

ABB ASSISTS IN WIND INTEGRATION ON ALASKAN ISLAND MICROGRID



ABB, the leading power and automation group, will install its PowerStore, an integrated commercial flywheel technology to integrate with a battery system on Kodiak Island in Alaska to enable the integration of more renewable energy from an expanded wind farm to its microgrid and also to address stability challenges that will arise from a crane upgrade being undertaken to enhance its port operations. The project is being undertaken on behalf of Kodiak Electric Association, an electric cooperative owned by residents of the Island.

Kodiak Island, off Alaska's south coast, is the second largest island in the United States. Its 15,000 residents live in just seven communities — the largest being the port town of Kodiak. KEA operates a microgrid that generates virtually all of its 28 MW of electricity capacity from hydropower and wind.

The City of Kodiak, in conjunction with Horizon Lines, recently decided to upgrade its existing crane to an electrically driven crane instead of a diesel driven one and expand its capabilities. The installation of the larger crane is expected to generate power fluctuations that can be particularly destabilizing for an isolated grid like the one on Kodiak Island. PowerStore's dynamic response to transient events such as those expected from the new crane as well as the ability to carry out infinite charge and discharge cycles without degrading the PowerStore's life expectancy make it an ideal fit.

"Expanding the crane operations at the port posed a challenge because it meant that we would likely have to rely more heavily on our fossil fuel-based generators," said Darron Scott, president and chief executive officer of KEA. "Not only will the ABB solution allow us to shave the peaks off the crane loads, it will also reduce the stresses placed on our battery systems and extend their lifespans."

ABB's solution incorporates two 1 MW PowerStore grid stabilization generators that are based on a fast-acting, spinning flywheel with ABB inverters to store short term energy to absorb and/or inject both real and reactive power onto the microgrid. PowerStore can switch from a full-power charge to a full-power discharge in less than 5 milliseconds. Besides providing voltage and frequency support for the new crane, the PowerStore units will extend the life of the two 1.5 MW battery systems and help to manage the intermittencies from the island's 9 MW wind farm.

"Remote locations like islands may be rich in renewable energy sources, but the intermittent nature makes their integration into the power grid a challenge," said Claudio Facchin, head of ABB's Power Systems business. "ABB's innovative microgrid solution as in this case includes grid stabilization technology that enables high penetration of renewable power generation, and distributed control systems that provide intelligent power management and efficient hybrid power plant operation." 