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 – Oiseau des Iles building

This action has been implemented by Nantes Metropole during the first semester of 2020. A deliverable (D2.6) has been written and described in detail this action. Link to the publications listing:
https://mysmartlife.eu/publications-media/public-deliverables/

► OBJECTIVES

› To reduce the carbon footprint of Nantes Metropole Habitat social housings by developing building-integrated renewable energies
› To control and lower the tenant charges
› To engage Nantes Metropole Habitat 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.
This action also contributes to the commitment 11 of Nantes Metropole roadmap for energy transition “50% of local and renewable energy by 2050”.

SOLUTIONS

A digital boiler process is quite simple: using the heat generated by the 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.
Several technologies of digital boiler exist. The system chosen for this action is the one from Stimergy company. It consits in immersing computer servers, made specifically for this purpose, in oil. The latter rises in temperature with the running servers, and is then cooled down through an exchanger with a first water circuit. This water circuit thus rises in temperature and goes through a second exchanger to heat the DHW of the building.

This system allows to **save up to 50 % of the energy needed for DHW production.** 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, 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, the digital boiler is locked.

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

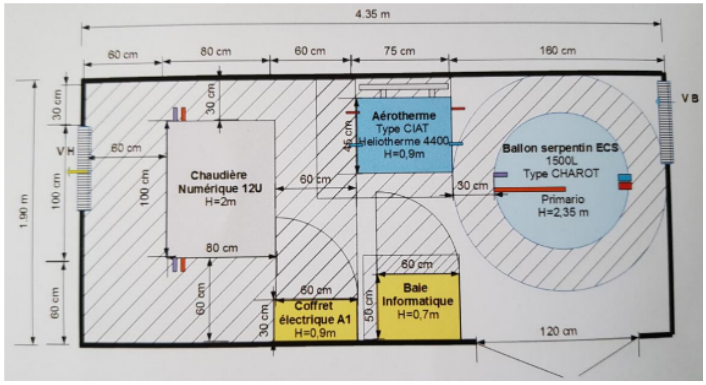
- Energy savings on the computer server cooling
- Energy savings on the DHW needs, 19 MWh less per year, which is around 50 % of the energy needs for DHW
- Decrease in the greenhouse gas emissions

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).

For the tenants

- Decrease in the tenant charges thanks to the energy savings on DHW (the investment is taken of by Nantes Metropole Habitat, thanks to its innovation budget and mySMARTLife grant).
- Raising tenants' awareness of the environmental impact of their daily energy consumption



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