battery, i.e. an advanced thermal storage system based on Thermo-Chemical Materials (TCMs), that enables:

- **Economical affordability:** For the existing building stock CREATE will reach at least a reduction of 15% of the net energy consumption with a potential Return-On-Investment shorter than 10 years.
- **Compactness:** Novel high-density materials will be used in order to limit the use of the available space to a maximum of 2.5 m^3 thermochemical material.
- **No heat losses during storage:** This is an intrinsic material property of thermochemical storage technology, thereby enabling long-term storage.

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

01 Bridging the gap between supply and demand of renewable heat, by storing locally generated solar heat in summer for use in winter (heating, hot tap water).

02 Increasing the flexibility of the energy grid, by converting electricity peaks in renewable electricity, e.g. wind energy, in stored heat for later use.

CO2 reduction due to better use of available renewable energy sources instead of fossil energy

CREATE is focusing the following 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:
As high as 5kW for a single family home.

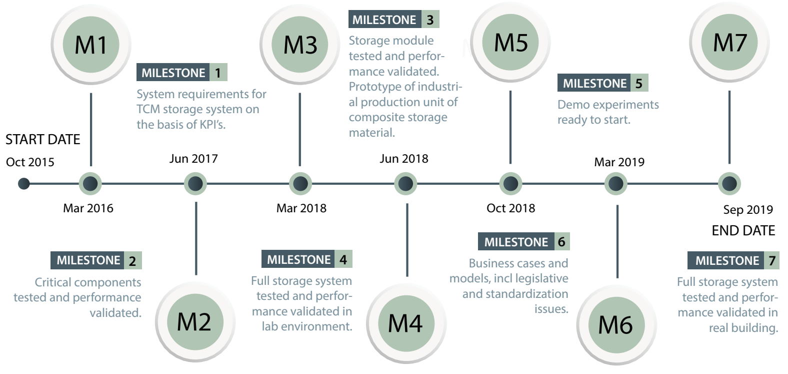
Long lifetime:
TCM/stabilizer composite materials and the prevention of unwanted side-reactions.

Safe and reliable operation:
Full validation and testing against failure modes, effects analysis and demonstration of compliance.

Future value chain:
To 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.

Affordable technology:
Focus on low-cost and maintenance-free concepts for heat storage.

TIMELINE



START DATE
Oct 2015

M1 – Mar 2016 – MILESTONE 1
System requirements for TCM storage system on the basis of KPI's.

M2 – Jun 2017 – MILESTONE 2
Critical components tested and performance validated.

M3 – Mar 2018 – MILESTONE 3
Storage module tested and performance validated. Prototype of industrial production unit of composite storage material.

M4 – Jun 2018 – MILESTONE 4
Full storage system tested and performance validated in lab environment.

M5 – Oct 2018 – MILESTONE 5
Demo experiments ready to start.

M6 – Mar 2019 – MILESTONE 6
Business cases and models, incl legislative and standardization issues.

M7 – Sep 2019 – MILESTONE 7
Full storage system tested and performance validated in real building.

END DATE
Sep 2019

DEMO

Implementation of the CREATE concept is foreseen in typical European dwellings. To demonstrate applicability of the thermochemical storage solution and its operation in real life conditions and to receive early user feedback, MOSTOSTAL will install a full scale solar compact thermal storage system delivered by the CREATE project.
The system will be installed into a single family house in Warsaw, Poland, where a continental climate delivers both cold winters and warm summers.

PARTNERS

WWW.TNO.NL
WWW.CALDIC.COM
WWW.TUE.NL
WWW.MOSTOSTAL.WAW.PL
WWW.AEE-INTEC.AT
WWW.DOW.COM
WWW.DAPPOLONIA.IT
WWW.EDF.FR
WWW.VAILLANT-GROUP.COM
WWW.TESSENDERLO.COM
WWW.LUVATA.COM
WWW.FENIXTNT.CZ

RELATED PROJECTS

http://comtes-storage.eu/
www.einstein-project.eu
www.tesse2b.eu
www.merits.eu

HORIZON 2020 RESEARCH PROJECT
This project is supported by the European Commission under the Energy Theme of the Horizon 2020 for research and Technological development.
Grant Agreement number: 680450

YOU CAN FIND US ALSO ON:
www.createproject.eu

NEWS AND EVENTS

CREATE project website
We have established website for CREATE, for more information about the project and partners please visit:

www.createproject.eu

Social profiles for CREATE created
You can now follow the latest news about the project and partners on Facebook, Google+, LinkedIn and Twitter.

Google+: **CREATE project** (https://plus.google.com/117422497192167205287/posts)
LinkedIn: **CREATE project** (https://www.linkedin.com/company/create-project?trk=biz-companies-cym)
Twitter: **@CREATEproject1**
Facebook: **Create project** (https://www.facebook.com/Create-project-102553596776634/?ref=hl)

Brochure and roll up poster designed
CREATE brochure and roll up poster to be used during dissemination events were designed by FENIX and can be downloaded from the project website.

http://www.createproject.eu/documents

CREATE on BuildUp Portal
The BUILD UP initiative was established by the European Commission in 2009 to support EU Member States in implementing the Energy Performance of Buildings Directive (EPBD). The BUILD UP web portal is intended to reap the benefits of Europe's collective intelligence on energy reduction in buildings for all relevant audiences. It brings together new practitioners and professional associations while motivating them to exchange best working practices and knowledge and to transfer tools and resources. The BUILD web portal targets professionals working in the building sector (public or private) with an interest on the latest developments at technical or practice level, policy legislation, financial issues, etc.

www.buildup.eu
http://www.buildup.eu/en/news/create-compact-retrofit-advanced-thermal-energy-storage-0

IBF – International Building Fair

The CREATE project was presented by the partner FENIX during the International Building Fair in Brno - a unique presentation of all aspects of housing and house constructions, building management services, technical solutions and equipment.

http://www.bvv.cz/en/building-fairs-brno/
photos from the event **http://www.createproject.eu/gallery**

MSE 2016 - Material Science for Engineering

The partner TNO and TUE will represent CREATE project on MSE 2016, which will be organized on 26th - 28th September 2016 in Darmstadt, Germany.

https://www.mse-congress.de/home/

11th ISES Eurosun conference 2016
TNO will represent the CREATE consortium in the 11th ISES Eurosun conference 2016, which will take place in Palma, Mallorca on 12th October 2016.
EuroSun 2016 will be a unique platform to discuss the latest developments with leading solar energy specialists as well as policy makers and industry representatives. The congress will host topic sessions, keynote speakers, plenary sessions and open discussion forums, as well as social events where you will have the opportunity to network, to meet old friends and to make new contacts.