

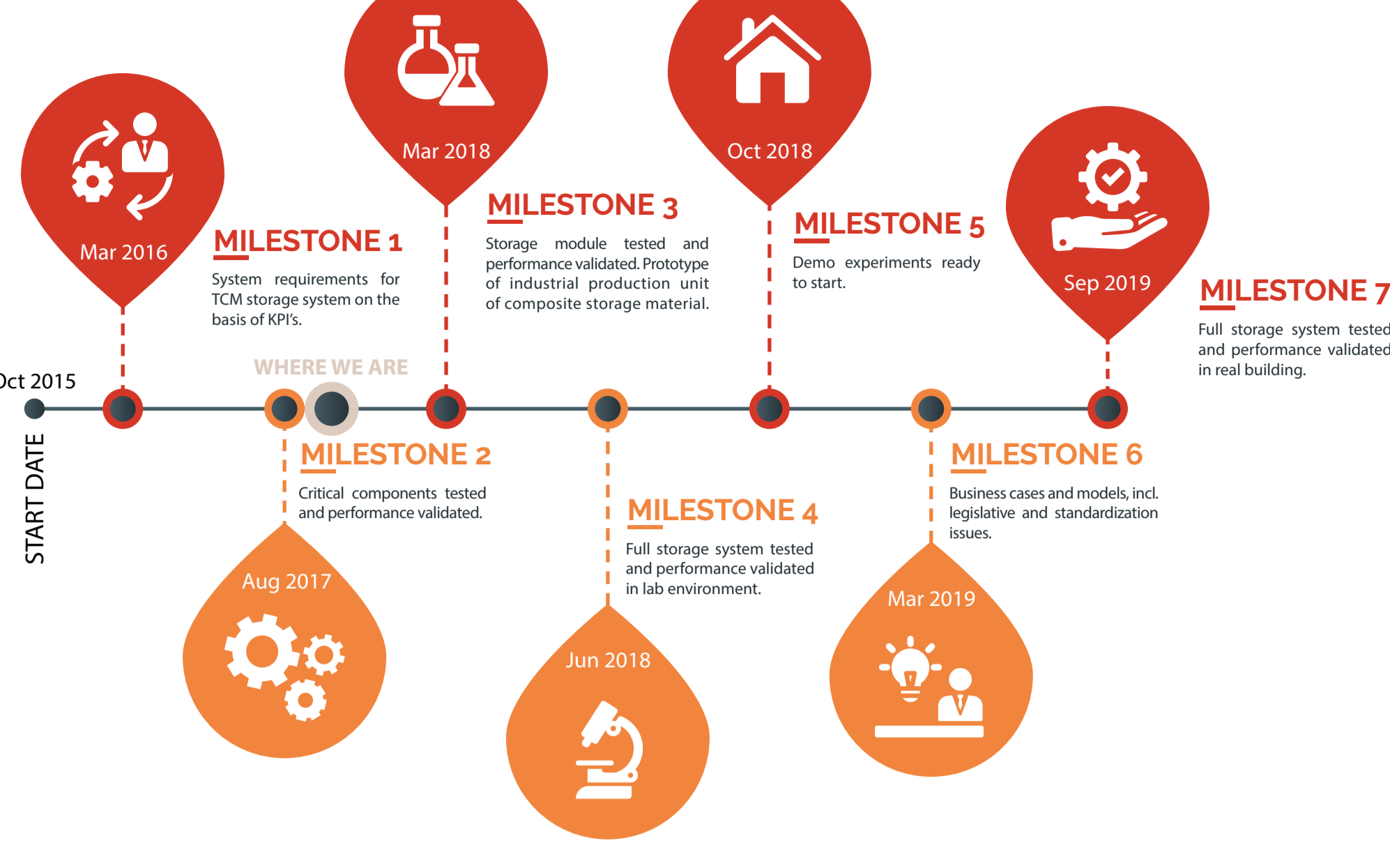
Dear Reader,

this newsletter was created to provide you with an overview of the progress of the **CREATE project**. The project has reached a milestone of **22 months** and it is at this point that we would like to share with you the latest news on the advances that were made in the past months as well as elaborate on our plans for the upcoming period.



Compact REtrofit Advanced Thermal Energy storage
An economically affordable, compact and loss-free heat battery for existing buildings

TIMELINE

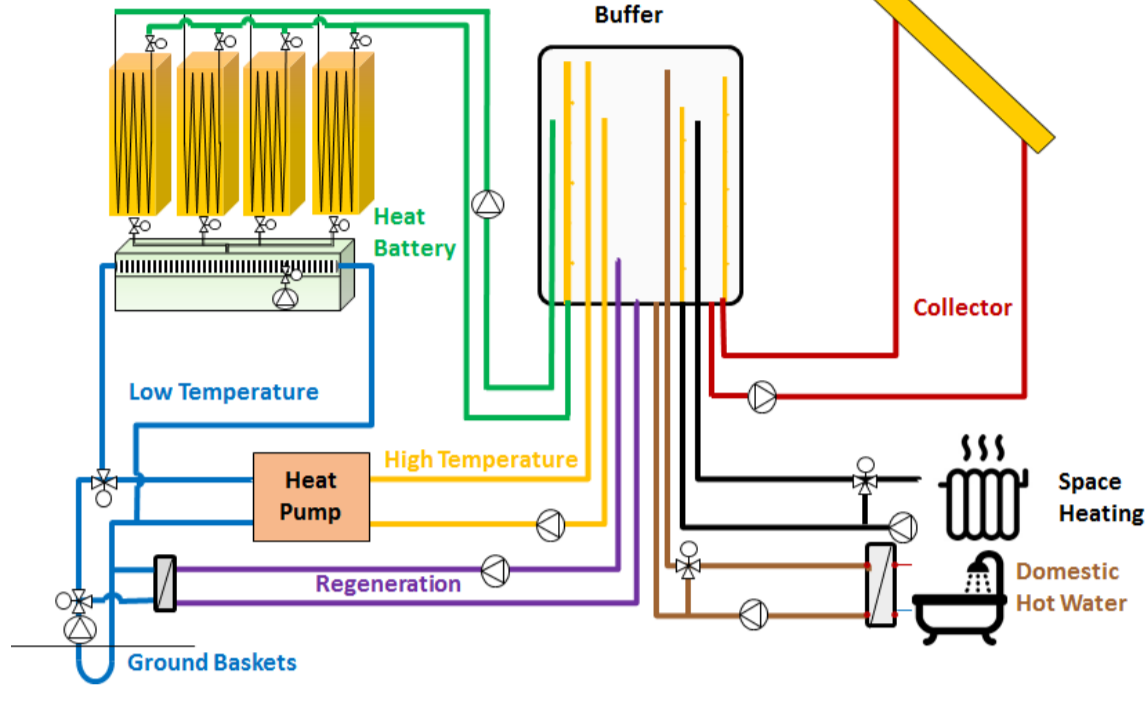


SYSTEM DESIGN

The aim of the CREATE storage system is to cover the domestic hot water and space heating demand of a single family house with a high solar fraction. To achieve this goal, a proper system design has to be developed.

The **CREATE-storage system design** will consist of the following main components:

- Heat Battery (seasonal storage)**
 - Absorber modules with thermochemical material
 - Central evaporator/condenser with water reservoir
- Buffer Storage (diurnal storage)**
- Heat Pump**
- Solar Thermal Collector**
- Ground Source**

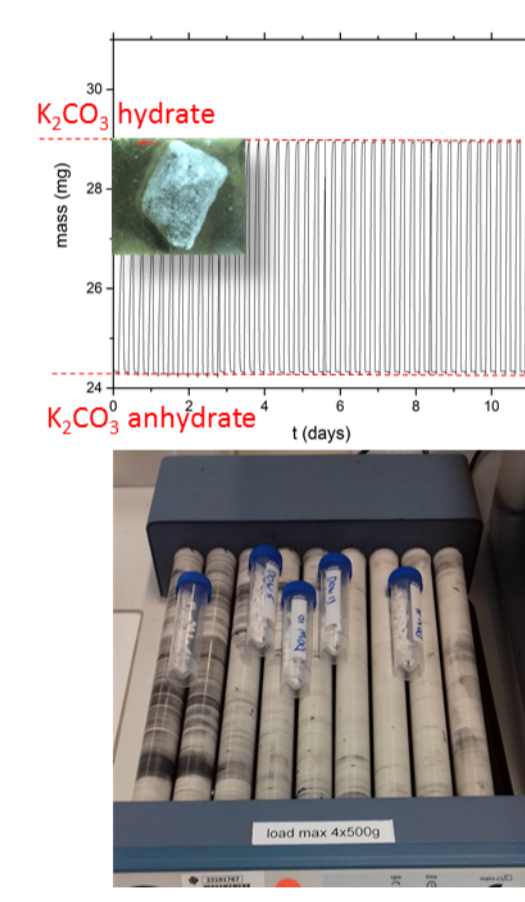


MATERIALS DEVELOPMENT AND TESTING

To select the starting material for the Thermo-Chemical Material (TCM), a database of approximately 600 hydrate reactions of salt hydrates has been made. The long list of salts has been made based on characteristics like the energy density and the (un)loading temperatures. The survey has been published recently in the journal "Applied Energy". From this list, K_2CO_3 was selected for further materials development.



Up to **20 different TCM composites of K_2CO_3** have been made on lab-scale by **DOW and CALDIC** and extensively tested at the **Eindhoven University of Technology**. Based on the characterization results, two composites have been selected for further upscaling.

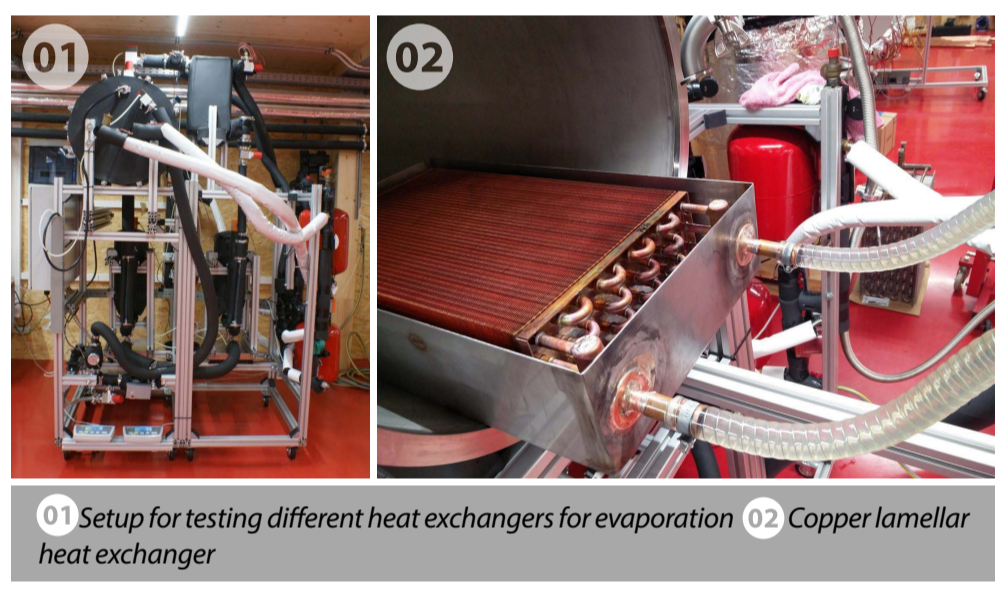


- Energy density single particle
- Energy density particle bed
- Cyclic (un)loading
- Pressure-temperature characteristics
- Outgassing
- Mechanical stability & dust formation
- Thermal conductivity

* Donkers, P.A.J., Sögütoglu, L.C., Huinink, H.P., Fischer, H.R., Adan, O.C.G. A review of salt hydrates for domestic heat storage in domestic applications. Applied Energy 2017;199:45-68.

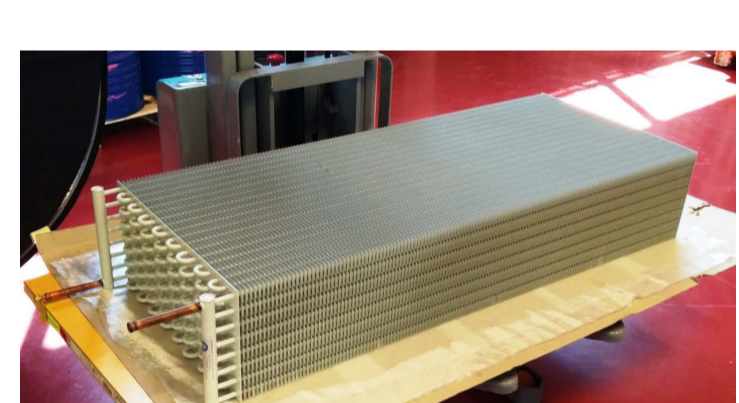
EVAPORATOR/CONDENSER

The **heat exchanger for condensation and evaporation** is one of the critical components in the thermochemical storage system. Especially during the discharging phase, the evaporation of water is difficult due to the cold low-temperature heat source in winter and the unfavourable fluid properties, like the surface tension or higher influence of the hydrostatic pressure. Thus, the design of an efficient evaporator with high heat transfer is necessary because it leads to smaller temperature overheating for the required evaporation performance and consequently enhances the energy density of the storage system. However, there is still a lack of knowledge for designing the optimal evaporator. That's why different concepts and options will be experimentally investigated with a **test facility at AEE INTEC** for the CREATE project. The outcomes of these experiments will help to find the suitable heat exchanger for the final storage system.



ABSORBER HEAT EXCHANGER

At **AEE INTEC**, critical components of the storage module, such as the absorber heat exchanger, are designed and tested. The heat exchanger of one module will hold **250 litres of the storage material K_2CO_3** . It will be used to transfer heat to the storage material during the dehydration process in summer and to return heat to the heating system during the hydration process in winter.



PARTNERS



HORIZON 2020 RESEARCH PROJECT
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 680450.

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

UPCOMING EVENTS

INTERNATIONAL CAE CONFERENCE
The **create project** will be presented by **FENIX TNT** during the **33rd International CAE conference and exhibition** which will be held in **Vicenza, Italy** on **6th and 7th November 2017**. It is the enriching two-day conference driven by industrial peers' and pioneers interrogates traditional methods and approaches in engineering; opening an engineering network source of new and adopted ideas.

PAST NEWS

CREATE is a PART of the E2VENT CLUSTER PROJECTS
The **CREATE project** is now connected with new **cluster project: E2VENT project**. The main aim of the E2VENT project is to develop an energy efficient ventilated facades for optimal adaptability and heat exchange enabling low energy architectural concepts for the refurbishment of existing buildings. E2VENT presents an innovative technology based on **smart heat recovery units and latent heat thermal energy storage** which are going to be integrated into the ventilated façade cavity.

WORKSHOP of the PARTNERSHIP in PUBLIC AND PRIVATE SECTOR in HORIZON 2020
The **CREATE project** was presented by **Petra Colantonio from FENIX TNT** during the **Workshop of the Partnership in Public and Private Sector in HORIZON 2020**. The event was organised by the **Technology centre CAS in Prague, the Czech Republic** and took place on **24th May 2017**. The aim of the workshop was to inform audience about results made during the programs PPP Factories of the Future, Energy-efficient Buildings and SPIRE a Photonics.

CREATE PROJECT PART of the EEB PPP PROJECT REVIEW 2017
We are proud that the **CREATE project** is one of the **155 energy efficient H2020 and FP7 projects** presented in the **6th edition of the EeB PPP Project Review 2017**. This yearly publication presents the progress and results of 110 co-funded projects within the EeB PPP under the 7th framework programme (FP7) for 2010, 2011, 2012 and 2013 and 45 co-funded projects under the HORIZON 2020 programme for 2014, 2015 and 2016.

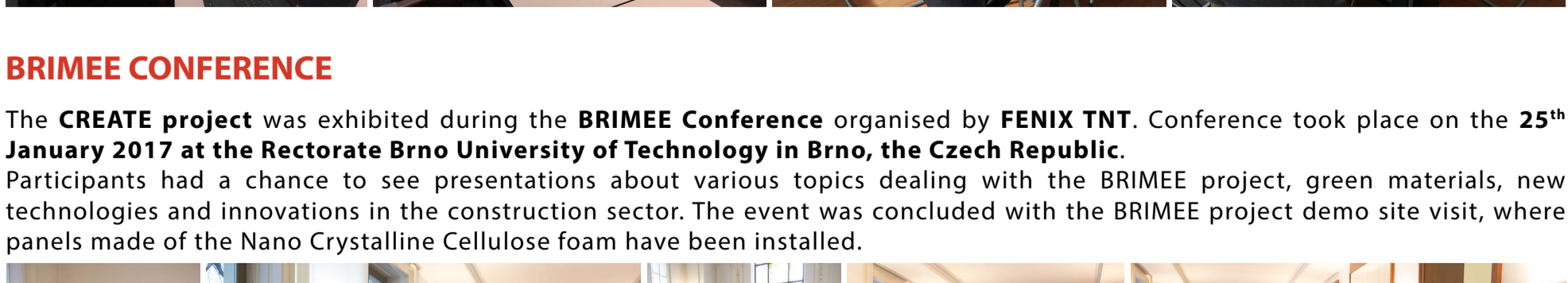
BUILDING FAIRS – BRNO, CZECH REPUBLIC
The **CREATE project** was exhibited by **FENIX TNT** at the **Building Fairs in Brno, the Czech Republic**. The event took place on the **26th–29th April 2017**. Fairs in Brno are well known for a unique presentation of all aspects of housing and house constructions, building management services, technical solutions, equipment, interior design and furniture. Visitors can learn about the latest developments, trends, products and services in various fields.



THIRD CREATE MEETING
The **third general meeting of the CREATE project** took place in **Brussels, Belgium, from 19th to 21st April 2017**. The project's consortium consists of 12 partners from across Europe. They came to meet, discuss and evaluate the project's progress with the next steps. The first day of the meeting was dedicated to the review of last 18 months of the project together with the **Project Officer from the European Commission**. The General Assembly meeting was scheduled for following two days.



BRIMEE CONFERENCE
The **CREATE project** was exhibited during the **BRIMEE Conference** organised by **FENIX TNT**. Conference took place on the **25th January 2017** at the **Reactor Brno University of Technology in Brno, the Czech Republic**. Participants had a chance to see presentations about various topics dealing with the BRIMEE project, green materials, new technologies and innovations in the construction sector. The event was concluded with the BRIMEE project demo site visit, where panels made of the Nano Crystalline Cellulose foam have been installed.



BAU 2017
The **CREATE project** was exhibited by **FENIX TNT** on **BAU 2017**, the World's Leading Trade Fair for Architecture, Materials and Systems which took place in **Munich, Germany** on the **16th–21st January 2017**. BAU presented a display of architecture, materials and systems for commercial and residential construction and interior design, for both new-built and R&M projects. Every year, around 2,000 exhibitors from more than 40 countries present a comprehensive range of materials and technologies for planning and construction.

