

Verksbyen, Fredrikstad

Norwegian demo neighbourhood

Climate: ❄️ Subarctic

Verket Atrium and Panorama will comprise **56 units** in **apartment buildings**, and they are part of the **Verksbyen urban development project**. The project and associated land areas are fully owned by the real estate developer **Arca Nova Bolig AS**.

Neighbourhood approach

A sustainable and efficient energy system will be set up in **Verksbyen** including mobility and energy exchange solutions between buildings and future neighbourhoods in the area.

Passive systems:

All buildings are built with passive house standard: no thermal bridging, superior windows, high quality insulation, balanced ventilation with heat recovery and an airtight building envelope.

Active systems:

Solar panels integrated into facades and roofs; balanced ventilation with heat recovery; ground source heat pump.

Innovations:

Neighbourhood energy sharing; low carbon design; recycled materials in construction; renewable energy sources/linked to SMART ICT-based components.



@syn_ikiaEU



@syn_ikiaEU



www.synikia.eu



Norwegian University of Science and Technology Sentralbygg 1 Gløshaugen, Alfred Getz vei 3, NO-7491 Trondheim Norway



Our partners

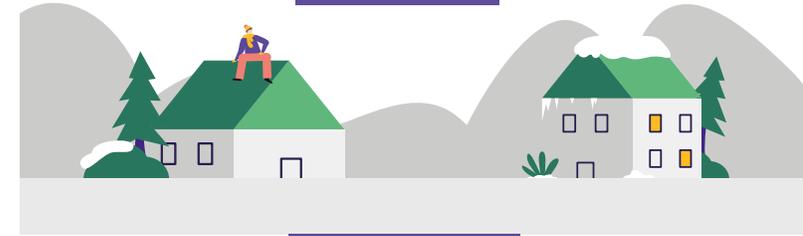


This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No.869918.



Sustainable plus energy neighborhoods

SUBARCTIC



CONTINENTAL



MARINE



MEDITERRANEAN



Our mission in syn.ikia is to increase the share of sustainable neighbourhoods with surplus renewable energy, resilient and affordable living places and communities in different contexts, climates and markets in Europe.

Over the course of the project, four real-life plus-energy demo neighbourhood projects tailored to four different climatic zones are developed, analysed, optimised and monitored, demonstrating the functionality of the plus-energy neighbourhood concept to the rest of Europe.

Loopkanstraat, Uden

Dutch demo neighbourhood

Climate: ☔ Marine

The new built development includes a total of **39 social housing dwellings** - **24** managed by **Area Wonen**, and **16** by **Labyrint zorg & werk** for people with special needs.

Neighbourhood approach and social commitment

Photovoltaic production in the neighbourhood and EV charging stations are considered in the simulations of the demo. The **'social beautiful'** concept has brought together social housing by **Area**, the **municipality of Uden**, social care by **Labyrint** and the developer **Hendriks Coppelmans**.

A **group of tenant ambassadors** were identified in the design phase to lead community building activities and create a dynamic social environment. They will also be responsible for raising awareness and guiding the community about the SPEN concept.

Passive systems:

Thermal insulation of floor, roof, outer walls; triple glazing; and airtight building.

Active systems:

Individual ground source heat pumps for space heating and domestic hot water; radiant floor heating; mechanical exhaust ventilation with CO₂ -sensors; and 190 PV panels on the roof.

Innovations:

Development of a predictive (digital) twin for performance optimization; load balancing at building and neighbourhood level; and performance guarantee within the lifecycle for energy reduction and IEQ.

Gneis District, Salzburg

Austrian demo neighbourhood

Climate: ⚡ Continental

New built and renovation of **250 social housing dwellings and kindergarten** in an existing neighbourhood. The apartments are built by **Heimat Österreich**. **40 apartments** will be distributed through **Caritas** to residents with special needs.

Neighbourhood approach and social commitment

Caritas together with a highly motivated +55-year-old community group **"Wohngruppe Silberstreif"** are shaping the neighbourhood's atmosphere. The social housing provider offers advice and consulting services about energy use and home renovation and is working together with residents to set up a self-sufficient energy community. The premises will also include facilities such as a kindergarten, doctor, café, co-working spaces, common rooms and special assistance rooms.

Passive systems:

Optimised insulated building envelope, triple glazing and airtight building.

Active systems:

Photovoltaic power plant; heat pumps for ground source and waste water for heating and domestic hot water. Mechanical exhaust air ventilation.

Innovations:

Smart house technology (production, consumption & IEQ); user behaviour assessment and optimisation; energy peak shaving as a result of dynamic energy modelling; green roofs and consideration of aspects of climate change adaptation.

Fondo, Santa Coloma de Gramenet

Spanish demo neighbourhood

Climate: ☀ Mediterranean

It is a typical **newly built** urban project, a multi-family building comprising **38 housing units**. The apartments are developed and will be managed by the public housing provider **INCÀSOL**.

Neighbourhood approach and social commitment

The regional housing agency (**Agència de l'Habitatge de Catalunya**) accompanies, communicates, and effectively engages residents with their new home, and supervises building operations, maintenance and rents.

Facilities will be shared at a neighbourhood level with a medical centre. An energy manager will be in charge of monitoring and optimizing the needs and energy production of both buildings.

Passive systems:

Optimised insulation for each facade; inertia of elements; shadows (to control overheating in summer); control the absorptency of materials; and optimal ratio of windows in facades.

Active systems:

Centralized heat pump for domestic hot water and heating supplied by photovoltaic panels.

Innovations:

Energy sharing with other public buildings in the neighbourhood; power installation of the grid will be reduced and adjusted; the data of energy generation and consumption will be shared with the medical centre; the renewable energy generation is beyond the requirements of building code; public procurement of building works includes sustainable and environmental requirements.

