

RENEWABLES FOR CLEAN ENERGY BUILDINGS IN A FUTURE POWER SYSTEM



www.res4build.eu

The Challenge

Decarbonising energy consumption in buildings is essential to achieving the EU energy and climate goals. While the use of renewable electricity in buildings has grown steadily, the uptake of renewable energy solutions for heating and cooling has been slower. This is due to several factors, including the greater variety of technological options and the varied needs of users and buildings.

Project At a Glance

- Instrument: Horizon 2020 - RIA
- Total budget: € 4,999,702.50
- Duration: 48 Months
- Partners: 15
- Countries: 8

Project Objectives

- Improve the performance and reduce the cost of the most innovative RES4BUILD components.
- Develop tools for simulation, sizing and control, making optimal use of integrated energy systems and the flexibility of consumption.
- Engage all relevant stakeholders in an interactive process to co-design integrated energy systems.
- Test and validate various RES4BUILD solutions in different climates.
- Pave the way for bringing the developed solutions to the market using rigorous life cycle assessments to measure their real impact, ensuring wide adoption.

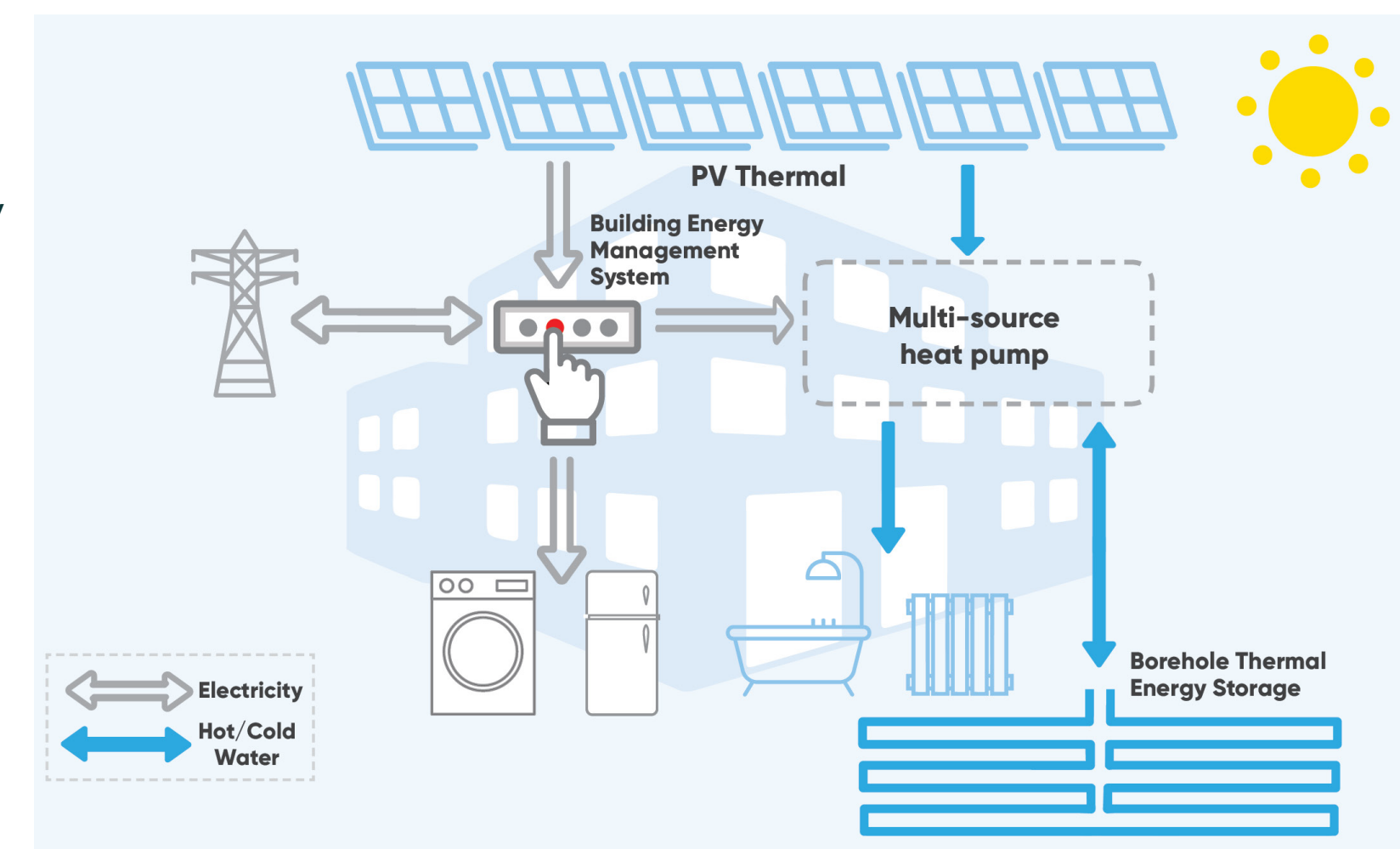
Results/Findings

- Various scientific publications (journal articles), articles (popular science), media outputs (factsheets, press releases, videos), deliverables (open access project reports) and other (conference proceedings, presentations, thesis).
- Two pilot systems tested the integrated components, and project partners explored the challenges involved with implementing these systems into existing buildings
- A numerical model of an integrated RES4BUILD system for buildings, considering the use of various components, was developed in Python.

THE RES4BUILD INTEGRATED ENERGY SYSTEM CONTAINS A NUMBER OF INNOVATIVE TECHNOLOGICAL COMPONENTS.

- Photovoltaic Thermal Collectors to maximise heat and electricity that can be produced when space is limited.
- Multi-source Heat Pump, which combines magnetocaloric and vapour compression technologies.
- Borehole Thermal Energy Storage.
- Building Energy Management System.

Technology Component



Impact of the Project

- Solutions that reduce our dependence on fossil fuels for electricity, heating and cooling in buildings.
- Innovative components and technologies for increased performance in building systems.
- Best practice to approach renovations of energy systems in a more integrated and systematic way.
- Shared knowledge and innovative synergies with industry and other sectors.
- More efficient operation and optimised interaction with the grid, and thus a lower energy bill.
- Social inclusion and an accelerated energy transition due to the co-design approach with various stakeholders.

Contact Högskolan i Gävle
Kungsbäcksvägen 47, 801 76 Gävle
Joao.Santos.Gomes@hig.se

