

Partners



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Project details

Project number: 101096368
Project title: Efficient Compact Modular Thermal Energy Storage System
Project Acronym: ECHO
Topic: HORIZON-CL5-2022-D3-01-14
Type of action: HORIZON-IA
Granting authority: CINEA
Duration: 01 January 2023 – 31 December 2026
EU Contribution: 6.169.498,00 €
Total cost: 8.169.948,00 €

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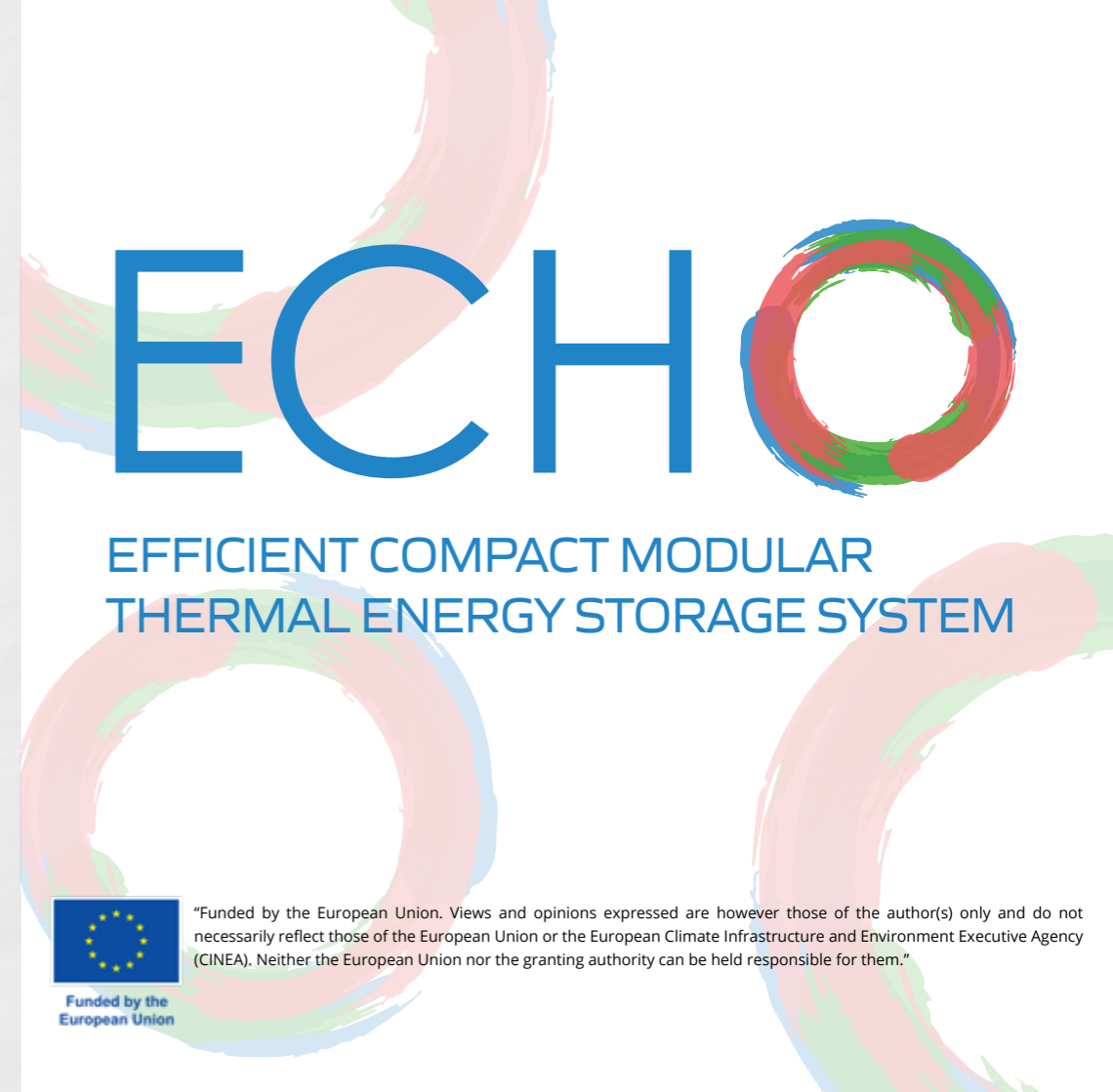
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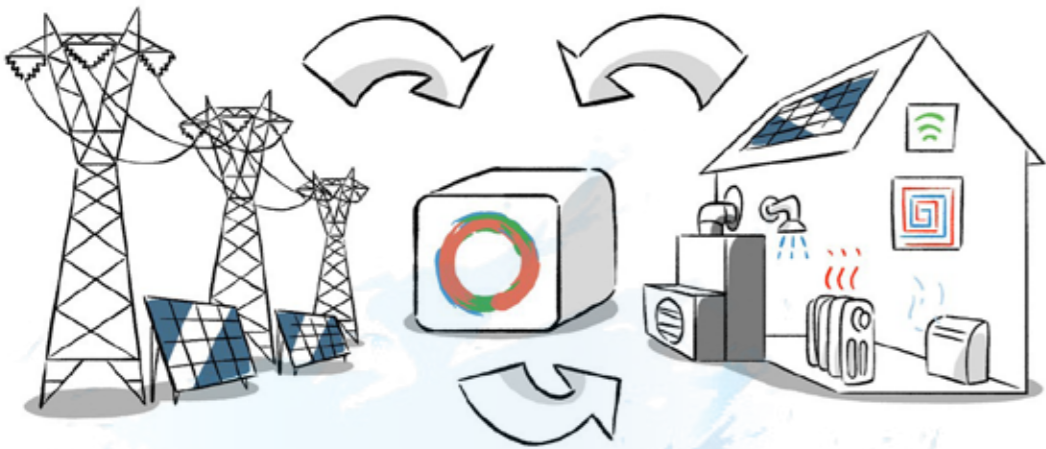
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Project

Scope

Impacts



Energy storage is one of the key factors to reach EU aims to be climate-neutral by 2050, with a net-zero greenhouse gas (GHG) emissions economy. The **decarbonisation** and the **transition to clean energy sources**, together with the improvement of the energy efficiency, will bring to a severe change in the employed energy systems. The potentialities of **thermal energy storage (TES) systems**, able to provide **electricity load shifting** by mean of energy conversion and storage, can help in developing flexible energy systems, managing the intrinsically intermittent nature of renewable energy sources.

ECHO solutions will be **flexible** and **adaptable** to different end-user requests, in terms of charging (and discharging) power, dimension and types of energy sources.

The project's goal is to develop and demonstrate **novel modular, compact, high performances and Plug&Play thermal energy storage (TES)** solutions for heating, cooling and domestic hot water (DWH) production, able to provide electricity load shifting with meaningful peak shaving of the thermal and electric load demands.

ECHO project will provide a key tool for thermal energy storage **in the context of sector coupling and provision of flexibility of demand**. ECHO system will be adapted to the **different energetic scenarios**. Additionally, its **modularity** will allow to use the concept in different scales, from small apartments to larger buildings.

The developed systems will be **adaptable** to different energy sources and user demands. They will be feasible to be charged directly by means of an internal heat pump, exploiting the electricity overproduction from the grid, or directly connecting to renewable energy sources installed in the building.

Methodology



ECHO will demonstrate the impact of TES on European Society, through the exploitation of different materials and technologies, simulating a wide use of these systems in the future (ECHOTSS).



Replicability

ECHO TES device can be sized according to the energy demand of the building, the energy sources and the available space.

Socio-economics

ECHO will enable network-scale integration and maximization of TES impact on flexibility/balancing markets, thus providing a key benefit to network operators as well as socio-economic well-being of end-users/building owners.



Environment

The innovative ECHO TES solutions will contribute to the mitigation of climate change.

Market Transformation

All the necessary actions will be done to build the social acceptance of new energy technologies and increase participation of consumers in energy markets.



Policy

ECHO results can help in the energy transition, informing EU citizens and policy bodies about the positive implication of TES use.