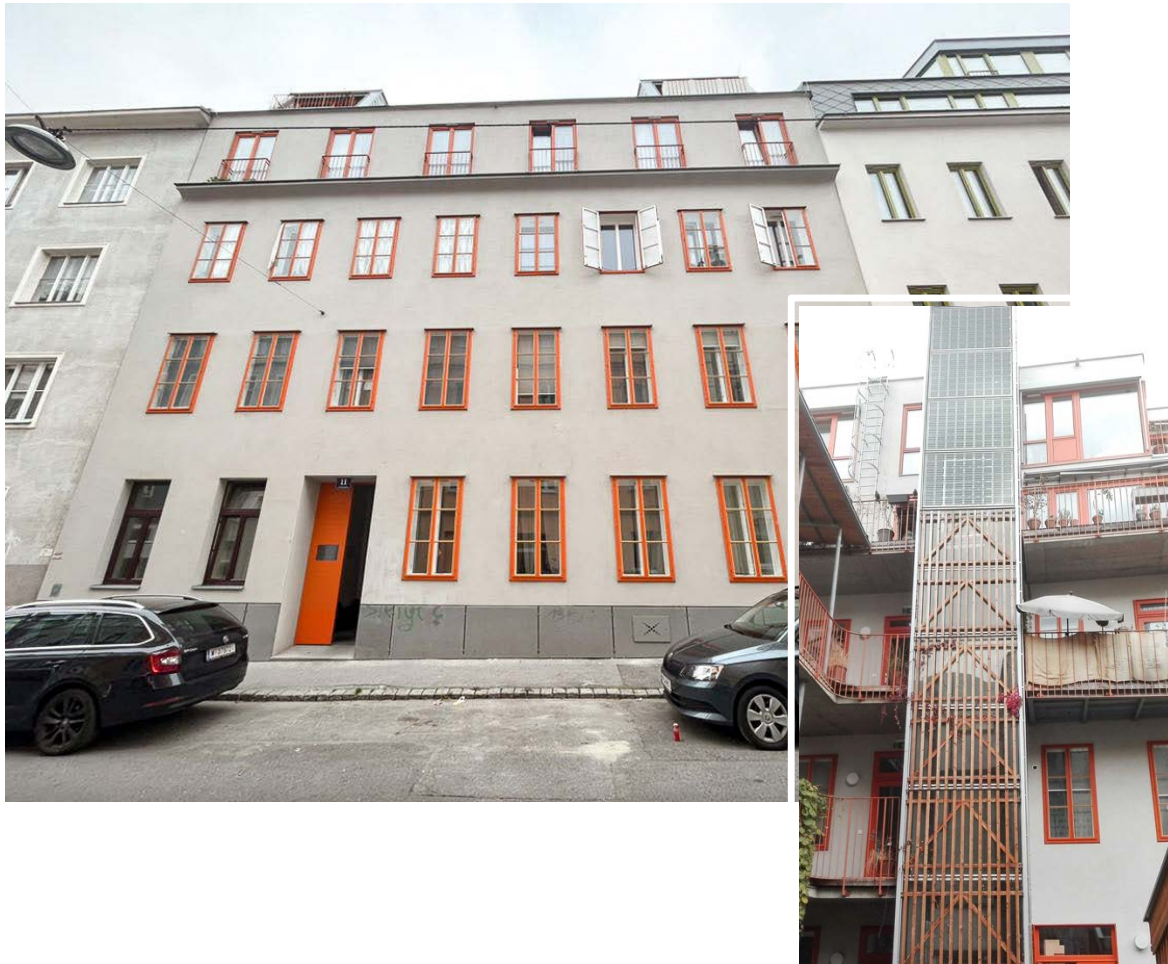


The Viennese-Pilot

Geblergasse, Austria, Viennese building block comprises of 13 residential buildings, district leader FHTW

<https://www.prolight-project.eu/demo-case/vienna-austria/>



Overall summary:

The demo-site is located in the 17th district of Vienna and consists of 13 residential buildings. Two of the buildings are already renovated and serve as a demo light-house project in Vienna. With the combination of heat-pumps, PVT-collectors and an energy grid between the households, the demo site has a flexible, energy efficient way of producing electricity and heat and can provide it to the neighbouring households. A Monitoring phase in the buildings should show the effects of the used approach and also the effects on the indoor climate shall be determined to check advantages not only on the energetic but also on the social side due to increased energy prices.

The project will deploy its solutions to a variety of residential buildings in Vienna in Austria. The use cases involve residential buildings related to the intermediary FHTW.



ProLight Demo district – GENERAL DATA

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

The quarter in Vienna is already partly renovated and extended by new attic floors. Within the courtyard of the multi-family houses, earth storage tanks are installed that consist of 18 earth probes with a depth of 100 m each. PVT (combined PV and solar thermal collectors) are installed on the roof of the multi-family house and the garden wing to the south. The heating centre in one of the building objects supplies heat energy to other buildings. The heat energy is brought into the rooms with a heat pump by means of underfloor heating systems. Some selected facts of the refurbishment results are given in the following:

- Heating load: 55 kW
- Specific heating load: 50 W/m²
- Roof area garden wing: 60 m²
- Roof area of the building: 45 m²

In regards to HVAC and integration of renewables:

- PVT Technologies –
 - Thermal energy: 73.500 kWh /year,
 - Electrical energy: 5.050 kWh /year
- Heat pumps with ground water
- Storage tanks: 120 liters

The water of the heating system and partly also the domestic hot water demand is covered by a brine-water heat pump via a district heating (DH) grid (low temperature network), which is supposed to supply other houses in future. The heating energy for this islanding DH grid is partly produced by 80m² hybrid collectors and partly with 41m² solar thermic absorber mats which are installed on the roofs of one multi-family house of the building block. The hybrid collector is a combination of a solar thermal and photovoltaic system. The electricity production is used for the electricity needs of the heat pump and from the surplus benefit the residents. Via monitoring and dissemination of the project results it is intended to demonstrate that high levels of comfort and a high quality of the indoor environment can be ensured in combination with an energy efficient building complex.

Climate area, Location urban/suburban, Energy performance [kWh/m²*a] (Current / after renovation)

Moderate climate Zone in Central Europe, Urban Area, 35.97 kWh/m²a of existing buildings, 27.41 kWh/m²a after the renovation



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

Key Performance Indicators	Lighthouse district	Expected results
Number of dwellings	18 dwellings installed/connected with the earth storage, originally 8 planned (13 residential buildings)	Efficient energy usage and significantly reduced CO ₂ abatements
Primary energy savings [MWh /year]	~58 %	Even higher savings via optimising the control logic of system
Renewable energy production [kWh /year] -> KPI5 in the project	N/A	Better in-house consumption through PVT-hybrid-collectors
GHG emission savings [TnCO ₂ eq/year]	~66%	High savings through renewable sources with high efficiency
Number of TRL 6 to TRL 8 technologies	PVT-Collectors Soil-Heat pump DH network	The used technologies are tested in the demo-district
KPI7: Investment costs [Euro/m ²]	N/A	Higher investment costs but lower costs during the operation

ProLight figures for the New European Bauhaus

Geblergasse, Vienna
 18 Dwellings (earth storage)
 ~25 flats (refurbishment)

Integrated Renovation Status: 2 houses are already renovated

Liveability: high comfort in the buildings through low temperature heating

Technological advancement: heating energy community

Social Innovation/Business Models: establishing the End-Users Advisory and Interest Group (EAIG) / heat energy community with different renewable sources



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

One-stop shop: thanks to this business model house and apartment owners will get high quality renewed building objects with little risk and responsibility which usually is the case with traditional handicraft renovations. The energy costs will be reduced, the market value of the building may increase, mortgage banks will have a safer asset and there are societal benefits in terms of reduced energy use and greenhouse gas emission.

Utilised financial supporting instruments:

Promotion measures are financially supported by the regional (Viennese) and Austrian governments to bring the investors towards energy solutions that are more ambitious in terms of performance and sustainability.

Main economic activities in your city/region:

As being the capital of Austria, the focus of economic activities is related to governmental and digitalised services, the commercial, construction and tourism sectors, real-estate administrations, the public transport and a nearby airport.

Envisaged local dissemination activities:

Come together with mentioned EAIG members and awareness campaigns towards the building occupants and owners

LEGISLATION

Relevant procurement procedures are depending on who is investing according to the national procurement law. The Dorda Brugger Jordis Rechtsanwälte webpage provides an overview about relevant laws: “For the State (Bund) and public bodies on the central government level, the Federal Public Procurement Law 2006 (Bundesvergabegesetz 2006 – “BVerG 2006”) implements Directives 2004/17/EC and 2004/18/EC (aspects on content) as well as Directives 89/665/EEC and 92/13/EEC (review proceedings). The legal frame for refurbishment of buildings is linked with living-legal laws e.g. laws governing tenancy such as the so-called “Mietrechtsgesetz (Act on Tenancy Law)” and “Wohnungsgemeinnützigkeitsgesetz (Limited Profit Housing Act)”. Of importance is the question how far tenants are obliged to the co-financing of refurbishment measures by the landlords. In addition participation possibilities of which kind of refurbishment measures foreseen are guaranteed to the tenants. The financing of renovation projects depends on promotion models of the federal states which entered into force in regional laws since 1987. As far as only generally used parts of the house are concerned by refurbishment, no formal agreement of the tenants must be caught up by the building manager. If changes are intended, however, in the households e.g. with the installation of ventilation or heating systems, the tenants affected have to agree on it. Renovation and improvement actions are part of the household expenses in the non-profit rental living area in Austria. Financial support for these improvements are determined in the



“Wohnungsgemeinnützigkeitsgesetz”¹. The use of these financial contributions for refurbishment measures must take place within a period of ten years, otherwise they are to be refunded. If the sum of mentioned financial contributions is not sufficient with respect to the needed investments for required refurbishment measures, the building project organisers have two options to demand more payments from tenants. i) There is the possibility to agree voluntarily on the rise of rental payments beyond the legally defined rates. ii) Another possibility would be that landlords and landladies apply for an increase in rental contributions before court. The justice decides about the appropriateness of the renovation intention and how the increase of rental payment is determined. Voluntary agreements are preferred, because judicial judgments can be time-consuming taking into account of possible objections by the individual tenants. Of importance is also the fact that by a judicial enforcement of refurbishments in multi-storey buildings it will lead to low acceptance which may complicate the implementation of the measures.”²

How are energy communities regulated in your country/region?

Based on the Austrian legislation of facilitate formal energy communities (CEC/REC according to the Austria energy law, EAG³). Intention is to harvest benefits from reduced grid tariffs and reduced taxes and levies for its users / customers and prosumers.

What else is important, having impact?

Together with the Viennese Municipal Department 20 - Energy Planning (MA 20) as part of the Administrative Group for Urban Development, Traffic and Transport, Climate Protection, Energy Planning and Public Participation visions of replicating performed refurbishment measures in the neighbourhood have been developed.

MAIN ACTORS INVOLVED AND STAKEHOLDERS

Local stakeholders and partners:

End-Users Advisory and Interest Group (EAIG) has been setup by the house and apartment owners with the intention of keeping the refurbishment directly oriented towards the societal and economic needs of Energy Efficiency and integration of RES in the building objects.

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

The EAIG is in charge of negotiating with the construction firms for the extended implementation actions in the other pending 11 buildings of the block. It acts as a kind of refurbishment community of the neighbouring objects.

¹ Wohnwirtschaftliche Werte: <http://www.gbv.at/Document/View/4156>

² Österreichisches Ökologie Institut: "Erfolgreich Sanieren mit Bewohnereinbindung - Leitfaden für Bauträger und Hausverwaltungen", ISBN 3-901269-13-4, 2004, bmvit, 2004

³ <https://www.ris.bka.gv.at/defaultEn.aspx>





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 legal frame for refurbishment of buildings is linked with living-legal laws e.g. laws governing tenancy such as the so-called “Mietrechtsgesetz (Act on Tenancy Law)” and “Wohnungsgemeinnützigkeitsgesetz (Limited Profit Housing Act)”. Of importance is the question how far tenants are obliged to the co-financing of refurbishment measures promoted by the house owners. In addition, participation possibilities of which kind of refurbishment measures foreseen are guaranteed to the tenants. In order to perform the establishment of a Smart building Block in Vienna the following main activities have taken place:

- planning procedures and inclusion of relevant market and social actors (real estate / apartment owners, municipal departments, interested representatives of the residents, social forum of the district etc.)
- surveys about the needs of the building users and interest of the owners
- analysis of the environmental impact
- involvement of stakeholders and external experts
- regular meetings and workshops with relevant market and social actors.



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: An interdisciplinary team is responsible for the project development, process design, communication and moderation, technical expertise (planning, energy, building, law, etc.) and on-site consultation considering lesson learnt of the two forerunner objects. Of crucial importance is the management of the interfaces between the different groups of actors necessary for the completion of the refurbishment of all buildings of the block. There will also be an extensive search for by-products that can be integrated into building renovation by e.g. using insulation material of recycled paper instead of conventional building material.

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: It is intended to use affordable technologies, but to integrate the components in an intelligent way easy to be replicated in the neighbourhood.

Energy communities (ict and/or social driven)

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

Response: Sustainable step-by step refurbishment of a building block in Vienna with about 437 residents is partly already accomplished and extensions are foreseen towards a Positive Energy District (PED). Regarding ICT, demand-side management strategies, supported by building energy management systems, will be implemented to promote energy efficient behaviours, and maximise the benefits of the building block.

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: The intervention will promote the New European Bauhaus concept in regards to: 1) sustainability - The attitudes of various residents and house respectively apartment owners have been identified and related energy behaviour will be investigated in the frame of ProLight as well as presented and discussed with involved stakeholders. 2) Aesthetics – 2 house owners of 13 building objects are active customers/prosumers and all other investors shall be integrated within the next 10 years following jointly decided aesthetic criteria. 3) Inclusion - house or apartment owners can assess the benefits of the joint approach, such as shared energy use (heating and electricity), cost advantages in bidding, synergies through joint property management, proper energy use of the courtyard, etc.

AMBITIONS

What are the demos' visions?

Together with the Viennese Municipal Department 20 - Energy Planning (MA 20) as part of the Administrative Group for Urban Development, Traffic and Transport, Climate Protection, Energy Planning and Public Participation and intends to contribute as follows:

- Consideration of relevant urban energy planning aspects
- Connecting foreseen demonstrations with related city actions
- Informing about further progress of urban/district developments
- Supporting stakeholder consultations in Vienna on various levels
- Dissemination & promotion among extended urban networks

Do you have a statement, which?

The Positive Energy District (PED) is a national initiative for sustainable development and to reach energy political goals in Austria. Although not realised the PED for all 13 buildings in the Viennese demo quarter, the 2 building owners are quite proud about what they have achieved so far and that they have been awarded with several environmental prizes.





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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