

EssPro™ Energy Storage case study

Cowessess First Nation High Wind and Storage project

Saskatchewan, Canada

Cowessess First Nation was one of the first communities in Canada to install a wind turbine with a battery energy storage system to support it, lowering energy bills while integrating renewable power that reduces greenhouse gas emissions.

In cold northern locations in Canada, the price of energy can be significant due to the high cost of transporting fuel to sites and also due to the long, cold winters and short hours of daylight.

In order to reduce energy bills and promote the adoption of cleaner energy, the Cowessess First Nation was one of the first communities in Canada to install a wind turbine with a battery energy storage system to support the energy needs of more than 3000 people living in southeast Saskatchewan.

ABB's EssPro PCS enables the 744 kWh lithium-ion energy storage system to demonstrate the successful integration of a wind turbine into the electrical grid. The reliability of the wind-battery system has been tested for its effectiveness in firming and dispatching the electrical output of the wind-battery system.

The project verified that the system is compliant with the anti-islanding standards when the grid was absent and the wind turbine was still in production. The system was also used in coordination with Sask Power's demand response programs and proved this is a valid technology for this application.



Project details

800 kW wind turbine

400 kW / 744 kWh SAFT Li-ion battery system

400 kW ABB Power Conversion System

Flexible, scalable solution allowing energy content to be increased in 124 kWh increments

Project supported by consortium of stakeholders to fund and execute energy projects in Canada

Benefits

Improved predictability of power production

Integrated energy storage into demand response program

Reliably dispatch at peak times

Smoothed the output of the wind turbine

Achieved maximum ramp rate

Provided up to 400 kWh of peak shaving capability

Successful integration of a wind turbine into the electrical grid

Compliance with anti-islanding standards



SAFT battery containers at the CFN wind generation site. ABB's compact EssPro PCS Power Conversion System package is housed inside. Images courtesy of Saskatchewan Research Council.

What is a Power Conversion System (PCS)

A Power Conversion System (PCS) for energy storage applications acts as an interface between the AC grid and the DC batteries, automatically charging or drawing power from batteries and managing the overall system.

EssPro PCS features

- Modular design and flexible product
- High availability for lowest cost of ownership
- Utility grade with advanced controls
- Precise system control and performance
- High performance in any climate
- Easily deployed due to optimal packaging options
- Minimized risk due to proven technology



ABB's EssPro PCS c225 and c600 configurations, shown in indoor and outdoor packages.

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