Building Digital Twin Simulation Workshop

New EU projects for coordinating grid districts and storage. The challenge and new solutions

08/09/2022- Nice, Sustainable Places Conference

This project has received funding from the H2020 programme under Grant Agreement No. 101036656

About the project – Quick facts

Hybrid Coupled Networks for Thermal-Electric Integrated Smart Energy Districts

Duration: October 2021 – March 2025 (42 months)

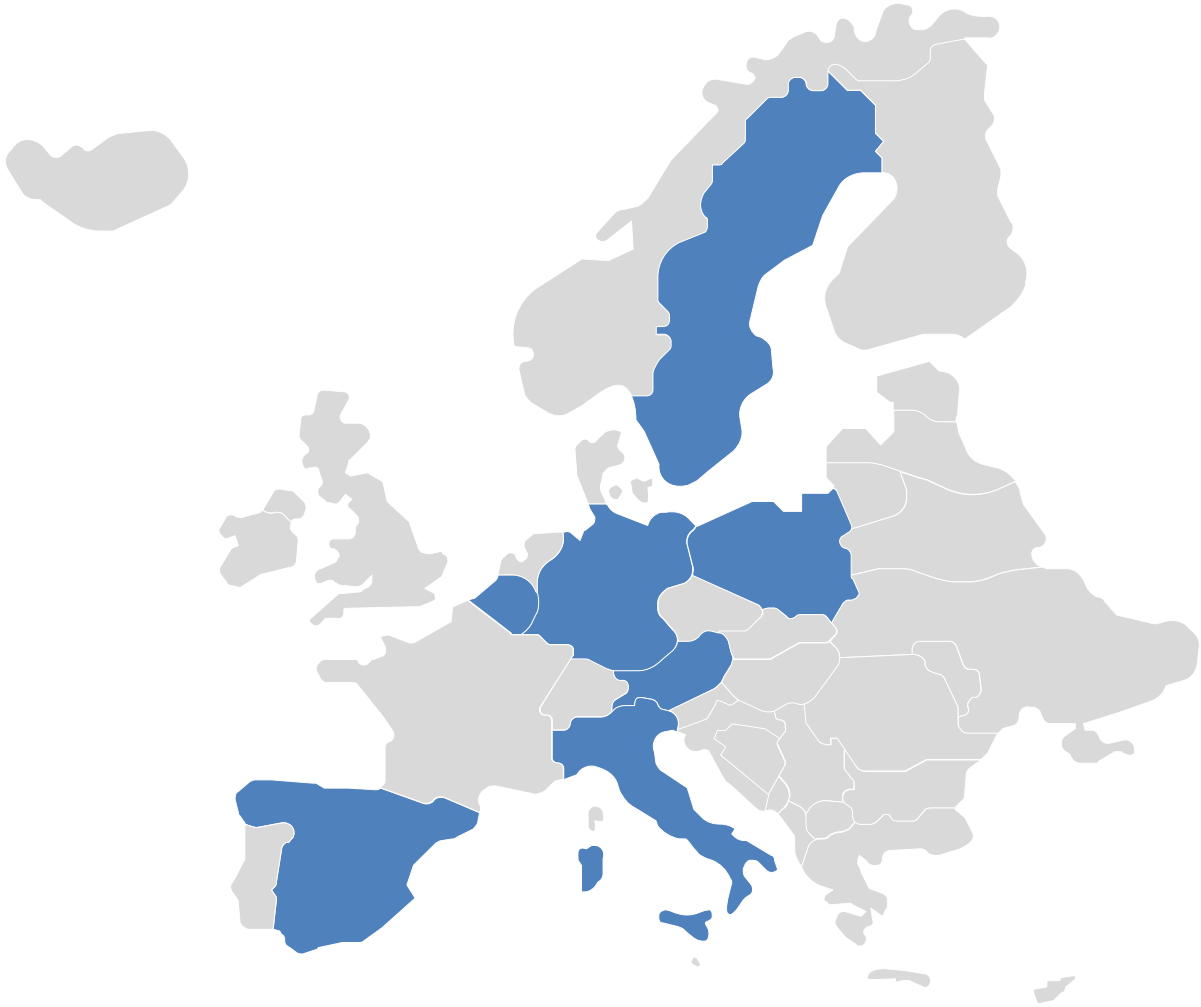
Call: H2020-LC-GD-2-1-2020 (Research and Innovation action)

Partners: 19 partners from 7 countries

TRL: 4-6

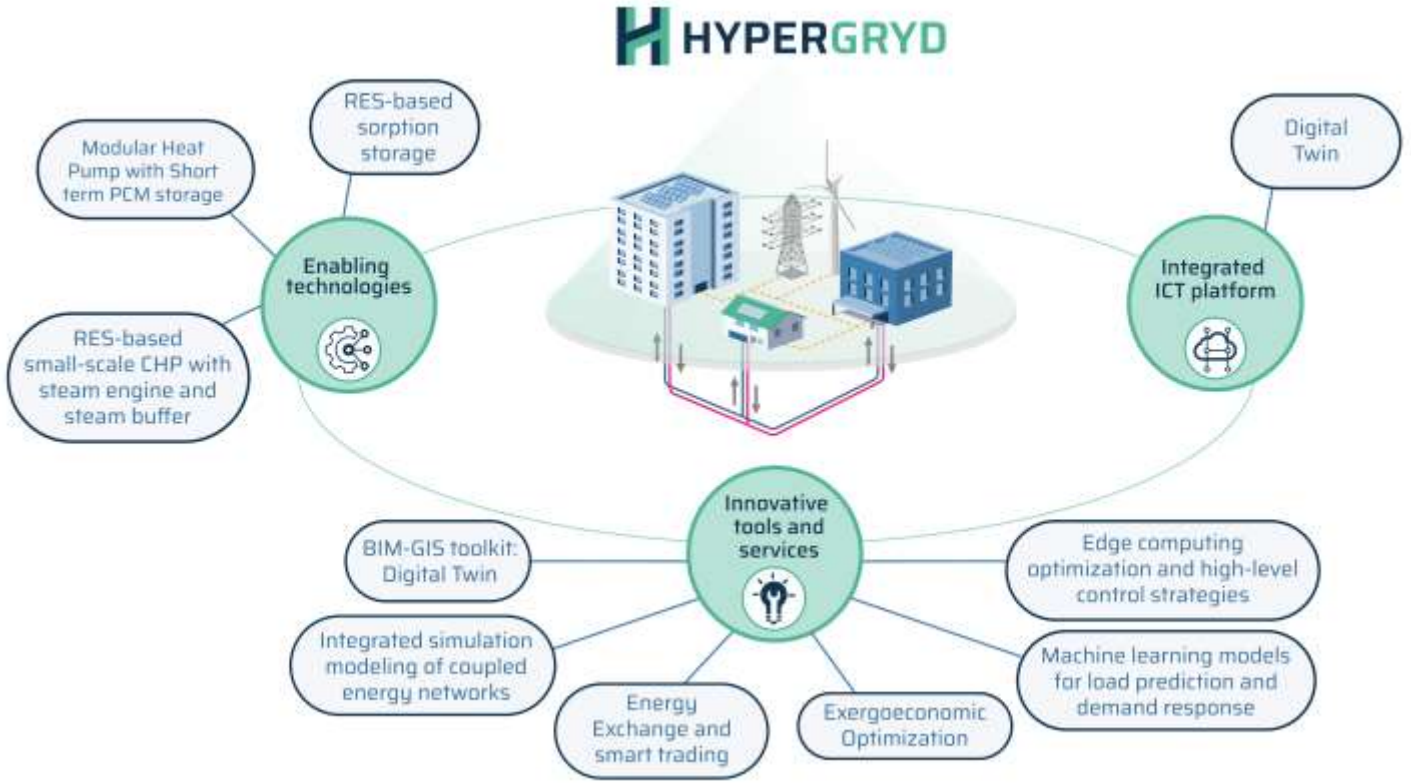
Coordinator: ARCbcn. Francesco Milani (f.milani@arcbcn.cat) & Àngel Font (a.font@arcbcn.cat)

Website: : https://hypergryd.eu/



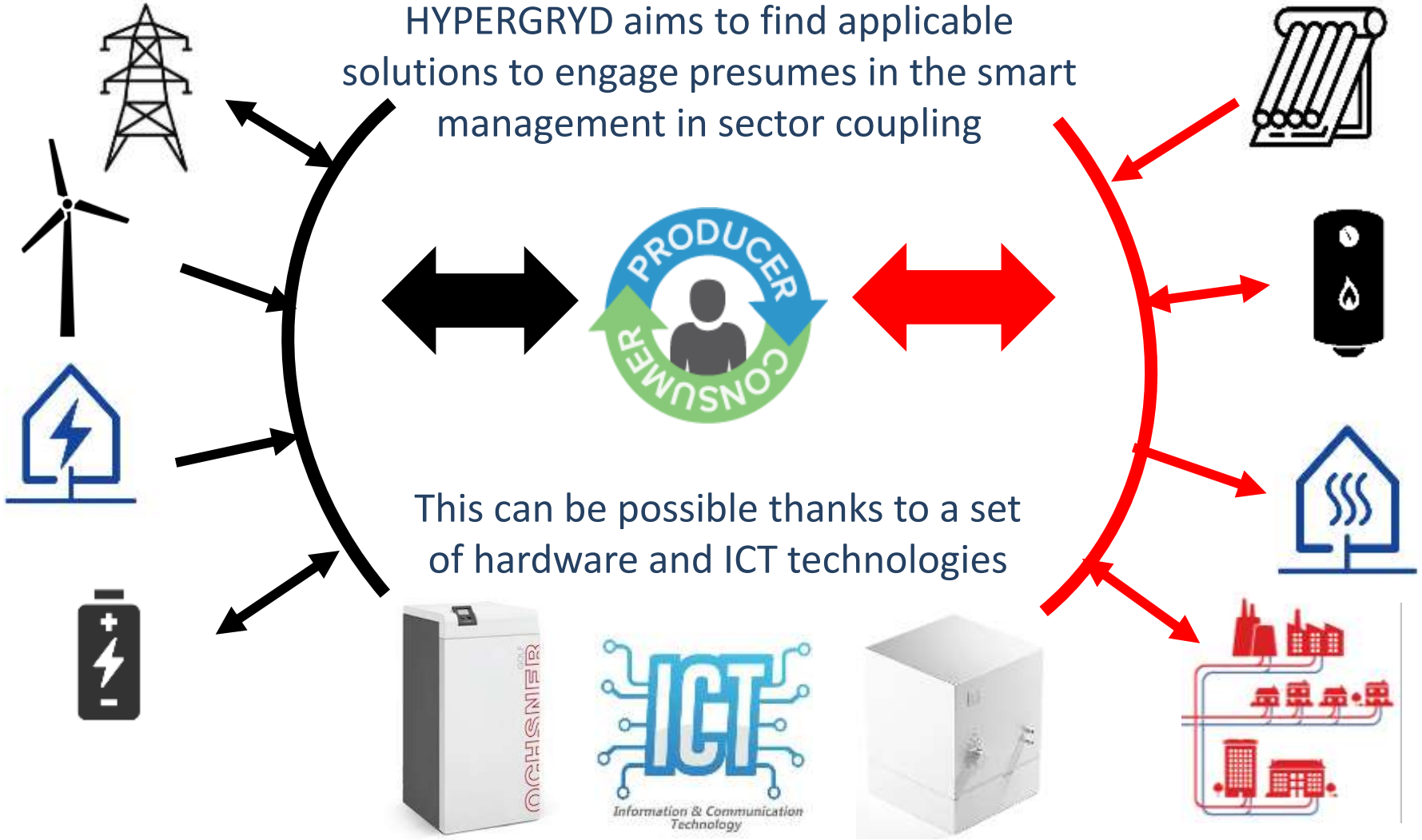
Project Objectives

- Develop and integrate renewable-based solutions to empower the deployment of **smart hybrid energy networks**
- Optimize system design and operation
- Ensure flexibility and rapid deployment and guarantee robust and secure energy supply
- Enhance users' participation in the overall grid energy management
- Develop a single platform functioning as hub for hardware and tools testing



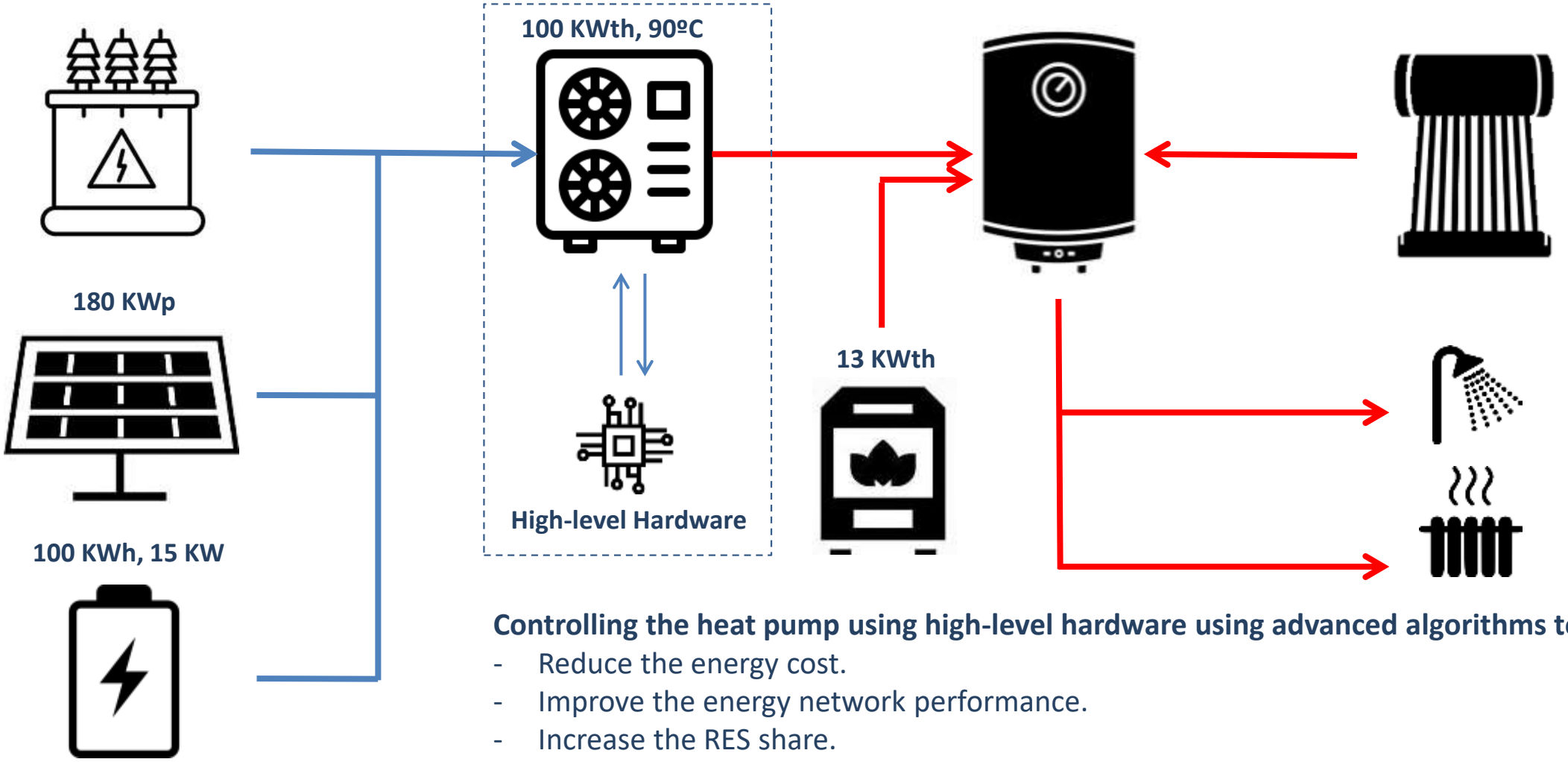
Smart Management

HYPERGRYD aims to find applicable solutions to engage presumes in the smart management in sector coupling



This can be possible thanks to a set of hardware and ICT technologies

Role of HYPERGRYD ICT solution for KEZO heating system

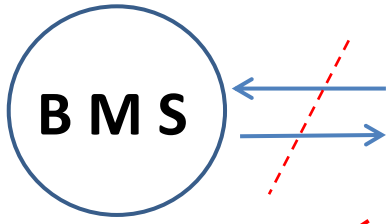


Controlling the heat pump using high-level hardware using advanced algorithms to:

- Reduce the energy cost.
- Improve the energy network performance.
- Increase the RES share.
- Improve the grid operation.

Implementation procedure in the test phase

Energy market
Weather forecast
Other API-based inputs



The edge hardware will drive the CO2 Mayekawa heat pump, in coordination with other units, using AI-based algorithms. The method is based on:

- Bypassing the BMS during the test phase to be able to control the heat pump independently.
- Using the BMS low level controller (PLC) to carry out optimal operations.
- Adjusting the heat pump setpoints in real-time to optimize building energy network performances.
- Considering the biomass boiler as a main heat source for an “emulated district heating”.

Main challenges

Data availability/accessibility (consumption profiles). Data protection and privacy issues

HYPERGRYD Platform: architecture and common database definition

Lack of standards in sector coupling: connection/coupling procedures to DHC and low voltage networks

Supply of IoT components: delivery time for hardware components

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Thank you for your attention

HYPERGRYD