

Key figures

Location: Portsmouth, UK.

PV-size: 5 kWp / 25 kWp.

Energy storage: 13.5 kWh / 40.5 kWh.

Annual Energy production:

4,000 kWh / 25,000 kWh.

Energy use: On-site within the Living Lab and the campus.

Technology: Monocrystalline PV modules.

Lithium-Ion battery storage system.

Attention points

- With the PV and battery, the Port-Eco House has become electrically self-sufficient, in the sense that any import of electrical energy from the distribution network over the year is offset by the electrical energy that is exported from the house.
- During the Spring and Summer months, it is a common occurrence that the Port-Eco House does not require to import any electricity over a 24 hour period.

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Useful links

<https://www.port.ac.uk/>

<https://www.port.ac.uk/research/research-projects/solarise>

<https://www.port.ac.uk/about-us/our-facilities/lab-and-testing-facilities/port-eco-house>

<https://www.port.ac.uk/about-us/our-facilities/teaching-and-learning-spaces/future-technology-centre>

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SOLARISE

European Regional Development Fund



UoP - Solar Living Lab
University of
Portsmouth



www.interregsolarise.eu



Low-Carbon
technologies

TOTAL PROJECT
BUDGET:

4,18 M €

INCLUDING AN
ERDF BUDGET OF:

2,51 M €



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SOLARISE
European Regional Development Fund



Budget

€ 83,000 of total partner budget € 477,000.

Goal

To create a solar living laboratory at the University of Portsmouth

Description

Living labs are defined as user-centered, open innovation facilities integrating research and innovation processes in real-life settings. **A university-based living lab** gives the opportunity for staff and students to analyse the behaviour of real systems as they operate and provides access to live testbeds for innovative scientific research and training.

As part of the SOLARISE project, a solar living lab has been created consisting of **installations at two buildings** at the University of Portsmouth. The Port-Eco House is a research facility consisting of an instrumented 3-bedroom household for research in energy efficiency and building performance. The Port-Eco House has an electricity demand of about 10 kWh per day, which is typical for a 3-bedroom home in the UK. The Future Technology Centre is a four-story university building, opened in 2018 for project-based learning and innovation in engineering and product design.

The SOLARISE project has allowed these buildings to be equipped with **solar photovoltaic technology, smart battery storage, and energy monitoring systems**. The installations were completed during May 2021 and are complemented by additional laboratory equipment that has been acquired to facilitate student projects, such as individual solar panels, inverters, load simulators, maximum power point chargers, batteries, etc. The port Eco house received a 5 kW photovoltaic array and a 13.5 kWh battery storage system. The Future Technology Centre building received a 40.5 kWh smart battery storage system.

The **monitoring systems** at the living lab provide information about solar energy production at an array and individual module level, current and voltages associated with the modules and the solar array, power flows involving the solar array, battery and the grid connection, and the state of charge of the battery. All variables are sampled every 5 minutes and can be accessed remotely by means of web interfaces and mobile apps. These measurements are complemented by data from an existing weather station located on a nearby building, which provide useful variables including solar irradiance, air temperature, and wind speed.

