



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

Smart City

Global Project

Coordination: CARTIF
European grant: 18M €
30 partners, 6 countries

Period: Dec. 2016 - Nov. 2021
Demonstrators:
Hamburg, Helsinki, Nantes

@mysmartlife_EU
<https://mysmartlife.eu/>

Helsinki Demonstrator Site

Coordination:
The City of Helsinki
European grant: 5,6M €
7 partners

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Smart Grids

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ACTION OVERVIEW

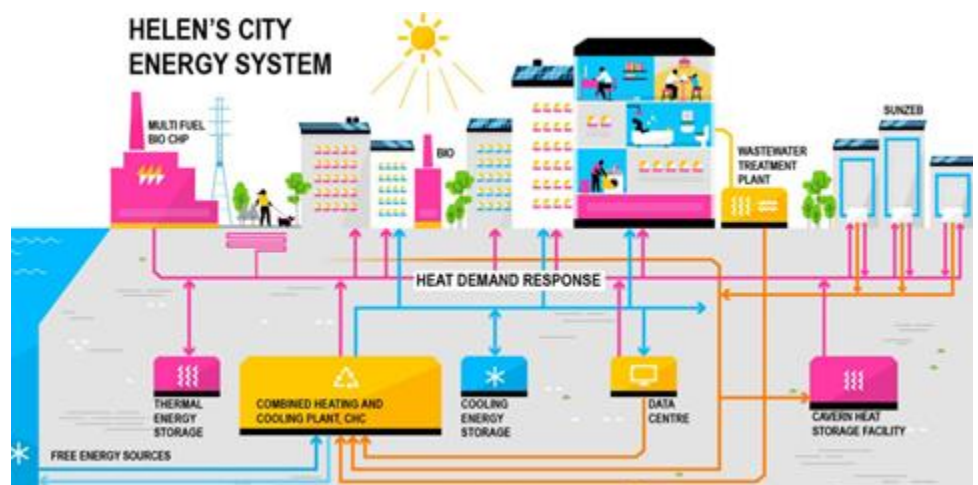
Kalasadama SunZEB Block

This action was implemented by Helen Oy in collaboration with VTT Oy. A full report (D4.22, D 4.5), written in English, November 2019, is available on <https://mysmartlife.eu/publications-media/public-deliverables/>

► OBJECTIVES

- › To implement a novel building concept that combines energy-efficient building structure design and the CHC (combined heating and cooling) system
- › To meet the increasing need for housing comfort, right temperature and daylight with minimal environmental impacts
- › To utilize solar heat in the system level as efficiently as possible

► IMPLEMENTATION



CHALLENGE / CONTEXT

The construction of the first SunZEB buildings (four apartment buildings) started at the end of 2018 in Kalasadama.

The SunZEB building solution is based on a highly energy-efficient building design (low energy demand in the first place) and integrated solar architecture. The solar architecture is enhanced by connections to the regional heating and cooling networks, enabling the recycling and collecting the solar thermal energy that otherwise would be wasted.

The solar architecture is the key component of the concept to optimize the use of renewables. Energy from the sun is captured by the building and recycled through the building's cooling system back to the urban energy system, using heat pump technology. What is more, the solar architecture should provide a comfortable indoor climate with lots of ambient light and a spacious feeling at the same time.

PROGRESS

The SunZEB concept enables large window surfaces and comfortable indoor conditions during all seasons. During the summer, excess solar energy and other waste energies are harnessed and stored, and the excess heat is then utilized by the district heating system of Helsinki. During wintertime, radiation from the low-hanging sun heats spaces and creates a lot of natural light for the apartments.

The construction of the Kalasatama SunZEB block started in the end of 2018. Asuntosäätiö, Fira and the Kojamo Group are each building their own property in the same city block. The first phase includes the construction of Asuntosäätiö's Hitas site and Kojamo's Lumo rental apartments. The sites of Fira and Asuntosäätiö will be added during the second phase of the implementation. The first SunZeb block will increase the use of renewable energy as well as the utilization of waste heat sources at the system level.

The first SunZEB building by Asuntosäätiö was finalized in April 2020. The architectural solutions used in the block of SunZEB houses of Kalasatama are modern and light.



The SunZEB building of Asuntosäätiö is the second building from the right in Kalasatama's Sompasaari.

MONITORING

The first commissioned SunZEB building is part of the monitoring programme of mySMARTLife. The fulfilment of the objectives set for the SunZEB concept is monitored by:

- › Energy consumption of the building is monitored throughout year
- › Additional sensors have been installed on the apartment level to analyse the indoor air conditions
- › Post occupancy analysis (POA) will be conducted to study the inhabitants' satisfaction with the indoor environment factors

LESSONS LEARNT

- › In general, the terms of plot assignment provide a practical tool for enabling an easier implementation of smart building solutions, including solutions integrated into the district heating and cooling systems
- › Third party sensor installation and end-user engagement increases the workload significantly compared to the normal building and commissioning process
- › However, this approach has a potential to increase the energy-efficiency without compromising user comfort in the future



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