

Key figures

Location: KU Leuven Technology Campus Ghent (Belgium).

Size: 2.4 kWp (active awning) + 2.265 kWp (rooftop PVT and PV)

Annual Energy production: 3600 kWh.

Energy use: On-site within the Living Lab and by the Technology Campus.

Technology: Various mono- and polycrystalline silicon and PV+thermal modules, from 1999 to 2018.

Additional enabling technologies: 5.8 kWh Lithium-ion battery, 300 kWh thermal storage in an "ice buffer" powered using an air-air heat pump.

Attention points

- PVT (PV+thermal) modules have a much higher complexity for installation compared to only PV. Their use is only recommended for space-constrained roofs.
- Regulations and experience around installing battery storage systems are still in their relative infancy. This can result in delays for new connection applications.

Contact

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Useful links

<https://iiw.kuleuven.be/onderzoek/eena>
<https://solarise-kuleuven.one/>
www.interregsolarise.eu
<https://www.youtube.com/watch?v=cDiTuRV9Ex0>

Interreg

2 Seas Mers Zeeën

SOLARISE

European Regional Development Fund



Living lab KU Leuven - Technology Campus Ghent



Low-Carbon technologies



www.interregsolarise.eu

TOTAL PROJECT BUDGET:

4,18 M €

INCLUDING AN ERDF BUDGET OF:

2,51 M €



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Budget

€ 63,000 of total partner budget € 412,000.

Goal

The living laboratory at the Technology Campus Ghent of KU Leuven aims to demonstrate solar and enabling technologies that can be used in the residential, commercial and industrial sectors.

Description

The Living Lab demonstrates a range of solar and enabling technologies for visitors and students at the KU Leuven Technology Campus Ghent.

The eyecatcher of the Living Lab is the active awning in front of the Living Lab which hosts 10 PV modules, showing the **variety of PV modules** available on the market, and the evolution over the past decades. It includes bifacial PV modules (where sunlight is used by both the front and back of the module), or semi-transparent modules for use in agrivoltaic (=combination of PV and agriculture) applications, as well as coloured modules that provide aesthetic benefits. The roof of the Living Lab has two PVT (PV-thermal) systems, with their hot water storage tanks inside the lab.

The Living Lab has:

- An active awning with PV modules in front of the Living Lab **showcasing varieties of PV modules throughout the years**, connected to an educational switching matrix which permits users to connect the PV modules directly to the inverter, or via dedicated optimizers;
- Two PVT (**PV-thermal**) systems on the roof of the Living Lab with their hot water storage tanks inside the lab, connected with additional PV modules to an inverter, all PV and PVT modules using optimizers to reduce electrical mismatch
- A Lithium-ion (Iron phosphate, LFP) **battery** connected to a bidirectional inverter to manage PV variability;
- A **thermal “ice battery”**, consisting of a heat pump connected to an insulated water tank, capable of holding approximately 330 kWh of thermal energy;
- Various metered **electrical loads** in the living lab (lights, heater, controllable electrical load);
- Multiple PV, PVT and ambient temperature **measurements**, combined with irradiance measurements in the plane-of-the-array.

All of the measured data points are captured and saved at 15 second resolution in a local database for future analysis and use in the Living Lab.

