

Newsletter

June 2023



Bringing advanced heat batteries in residential heat & electric systems closer to market through real life demonstration in different climates

Learn more about the HEAT-INSYDE project and its heat battery demonstration sites

Well into the project's third year, the past few months have seen a continued focus on the preparation of the heat battery prototypes that will be installed in three houses across Europe, where they will be tested in real-life conditions for their performance and optimisation. The houses themselves also required some preparatory work to be able to host the heat storage system, which is partially still underway but nearing its completion. These and other project updates were intensely discussed by all of the HEAT-INSYDE project partners at our latest General Assembly, held in Cadarache in the south of France at beginning of May 2023.

Read all about the three demonstration sites and our project's latest insights in the following pages. As usual, we also combined a collection of upcoming events of relevance to heat storage enthusiasts, so don't forget to mark your calendars.

Enjoy the read and we look forward to bringing you more news from the demonstration sites and project updates in the next issue of this newsletter – make sure to [subscribe](#) to receive it directly in your inbox!

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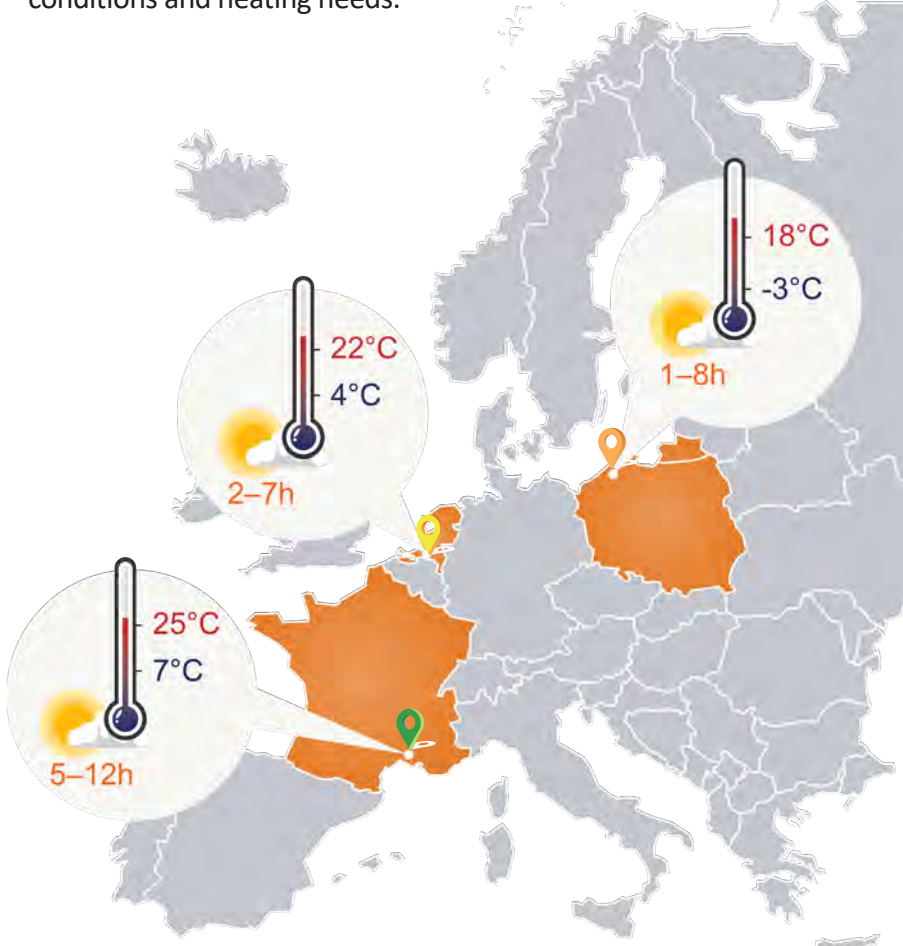


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DISCOVER THE DEMO SITES

A prototype of the HEAT-INSYDE heat battery will be demonstrated in three European countries with different climates, by installing it and testing its heat storage performance in three single-family houses. The demo sites were chosen for their different climatic conditions and heating needs.



As the demonstration sites will enable us to test the performance of the heat battery in real-life conditions, throughout the whole preparation process it was paramount to plan and prepare for the installation of the heat battery in each house without creating inconveniences for the tenants. Alongside this aspect, some key requirements for the houses to be able to host and operate the HEAT-INSYDE technology included allowing the use of a heat pump and the installation of photovoltaic panels as well as the integration of the photovoltaic panels to the heat battery, the conventional heating system and the energy grid.

Following these requirements and with the selected demonstration houses, the expected outcomes that we aim to achieve through the installation and operation of the HEAT-INSYDE heat battery include a higher amount of self-consumption of harvested energy and an increased COP of the heat pump, leading to reductions in the electricity requirements. Ultimately, we expect this to result in reduced network loads, which would limit the need to enlarge grid connections and be accompanied by more economically viable renovations.

Eindhoven, The Netherlands



Heating needs (kWh/y): **7,000**

Solar PV resource (kWh/m².y): **199**

Gdynia, Poland



Heating needs (kWh/y): **9,700**

Solar PV resource (kWh/m².y): **167**

Cadenet, France



Heating needs (kWh/y): **5,900**

Solar PV resource (kWh/m².y): **250**





Eindhoven, The Netherlands



The demo site in Eindhoven is a social house owned by HEAT-INSYDE partner Trudo. The building was constructed in 1948 and recently renovated in 2022. The HEAT-INSYDE system for this house consists of the heat battery combined with a heat pump and heat panels in a so-called heat shed located in the garden of the house. The storage system provides the house with domestic hot water and space heating.

The heat shed containing the HEAT-INSYDE heat battery, heat pump and heat panels was delivered to the backyard of the house in December 2022 and the full installation of the system is now complete. The heat battery is now connected to the heating system of the house via underground tubing and the heat battery is ready to be turned on for testing over the next weeks.



Gdynia, Poland

The demo site in Poland is a social house in Gdynia, owned by the city of Gdynia and provided for testing in the HEAT-INSYDE project by our partner Fasada. The building was constructed in 1943 and renovated in 2016. The HEAT-INSYDE system for this house will consist of the heat battery combined with an air-water heat pump and photovoltaic panels. The storage system will provide the house with domestic hot water.

At the beginning of 2023 the photovoltaic panels were installed on the roof of the house, while the installation of the heat pump and plumbing work are currently under way to prepare the house to host the heat battery in the coming months. Some of the challenges encountered in the preparation of this demo site to host the heat battery included the need to insulate the building envelope, internal additional electrical work to fit the required power connectivity between the heat battery and the building and the limited space availability of 4 m² for all elements of the storage system including the heat battery and the buffer tanks.



Cadenet, France

The demo site in France is a private house constructed in 1984 and located in Cadenet, where our HEAT-INSYDE partner CEA is the main point of contact and oversees the preparation of the site to host the heat battery. As for the demo site in Poland, the HEAT-INSYDE system for this house will consist of the heat battery combined with an air-water heat pump and photovoltaic panels. The storage system will provide the house with domestic hot water and space heating.

The house is currently ready to host the heat battery that is expected to be delivered to Cadenet in late summer. The heat battery will be installed in the basement of the house, where difficult access and the presence of the house's hydraulic system connection present a challenge that is being duly considered in the installation planning. The space heating in the house will be provided by hot air blowing, for which our partner VMI has developed and installed in the house an innovative system that includes dedicated filters for particle pollution.

HEAT-INSYDE INSIGHTS

The HEAT-INSYDE consortium met in Cadarache, France, on May 10-11th for its 8th General Assembly. Hosted by the project partner CEA, representatives from the project's 14 partners from industry and academia met for two days of productive and intense exchange. During the two-day meeting, the consortium members presented their latest progress, discussed the challenges to meet the ambitious [objectives of the project](#) and were also accompanied for a guided tour to CEA's solar power facilities.

After a warm welcome from Etienne Wurtz (CEA), the HEAT-INSYDE coordinator Olaf Adan (TNO) opened the floor emphasizing the important phase the project is now in:



“We are entering a crucial phase on the project so having face-to-face meetings is a must to discuss our progress and to keep our spirit of collaboration alive”

The first day focused on discussing the progress in all aspects of the project, with presentations ranging from the heat battery production to the communication and exploitation of the project's outputs. The current status of work at the three single-family houses in the Netherlands, France and Poland, the so-called [demonstration sites](#), where the heat battery will be installed and tested in real-life conditions, formed a key point of discussion to refine the plans for the delivery and installation of the heat battery over the coming months.

The in-person meeting created the ideal opportunity for small-group discussions on specific topics to continue into the later afternoon, leading to progress that was presented to all the following day. The demonstration sites require not only for all technical details to be considered so that the heat batteries can function at their best, but the consortium is also preparing and planning for easy installation, maintenance and trouble-shooting at three very different sites across Europe. This all requires considerable preparation and excellent team collaboration, which the consortium is striving to maintain.



While in Cadarache, some of the team members took the opportunity to share further insights into their role in the project and the current status of their work – click to watch the short videos and learn more!





UPCOMING EVENTS

On-site event
18 – 20 August 2023
The Hague, Netherlands

[IUPAC | CHAINS 2023 conference](#)

The conference, themed 'Connecting Chemical Worlds', brings together all disciplines of chemistry, a diverse audience of chemists from both academia and industry, and from all around the globe. Apart from plenary and invited lectures, the congress will include parallel sessions with oral presentations, focus sessions and poster presentations by junior and senior researchers.

On-site event
18 – 20 September 2023
Bari, Italy

[International Conference on Sustainability in Energy and Buildings SEB-23](#)

The conference aims to bring together researchers, government and industry professionals to discuss the future of energy in buildings, neighbourhoods and cities from a theoretical, practical, implementation and simulation perspective. Deadlines for registration and abstract submission are still to be defined.

On-site event
10 – 12 October 2023
Brussels, Belgium

[ESGC 2023 - Energy Storage Global Conference](#)

Previously taking place every two years and now organised as an annual event due to the gaining momentum of energy storage, ESGC is an international conference renowned for bringing together the latest insights on energy storage's policy, market and technologies and applications.

On-site event
28 – 30 November 2023
Messe Düsseldorf, Germany

[International Renewable Energy Storage and Systems Conference](#)

The International Renewable Energy Storage (IRES) Conference is one of the world's largest, leading international renewable energy storage conferences. In 2023, IRES will be held for the seventeenth time. On a present platform, representatives from politics, industry, science and research can exchange the latest findings in the field of storage technologies and present their results to a broad professional audience.