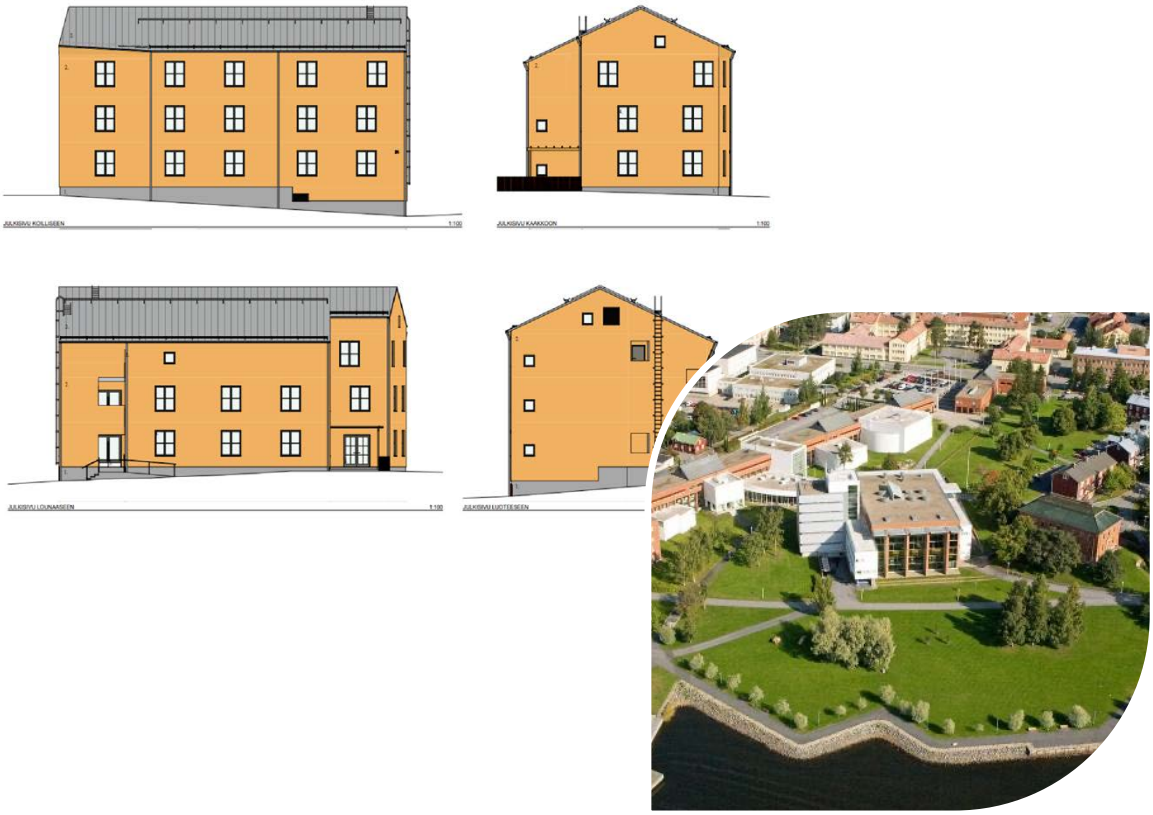
The VOAS Pilot

Vaasan opiskelija-asuntosäätiö, VOAS, The Student Housing Foundation in Vaasa, Vaasa, FINLAND

Wolffintie 24, 65200 Vaasa, Finland
https://www.prolight-project.eu/demo-case/city-of-vaasa-finland/



Overall summary:

VOAS Pilot incorporates modern solutions for energy management, including the following:

- Highly energy efficient construction that will be 30% more energy efficient, at the minimum, compared with the existing housing;
- Renewable energy will be accepted as the source of energy as much as it is possible, in collaboration with the local utility and VEBIC, the University of Vaasa;
- VEBIC together with VOAS will establish a LivingLab, meaning a real-life context for continuous, regular and long term R&D and demonstration activities for new technical, economic and social solutions;
- VOAS will prepare a LivingApp, and within the ProLight project an independent compartment for guiding and tutoring young students with their daily routines of energy use, waste management and circular economy will be prepared; the whole App will be available for all students also in other targets than the VOAS Pilot.

ProLight Demo district – GENERAL DATA

Pilot description and expected performance results (incl. No. of buildings, Building type, Renewables, Others):

Demo site, option 1:
Wolffintie 24
21 apartments
Energy class A
Ground heating/District heating
Solar panels
Room sensors

Construction of a new energy efficient building on an empty plot. The house will offer modern living in studio apartments, very close to the University campus and seaside nature, and with walking distance to the City centre.

Demo site, option 2:
Palosaarentie 58
66 apartments
Energy class A
Ground heating/District heating
Solar panels or green roof
Room sensors

The building will replace the old, not energy efficient, student dormitory built in 1968, which is in poor condition. The building has indoor air problems and there are many spaces that cannot be used for any purpose. The new building will have 66 modern student apartments, as well as common spaces that will also be used by other students living in the area.

During the project, VOAS will take in use a phone application that allows the tenants to manage all matters related to their housing and from which they can get information on energy consumption, water consumption and recycling rate, among other things. With the help of new buildings, apartment-specific information about the environmental effects of living is obtained, and via the application, the information can also be passed on to the resident.

With the application and information we can guide the students for energy saving habits, separation of waste at source, circular economy, but also some fundamental “habits of living” important especially for new students who start their independent life outside childhood home. This also makes the concept socially innovative. With the energy saving construction, smart metering and rational use of energy directly affect the rents and other costs of living paid by the residents.

Climate area, Location urban/suburban

Vaasa, Finland. Cold, Northern Europe. Urban.

Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district
Number of dwellings	Wolffintie: 21 / Palosaarentie: 66
Primary energy savings [MWh /year]	120,85 MWh / n/a
Renewable energy production [kWh /year] -> KPI5 in the project	20000 kWh / n/a
GHG emission savings [TnCO2eq/year]	n/a
Number of TRL 6 to TRL 8 technologies	n/a
KPI7: Investment costs [Euro/m2]	3393 €/m² / 3450 €/m²

ProLight figures for the New European Bauhaus

Demo, Country Finland
1 house, 21 apartments
Number of residents 21

Integrated Renovation Status: Demo option 1 is now an empty plot and on demo option 2 the old building must be demolished before starting a construction.
Liveability: The whole target will be a LivingLab for the VEBIC of the University of Vaasa, meaning systematic, regular & continuous research & development activity as a long-term partnership.
Technological advancement: All will be constructed energy efficient and renewable energy sources are used as much as possible.
Social Innovation/Business Models: The energy management concept will include, on top of using RES & energy saving construction, smart metering & incentives for rational use of energy, i.e. saving that directly affect the rents & other costs of living paid by the students. The VOAS "LivingApp" will be developed, with the purpose of guiding the students for resource/service efficient habits.

Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?

VOAS is a non-profit foundation, and all benefits will be directed to rents and tenants. Public funding for separate investments, see below (Financial instruments).

Utilised financial supporting instruments:

- ARA (The Housing Finance and Development Centre of Finland; ARA supports the improvement of the housing conditions of people with low or average incomes and special-needs groups, including students) subsidy, 15 % of the total investment;

- Financing by loan, 85% with special conditions: Green funding when 30% energy saving, fossil replaced by renewable energy.

Main economic activities in your city/region:

Energy technology industry, electronics, marine machinery, Retail, Construction..

Envisaged local dissemination activities:

- The LivingApp delivered to all tenants, accompanied with information on website and special meetings

- Information to the local audience: newspapers, local and regional radio and TV, info meetings

- Following the ProLight dissemination strategy and program

LEGISLATION

How are energy communities regulated in your country/region?

Energy community's participants must be on the same lot (or belong to same real estate group) in order to share the produced or stored electricity. Production and consumption are measured by smart metering and using data hub.

STAKEHOLDERS

Local stakeholders and partners:

- VOAS, Vaasan opiskelija-asuntosäätiö (The Student Housing Foundation in Vaasa), the owner.

- VEBIC (Vaasa Energy Business Innovation Center), University of Vaasa, R&D partner; will establish a LivingLab concept (continuous, regular, long-term R&D partnership) for the whole target area.

What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

The residents will get to know more about their energy consumption and get savings directly. With accessible data, awareness of energy issues will rise among the residents. Living in an energy efficient and sustainable house, can have meaning to people, as especially young people feel environmental values very important. Does the information and energy efficiency of the house make it more attractive to residents?

University researchers and students will learn more through LivingLab concept. The application will also be implemented in VOAS old houses, so in the best case, the application will have approximately 2500 users at the end of the project and there will be comparison data available.

REQUIREMENTS

Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

Response: The financing instruments presuppose and audit afterwards that 30% energy savings will be achieved, compared with the existing buildings. Energy poverty is addressed from the very beginning of planning and subsequent construction.
VOAS is a non-profit organisation. All benefits are seen in lower rents, which already today are among the cheapest ones in Finland. Also, new housing and living concepts developed by the foundation benefit directly the tenants.
All benefits will be evenly, equally and transparently distributed within all tenants, without any risks for gentrification.

Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

Response: Attention will be paid to waste handling during construction, and modern deep collection containers have been planned for the building, which will allow residents to sort waste efficiently. The amount of waste and the recycling rate are monitored and information about the results is communicated to the residents via LivingApp. Competitions can also be organized for residents between houses, which can be used to motivate them to recycle. In addition, residents are informed about issues related to recycling.

The waste management companies utilise the organic fraction to biogas, and the incineration plant (using combustible, source separated waste) produces district heating energy for the City of Vaasa. In Vaasa the utilization rate of municipal waste received is over 99 %.

Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction… etc.)

Response: The VOAS Pilot is planned by high quality architects, thus guaranteeing decent aesthetic appearance both for the region and the separate new houses. For this purpose, prefabricated concepts can be challenging, but can be used as far as it is possible. All solutions must be standardised and industrially compatible in terms of the permit procedures and renovations in the long-term.

Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

Response:

- The phone application introduced during the project activates the residents and increases their awareness of the environmental impact of their living.
- VEBIC of the University of Vaasa will use VOAS as a LivingLab, meaning continuous research, development, and support activity – involving both the tenants and the foundation (the owner).
- VOAS will prepare a "LivingApp", and within ProLight a separate compartment for energy (saving, rational use of energy, circular economy, dissemination of information) will be prepared.
- The VOAS housing targets, especially the new ones including this pilot, will devote special attention to creating and activating preconditions for social cohesion. This is done by persuasive meeting places and opportunities, and by the LivingApp, for instance.

New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. sustainability, from climate goals, to circularity, zero pollution, and biodiversity
2. aesthetics, quality of experience and style, beyond functionality
3. inclusion, from valorising diversity, to securing accessibility and affordability:
   a. reconnecting with nature:
   b. regaining a sense of belonging:
   c. prioritising the places and people that need it most:
   d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

Response:

1. The City of Vaasa has committed itself to be coal neutral by 2029. It has elaborated and committed to the "Energy and climate program", which was facilitated by the University of Vaasa. The program includes a vast number of actions, all divided, given responsibilities, scheduled and followed-up within the City's organisation. Vaasa is also the main owner of the regional waste management company that has been one of the forefront actors in Finland in the field of circular economy. It has created a systemic view towards promoting circulation as far as towards product and service systems with premises and areas reserved for companies using circulated materials and things.
2. All construction activities within the City of Vaasa are strictly regulated by the City's organisation and the permit procedures. They include all the mentioned perspectives, from architecture to the quality of construction.
3. The VOAS Foundation has equal rules for accepting tenants.

a. The demo houses, despite of being a part of the City centre, is close to the most important sea side area that is well managed and close to its natural condition. The target residential area has a direct contact with and open access to the park.
b. Participatory processes are included in all construction permit procedures.
c. The City of Vaasa supports the VOAS Foundation which offers students affordable living still with high quality apartments and living concepts. For some students it has been difficult and too expensive to hire apartment from free markets, and student housing has been invaluable for especially young students.

AMBITIONS

What are the demos' visions?

It's in the VOAS strategy, To be among the bests in energy efficiency 2026, as well as a living community and in servitization.

ProLight – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.
Analysed districts include:

- Building and renovating in an energy and resource efficient way in Austria, Finland & Greece.
- Energy communities in Spain, Italy & Portugal combined in so-called Innovation clusters

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