

Case study

Battery energy storage system
French Antilles

Project Summary

Project: Wind power stabilization

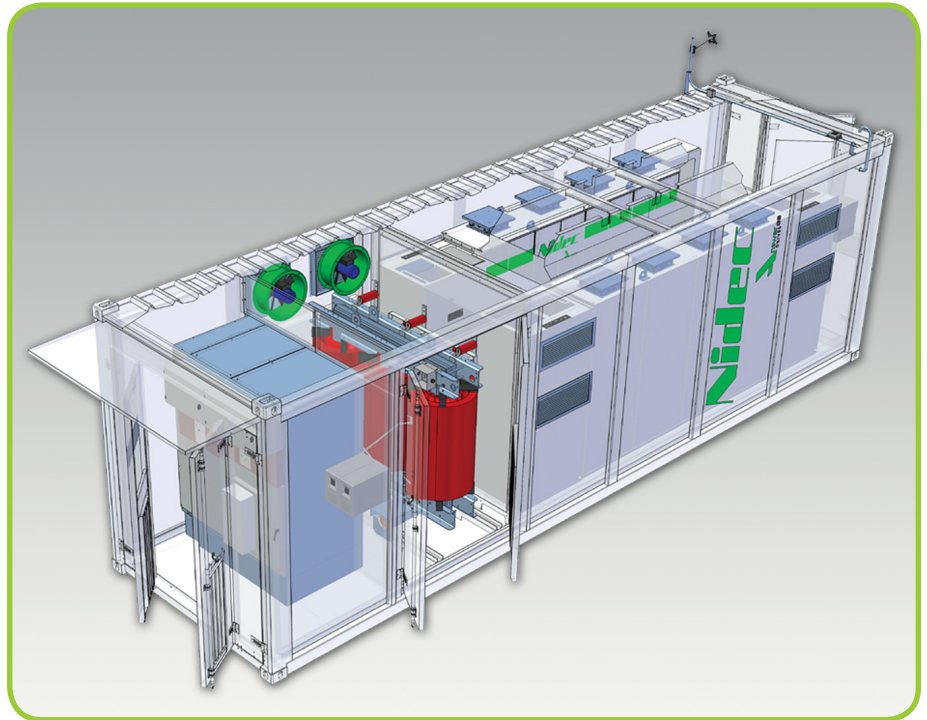
Application: Battery energy storage system

Nidec's Role

Nidec Industrial Solutions was selected to provide a 5 MW / 5 MWh battery energy storage system (BESS) for a 14 MW wind farm in the French territory of Martinique.

Scope of Supply

Battery Energy Storage System (BESS), composed in addition to batteries with a Power Conversion System (PCS), a Power Management System (PMS) and Energy Management System (EMS).



The challenge:

To improve the predictability of wind farm-generated electricity

It is growing more common for battery energy storage systems (BESS) to be paired with photovoltaic plants to address sudden surpluses or deficits in supply and bring stability to the grid. Until recently, these systems have been deployed less frequently in the wind power market, where generation interruptions are even more frequent and substantial, creating even greater energy management challenges.

A utility-scale wind farm on the Caribbean island of the French Antilles is working to change that. The new 14 MW wind farm was seeking a BESS to bring predictability to its power generation and achieve annual energy production of 40 GWh. It selected Nidec Industrial Solutions, which has more than 500 MWh of energy storage in operation, to provide the system.

The solution:**Battery energy storage with accurate forecasting capabilities**

Historically, it has been easier to predict solar (PV) power generation than wind power generation. Solar can be predicted with approximately 90% accuracy, compared to wind at 60%.

The 5 MW / 5 MWh BESS Nidec designed for the wind farm, which is comprised of seven 2 MW wind turbines, includes a sophisticated energy management system that significantly improves wind power prediction accuracy. Because of the system's integration with the weather forecasting system and wind flow data tracking, forecast accuracy for electricity production is expected to increase from 70% to 90% over the first three years of the BESS's operation.

In addition to the energy management system and lithium batteries, Nidec's BESS includes power conversion and power management systems.

The energy storage solution -- the second such project Nidec completed for the wind power industry -- today enables the wind farm to make optimal use of its wind resources. Nidec's innovative predictive technology not only improves the security of the island's power supply, it allows the wind farm to significantly improve the flow of energy through the grid.