my SMART Life

An European urban transition project towards more sustainable cities through innovative solutions, in the fields of mobility, energy and digital.

Smart City

Global project

Coordination: Cartif
European grant: 18 M€
30 partners, 6 countries
Period: Dec.2016 - Nov.2021
Demonstrators: Nantes, Hamburg, Helsinki

@mysmartlife_EU
https://mysmartlife.eu/

Nantes demonstrator site

Coordination: Nantes Métropole
European grant: 4,5 M€
10 partners

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Energy

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ACTION OVERVIEW

Nantes Métropole

Digital boiler – Pierre Landais building

This action has been implemented by Nantes Metropole in the end of 2020. A deliverable (D2.6) has been written to describe in detail this action, and it is available at: https://mysmartlife.eu/publications-media/public-deliverables/

OBJECTIVES

- To reduce the carbon footprint of Nantes Metropole's buildings
- To develop the use of renewable and recovery energies
- To engage Nantes Metropole in an innovation process

IMPLEMENTATION

CHALLENGE

In light of the climate challenges, energy management and the development of RES are becoming two important levers for reducing greenhouse gas emissions.
Besides, the use of computer servers for storage, data processing, or calculations keeps increasing. Ensuring the proper operation of these servers leads to additional energy consumption over and above the one used to run them: datacenters must be air-conditioned.
Furthermore, Nantes Metropole committed to reach "50% of local and renewable energy by 2050" in its roadmap for energy transition .

SOLUTIONS

A digital boiler process is quite simple: using the heat generated by running servers to heat Domestic Hot Water (DHW) of a building. The benefit is twofold since the cooling need of the servers is also covered by this system.

The **QB-1 system of Qarnot company** was chosen for this action. It is composed of several 2kW-units that together form the digital boiler. Each of them is fitted with a heat exchanger which can recover up to 85 % of the heat released by the servers, the latter being included in each unit. A primary hot water network goes through these units, and then an exchanger allows heat transfer to the DHW of the building. The number of units depends on the required power of each project.

For this system to be implemented, several requirements must be met: a collective DHW production, sufficient floor space and ceiling height in the digital boiler room (hot water storage tank included in the system), eligibility of the building for fiber optics for the servers operation, and an electrical connection of sufficient power.

When implementing delocalized servers, the issue of data protection must be addressed. The access to the boiler room and the servers is secured: security camera, the room is closed by an entry code.

MONITORING

This digital boiler operation is closely monitored so that its energy production can be followed. It is both technical monitoring as well as a way to check the commitments of the company operating the digital boiler. Indeed, the latter committed to supplying a minimum amount of heat per year.

The main key performance indicators (KPI) are heat production, building consumptions (heat, DHW, electricity) and the related greenhouse gas emission savings.

These indicators will be aggregated with those of all the actions of the Nantes-based mySMARTLife demonstrator to give a consolidated result of the overall impact of the project.

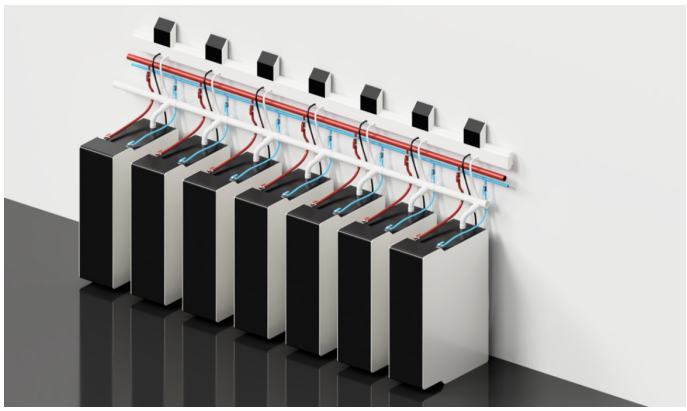
► BENEFITS

Environmental

› Energy savings on the computer server cooling
› Energy savings on the DHW needs, 20 MWh less per year.

Economic

› Commitment to an innovation approach thanks to this new energy recovery technology
› Visibility on the energy price for part of the DHW needs over 15 years (duration of the agreement).



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