OPENING THE DOORS TO ENERGY-EFFICIENT BUILDINGS IN EUROPE

The Holistic Energy and Architectural Retrofit Toolkit (HEART) makes existing buildings "smarter" and can reduce energy consumption by up to 90%.

BRUSSELS, 27 JUNE 2022

Energy efficiency has long been the foundation of the EU's energy policy and a central pillar of the European Green Deal. Now, it has become even more crucial. The European Commission's Renovation Wave Strategy proposes speeding up the renovation of buildings while also making them more energy-efficient and less carbon-intensive over their entire lifecycle.

However, consumers will only get on board the Renovation Wave if the renovation process is simplified, making it quicker, easier, and cheaper for them. EU buildings are responsible for 40% of our energy consumption, but only 1% of the stock undergoes energy renovation yearly. Hence, energy independence necessarily involves simpler, quicker, and more affordable renovation processes.

The lead author of a parliamentary report on the Energy Performance of Buildings Directive (EPBD), MEP Seán Kelly (who will open the HEART Final Event on 11 July) says:

> *"Efficient, technological and smarter buildings should be the cornerstone of Europe's decarbonisation, but more effort needs to go towards renovating the bloc's current building stock."*

HEART has developed and tested several components that open the door to the easier and faster renovation of the existing building stock. The Toolkit includes a multi-functional pre-fabricated façade system, universal photovoltaic tiles, a high-efficiency water storage tank, direct current smart fan coils and heat pumps, a multi-input/multi-output controller, and a cloud-based platform to support decision-making and energy management phases.

> *"The most innovative part is introducing a system that covers all possible aspects of energy renovation and the possibility of turning an existing building into a smart building. Its functionality begins even before its realisation, it has embedded a software that allows you to analyse the different renovation options and choose the best one."*
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> - Project Coordinator, Niccolò Aste, POLIMI.

This Toolkit reduces energy consumption, with overall savings on heating, summer air conditioning, and domestic hot water production between 60% and 90%. The Toolkit has been tested and deployed in two demonstration cases in Reggio Emilia (Italy) and Lyon (France). Both demo cases are social housing residences very energy intensive. One of the main challenges, but also one of the critical benefits of the HEART Toolkit, is that it is implemented while the residents live in their apartments.

The initial results from the monitored data in the Italian building demonstrate that just an energy-efficient retrofit of windows could reduce annual heating demand by about 16% (from 65.2 to 54.3kWh/m2).

Research has widely demonstrated how reducing emissions and energy consumption requires a substantial rethinking of the building sector. Improving energy efficiency in buildings has been developed considerably and applied with HEART. However, this is too often done in an uncoordinated and fragmented manner while underestimating synergies and benefits gained through different technologies' systemic integration.

Transplanting this high-efficient HEART system in the EU building stock will help achieve the renovation and decarbonisation goals to make Europe the first climate-neutral continent by 2050. Out-of-the-box solutions that make the renovation process faster, more straightforward, and more holistic while keeping the spirit of innovation and modernising buildings at the core will remain vital.

Join us for our Final Conference on 11 July, 11:00 – 17:00 CEST, at Residence Palace in Brussels.

Registration is now open and you can scan the QR code to register directly

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ABOUT HEART PROJECT:

The HEART Project received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 768921. The project is developing and testing several components that will facilitate renovation by using: a multifunctional prefabricated façade system; universal photovoltaic tiles; a high-efficiency water storage tank; direct-current smart fan coils and heat pumps; a multi-input/multi-output controller; and a cloud-based platform to support decision-making and energy management phases. Toolkit installation and envelope technologies are structured as a function of their synergic action, practicality, installation time and non-invasiveness. Applying the HEART's envelope solutions (thermal insulation and windows) ensures thermal loads reduction while applying novel installation technologies (PV, heat pump, fan-coils, storage system) provides energy efficiency and RES exploitation. HEART's control system optimises the building energy performance, enhancing synergies between different installation and technology sub-systems and operating according to an integrated logic.

ABOUT THE FINAL CONFERENCE:

The HEART Consortium is closing the project with a Final Conference on how to open doors to energy-efficient buildings in Europe. The event will take place on 11 July from 11h00 to 17h00 CEST at Residence Palace in Brussels. There will be two-panel discussions on how the pathway to decarbonisation should be; and what should be the role of the European Union in promoting energy-efficient, smart, and flexible building technologies. Partners will present their research approach, developments, and results. The deadline for registrations is 7 July 2022 COB.

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