

## PROJECT DESCRIPTION

### Multi-storey residential building in Austria

**System:** ELWA

**Developer:** GEMYSAG



**Image:** GEMYSAG

#### Property data

- 24 apartments
- 24 x 1.5 kWp separate PV systems
- 24 ELWAs (decentral)
- 24 "Enerboxx" 140 L hot water tanks
- Building heated by district heating
- Hot water separated from space heating

**With a photovoltaic capacity of up to 2.1 kWp, the ELWAs replace the previously used 4 to 10 sqm solar thermal systems.**

#### 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 decentralised in the individual apartments. An electrical hot water provision device (ELWA) was installed in the existing hot water tanks (indicated in red). The individual photovoltaic systems on the roof provide the ELWAs with clean solar power.

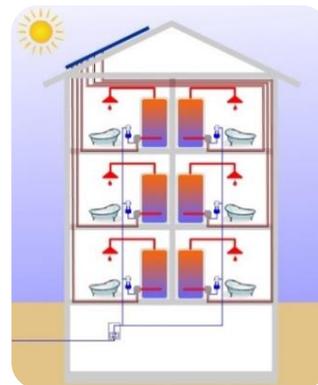


Thanks to this technological innovation, the residential property does not need any heat distributed by pipework to heat hot water. Beside the space heating system, there is only one pipe per apartment for supplying cold water.

**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.



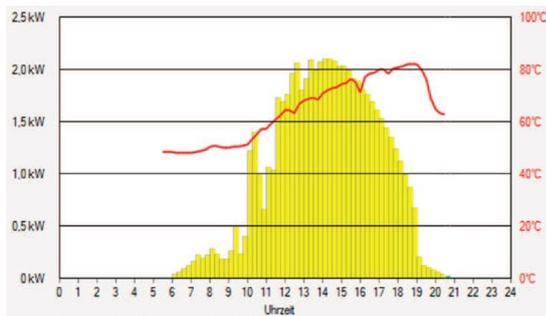
This form of energy management does not require an inverter because the electricity is not fed into the grid. This dispenses with the need for any connection permits, and the installation or retrofitting is extremely simple.

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.

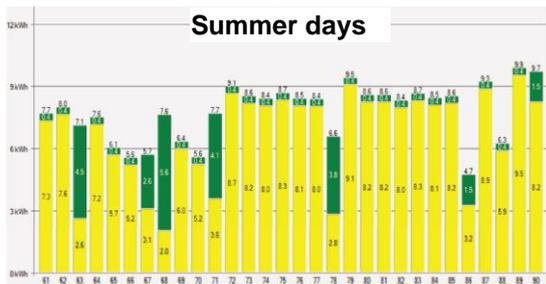
**Using the ELWA makes the usually complex grid-connection of PV systems in large residential buildings unnecessary. This form of storage makes solar electricity an efficient solution. Even for this type of building.**

## ELWA data processing

An integrated data logger makes it possible to visualise the solar yields, the hot water temperature profile, and the amount of energy taken from the public grid to boost the hot water provision.

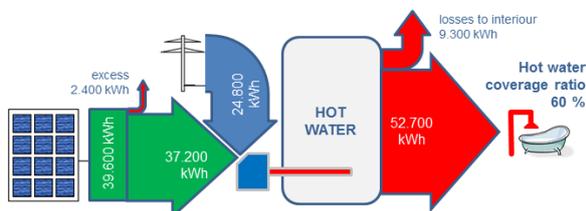


**Figure 1:** Solar yields (yellow) and temperature profile in the hot water tank (red).



**Figure 2:** Daytime solar yields (yellow) and mains power used for boosting the hot water (green).

Over the course of an entire year, there is a hot water coverage ratio of up to 60% depending on the heating requirement. The PV excesses that cannot be used make up a mere 3-8%.

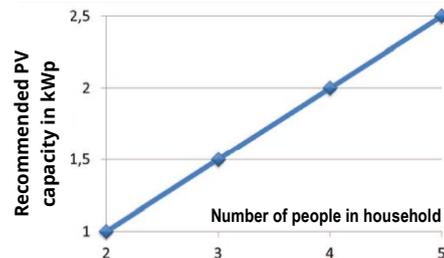


**Figure 3:** Schematic illustration of the energy flows (data und symbols: Polysun)

The green arrow represents the PV electricity; energy from the grid is shown in blue. Excesses and useful energy are shown in red.

## ELWA calculation tool

The recommended size of the PV system is based on the number of people in the household, or rather their water consumption. A value of 50 litres/day is assumed per resident. This corresponds to a required quantity of energy of around 1,000 kWh/year.



**Figure 4:** Recommended PV generator capacity according to the number of people in the household.

The annual yield of a photovoltaic system is approx. 1,100 kWh/kWp (Austria). With a recommended solar hot water coverage ratio of 50%, this gives a system capacity of 2 kWp for a four-person household.

## 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 - 500 liters
- Internal consumption 2 W
- Efficiency ratio >99% at nominal capacity
- Boost power for hot water securing 1.7 kW



## Contact person

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