

Article

PCS100 ESS - China's first PCS100 ESS to be shipped to Indonesia



After months of effort between the MV (medium voltage) Drive and Power Electronics teams of ABB Beijing, the first PCS100 ESS (Energy Storage System) has been implemented as part of Prudent Energy's battery solution in Indonesia. This solution will support Prudent's storage and release of new energy power and will strengthen grid reliability and overall performance. The PCS100 ESS is suitable for this application as it is grid compliant and provides the technology needed for smart grids.

Most countries generate electricity in large centralized facilities. These plants have excellent economies of scale, but usually transmit electricity over long distances and have a negative affect on the environment. Distributed generation, such as a micro-grid connected to the centralized grid, allows collection of energy from many sources. This in turn may give lower environmental impacts and improved security of supply. In the case of a major network event, where the energy supply from the interconnected grid may be interrupted, ABB have supplied Prudent Energy with a 400 kW PCS100 ESS to support the charging and discharging of the battery.

The PCS100 ESS will be implemented as part of Prudent's overall battery energy storage solution. This will provide real and reactive power to Sumba, a small island in eastern Indonesia that has poor power supply. Using the PCS100 ESS, the grid can support power to the island when the main grid is interrupted. This will in turn generate a smooth output of power, increasing the renewable accommodation capability. The PCS100 ESS battery solution can help energy storage devices, such as batteries, achieve stable storage and release of electrical energy through frequency modulation and voltage regulation. For a power system, PCS100 ESS is just like a conventional synchronous generator featuring power electronics and advanced control technologies. Its inertial characteristics depend on the inter-

nal control system, which is aligned to the grid frequency and its change, and energy conversion is recognized on this basis.

This is the first project that incorporates Prudent's VRB (Vanadium Redox Battery) "flow battery" technology with the PCS100 ESS, and is an important milestone for ABB. The PCS100 ESS works by charging the VRB battery voltage up to the designed range, helping regulate the power flow by discharging power to the grid during unstable events, such as extreme weather conditions.

Along with the PCS100 ESS, ABB supplied a circuit breaker, transformer, DCS800 drive and a PLC (programmable logic controller). The DCS800 system that was provided by ABB recognises the pre-charging function. It has a three-winding transformer, that can reduce harmonics, making the overall package provided an effective grid compliant option. ABB's leading edge technology made the total solution easy for Prudent Energy to utilize. The extensive support and global service offered by ABB, mean that the PCS100 ESS is a product that Prudent Energy can rely on. This will enable an ongoing relationship between ABB and Prudent Energy for future energy storage solutions, which will be offered in other locations.

Kong Fanshi, Project Manager for ABB Beijing Drive Systems states, "Prudent Energy believes in the design and service ability of ABB, and thus a reason why we were able to have this opportunity. We also provided the commissioning and follow-up of service on time."

Prudent Energy is the designer, manufacturer and integrator of the patented Vanadium Redox Battery (VRB®) Energy Storage System – a long-life, environmentally friendly "flow battery" system. Founded in 2007, the Prudent Energy group of companies maintains corporate offices in Bethesda, Maryland, and Beijing, China, with research, development, and assembly facilities in the United States, Canada and Asia.

For further information please visit:

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