



CUSTOMER: EPFL
INDUSTRY: SMART GRID
COUNTRY: SWITZERLAND



Powering industrial applications with a zero-emission micro grid

When the Swiss Polytechnique Fédérale de Lausanne (EPFL) wanted to create a zero emissions micro grid to power an onsite industrial application, they turned to Nilar for an effective energy storage solution. The 72kWh Nilar rack system offers the necessary capacity and flexibility to manage variable energy flows from multiple solar panels set-ups, simultaneously.



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Challenge

The Laboratory of Materials for Renewable Energy (LMER) at the Polytechnique Fédérale de Lausanne (EPFL) is dedicated to advanced research in energy production, consumption and storage. As part of this research, they took the decision to create a fully operational, zero-emission micro grid to power an onsite industrial application. The plan was to increase the use of renewable energy sourced from the micro grid to produce highly flammable liquids and gases such as methanol and hydrogen.

To optimize this process they required a safe, reliable and stable energy storage solution, that was compatible with sustainable energy sources and capable of running off-grid. A further requirement was the ability to handle full charge and full or partial discharge every 24 hours, without impacting short and long-term performance.

Solution

A 72 kWh Nilar energy storage rack system was chosen as the ideal solution for the micro grid. The high capacity system stores solar energy collected from four different brands of solar panels located on the roof of the university building. The panels, which are positioned at varying inclinations of 10–30 degrees, charge the batteries at a peak power rating of 20–22 kW.

The rack system itself is supplied with Nilar's "inhouse" developed BMS, 12 Nilar parallel battery strings, each consisting of five batteries. The system is connected to an ABB bi-directional 50 kW inverter, which acts as a "charger" for the energy storage solution.

Result

To date, all tests with the Nilar energy storage system have been positive. Potential complications, such as varying energy flows from the different solar panel settings have not proved to be an issue. Furthermore, thanks to the Nilar Hydride® chemistry there is no risk of battery explosion, which was a prerequisite due to the closeby production of methanol and hydrogen.

The system has also the potential to run completely off grid – during the right weather conditions – allowing the university to achieve the goal of powering an industrial application such as this with zero emissions.

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About Nilar

Nilar was founded in 2001 as a research project by leading battery industry experts from Europe and the US. The company has been producing safe and environmentally-conscious Nilar Hydride® batteries for energy storage at commercial properties, private households, industrial plants and for use with the smart grid, since 2015. Nilar's Hydride® energy storage solutions are robust with non-flammable electrolyte and durable with a low lifetime cost. The modular design supports scalability to handle the energy requirements of everything from small residential systems to large-scale electrical installations. With R&D departments in the US and Sweden, and a manufacturing plant in Sweden, Nilar is revolutionizing energy and power supply technology, and is taking automated battery production to the next level. [Read more at: www.nilar.com](http://www.nilar.com)