



Eaton Energy Storage System Helps the Catholic University of Lille in France Move Towards a Zero Carbon Future

Location:

Catholic University of Lille, France

Challenge:

To provide an energy storage system that helps the university become a zero-carbon campus by 2035.

Solution:

Eaton xStorage Buildings enables the university to store its renewable energy produced by its 1400m² of photovoltaic panels and use it to power the building or charge electric vehicles and thus reduce carbon footprint.

Result:

The building has saved 174 Kg of carbon operating through the winter and early spring months. This saving will increase substantially as the university learns about its consumption patterns and uses the system at times of national peak demand, when coal and gas fired stations supply the extra capacity needed by the grid.

“Eaton provided us with a solution that increases our consumption of self-generated renewable power that is reliable and could adapt to our particular needs. Using this system as part of our overall energy management plan, our ongoing goal is to further reduce our carbon footprint for the entire university campus.”

Grégory Vangreveninge, Technical Manager - Yncréa Hauts-de-France

Background

Founded in 1875, the Catholic University of Lille has 30,000 students spread across five faculties and 18 colleges and institutes on its historic campus, and in more than 20 cities in France and globally.

Engaged in energy, economic and social transition since the turn of the century, the university launched its Live Tree program in 2013. Working with the region Hauts-de-France, researchers, local people and businesses, Live Tree aims to accelerate the energy, ecological and economic transition needed for a more sustainable future in the Vauban-Esquermes area of Lille.

As part of this program the university has been renovating its buildings to limit its carbon footprint and make them a model for good practice and places where new technology is implemented.

Talking about the initiative Grégory Vangreveninge, Technical Manager for Yncréa Hauts-de-France which is a member institution of the program says, “with the Live Tree program we aim to immerse our students in a scientific and cultural program that will help them act responsibly throughout their personal and professional lives.”

Challenge

The Catholic University of Lille wants its entire campus to be zero carbon for its energy consumption by 2035 and wants to achieve this by 2021 for one of its buildings called The Rizomm.

As part of this program, the building uses innovative solutions to enable this transition and encourage best practice for the university and the wider community. The Rizomm building already has 1200m² of photovoltaic panels that generates 194 kWp of its own renewable energy and the HEI building has 200m² of photovoltaic panels generating 28kWp. This provides power to the building and also to the six-electric vehicle charging points at the university.

The challenge the university faced was how to maximize its use of this renewable resource to further reduce its carbon footprint and its reliance on the national grid at times of peak demand, when it uses gas and coal-based generation to top up supply.

Any energy storage solution that it selected had to fit in with its space requirements for installation and also with the university's energy management system so that it could be optimized as part of an overall energy-efficient system for the building.



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Solution

Eaton worked with the University to install its xStorage Buildings energy storage system. The system consists of two Eaton xStorage Buildings power conversion systems (40 kW discharging / 20 kW charging power) and 25 new battery packs with a capacity of 10 kWh each.

The university chose the Eaton xStorage Buildings system because it was flexible and easy to install within the allocated space since the installers could separate the rack of battery packs including the battery protection from the power conversion systems. Eaton also worked with the university to help them integrate its xStorage Buildings solution with its energy management system by writing and developing custom software.

Result

Gregory Vangreveninge commented: "Eaton provided us with a solution that increases our consumption of self-generated renewable power that is reliable and could adapt to our particular needs. Using this system as part of our overall energy management plan, our ongoing goal is to further reduce our carbon footprint for The Rizomm, the HEI and the Hotel Académique buildings."

The system had been operating through the winter and early spring months so far and had already saved the university 174 Kg of carbon. The university expects this to increase substantially as it begins to understand its own demands for power and ties this in with the capacity available from the main grid to maximize peak shaving.

Most power on the French national grid is from carbon neutral nuclear and hydro sources, with coal and gas

sources used to provide additional capacity at times of peak demand. By understanding these demand patterns and also its own usage needs, the university aims to use more power from its own renewable sources and storage capacity to make it less reliant on fossil fuel-based grid power when demand is at its peak.

Researchers and PhD students are working on the university's energy transition program to further improve its energy efficiency and uptake of renewable energy sources. This includes the development of an algorithm to understand its patterns of supply and demand and research programs to increase the supply from its PV panels.

Another benefit of Eaton xStorage Buildings is the ease at which it can be expanded to store more energy as a result of increased renewable capacity in the future. A further 50 kWh storage capacity is possible within the existing system.

Grégory Vangreveninge concludes: "Our smart grid demonstration project goes beyond the needs of the university. It communicates real-world results to the whole Lille area, our ten partner companies in the immediate area and beyond that to anyone interested in the adoption and installation of such technology.

"Flexible technology that incorporates renewable production with energy storage, such as Eaton's system, are vital for us to achieve our zero carbon targets at the University of Lille and beyond that for the nation."



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