

PROJECT DESCRIPTION

Apartment building in Upper Austria

System: ELWA with ELWA Modbus Interface
Monitoring by my-PV.LIVE Cloud Connect
Owner: GWG Housing association
Planner: tbW - ingenieur consult GesmbH
Location: Linz, Austria



Object data

- 14 apartments
- 14 x 1.36 kWp separate PV systems
- Remote monitoring by my.PV.LIVE Cloud Connect
- 14 Hot water boiler 150 L located in the apartments
- Building heating by district heating
- Hot water separated from space heating

Description

The ELWA from my-PV ensures optimal energy management in multi-family houses as well as in single-family houses. Use of the ELWA has reduced the centralised building technology in the project to a minimum.

Hot water provision is entirely decentralized in the individual apartments. An electrical hot water provision device (ELWA) was installed in the existing hot water tanks. The individual photovoltaic systems on the roof provide the ELWAs with clean solar power.



Thanks to this technological innovation, the residential property does not need any heat distributed by pipework to heat hot water.

Beside the space heating system, there is only one pipe per apartment for supplying cold water.

Use of the ELWA completely avoids the high energy losses caused by heat ring mains. The solar energy is converted into heat at the exact point where it is required.

Functional description of the ELWA

During the daytime, direct current is transported by electric cable from the PV modules to the ELWA, which uses it to heat the hot water in the tank. On days with low solar radiation, the system switches automatically to use standard household electricity as required. The ELWA thus always guarantees the provision of hot water.



This form of energy management does not require an inverter because the electricity is not fed into the grid. This dispenses with the need for any connection permits, and the installation or retrofitting is extremely simple.

Thanks to the integrated MPP tracker, the ELWA can also be used for projects in which the PV systems are installed in various alignments on the building.

Using the ELWA makes the usually complex grid connection of PV systems in large residential buildings unnecessary. This form of storage makes solar electricity an efficient solution. Even for this type of building.

The technical advantages are manifold. "Cable instead of pipes" makes installation and operation considerably easier and even high target temperatures can be achieved without drastically increasing losses.

my-PV.LIVE Cloud Connect

Cloud Connect enables the simple connection of all my-PV devices to a data cloud in residential construction. In this way, they have an overview of the current operating parameters at anytime and anywhere. In addition, my-PV offers the option of continuous remote monitoring.



Figure 1: Cloud Connect unit with data cables to the ELWAs in the flats

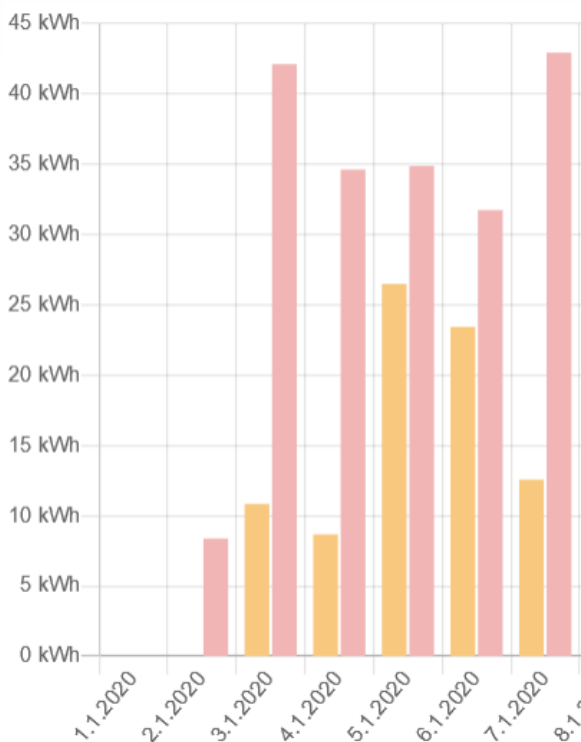


Figure 2: my.PV.LIVE data evaluation of all 14 residential units in the first week of January. Photovoltaic heat (orange) and additional heating (red).

Even in the first week of the year, photovoltaic heat provides the considerable solar contribution of 30 percent of the hot water production, even though the solar radiation is still relatively low. This is made possible by avoiding heat loss from pipes. In addition, photovoltaic systems work even better at low outside temperatures.

Technological innovation

The use of PV electricity for hot water production is a young topic, but it has been developing at an ever faster rate in recent years. With my-PV technology, the power of electric heating systems can be controlled linearly. A feature that is essential for photovoltaic heating applications. The technical advantages are manifold. "Cables instead of pipes" simplify installation, the systems are maintenance-free. Compared to solar thermal systems, 90% less copper is required. All pipes, pumps, valves, expansion tanks, antifreeze etc. are obsolete and PV works even more efficiently at low ambient temperatures.

Photovoltaics is becoming the cheapest form of energy worldwide. Solar electric water heating with ELWA is more advantageous than solar thermal energy.

ELWA Product details

- 0 – 2,000 W linear power control
- Target temperature adjustable with rotary knob
- Even works during grid blackouts
- For water tanks with capacities of 100 – 1,000 litre
- Internal consumption 2 W
- Efficiency ratio >99 % at nominal capacity
- Optional boost backup 750 W



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