



AEP integrates energy storage with hydro generation

American Electric Power (AEP) is to integrate advanced energy storage with hydroelectric generation at a two-plant complex in the southern US state of Virginia in the world's first hybrid system of its kind to provide ancillary services.

Greensmith Energy, a subsidiary of the energy group Wärtsilä of Finland, announced on 20 October that it had been contracted by the US utility to install a 4 MW energy storage system for integration with the Buck and Bylesby hydropower plants. The system, which is expected to begin oper-

ating in the first quarter of 2018, will deliver one of the first new energy storage systems for the regional grid operator PJM, since the adoption of new frequency regulation signals and requirements for regulation service. Expected to operate for 20 years, the programmable storage system running on Greensmith's GEMS software platform will serve PJM's frequency regulation markets, including traditional regulation known as RegA and dynamic regulation or RegD, optimizing participation between RegA and RegD signal based fluctua-

tions in market values over time.

The 21.5 MW Bylesby and downstream 8.5 MW Buck plants, on the New River near Ivanhoe, are operated by Appalachian Power, a subsidiary of AEP, as a single project. PJM is a regional transmission organization that manages a competitive wholesale electricity market serving all or parts of the states of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

FMO supports further run-of-river capacity in Uganda

FMO, the Dutch development bank, has underwritten US\$ 39 million in senior debt for the financing of two new run-of-river plants totalling 22 MW in western Uganda. FMO disclosed on 22 September that it had acted as mandated lead arranger and underwriter of the credit facility, of which 40 per cent is expected to be risk shared with Proparco, the private sector financing arm of the French development agency, Agence Française de Développement (AFD). The 16 MW Rand and 6 MW Nyamagasani 1 and 2 projects are to be developed and owned by Rwenzori Hydro and Nyamagasani 2 HPP, respectively.

The projects are majority owned by funds managed by Frontier Energy, a Danish private equity

fund that is developing a portfolio of private renewable power projects in Eastern Africa. With these latest projects, FMO said it has now financed five small run-of-river projects totalling 47.5 MW in Uganda with Frontier Energy.

In May, the first of the five projects, the 5 MW Siti 1 plant in the Mount Elgon area in eastern Uganda, was inaugurated. FMO arranged a US\$ 35 million senior loan for the Siti 1 and 16.5 MW Siti 2 projects, which will supply 60 000 homes, schools and businesses in the area. Both projects are owned by Elgon Hydro Siti Limited, majority owned by Frontier Energy. FMO syndicated 50 per cent of the Siti projects to the Emerging Africa Infrastructure Fund (EAIF). FMO has also provided a

US\$ 10.2 million senior loan, of which 50 per cent has been syndicated to the EAIF, to Lubilia Kawembe Hydro, a special purpose vehicle set up to construct and operate the 5.4 MW Lubilia Kawembe plant in the Kasese district in Western Uganda.

All the projects are being developed under the Global Energy Transfer Feed in Tariff (GET FiT), a dedicated support scheme for renewable energy projects managed by KfW of Germany, in partnership with Uganda's Electricity Regulatory Agency and funded by the Governments of Norway, Germany, the UK and the EU. GET FiT is providing a subsidy of €11.6 million in the form of result-based premium payments per kWh of delivered electricity.

Italy's Gandellino plant to be upgraded

The EPC contractor Water GenPower of Italy has been awarded a contract by Enel Green Power (EGP) to upgrade the 5.6 MW Gandellino plant in the northern province of Bergamo. The contract, which was awarded in September and is to be completed in 19 months, entails the supply of three 1.9 MW horizontal-axis Francis turbines and generators to replace existing electro-mechanical equipment, as

well as new main inlet valves. The turbines and generators will be supplied by its minority shareholder, China's Chongqing Machinery and Electrics (CQME), with the valves to be sourced domestically. The diversion-type facility, which was built in 1921, has three 1880 kW units. Utilizing the outflows from the river Serio and the valleys of Grabiasca, Sedornia and Fiumenero, the plant generates 24.5 GWh/year.

It is the fourth such contract secured this year by the Water GenPower to increase production and efficiency and extend the operating lives of aging small-scale plants in its domestic market. In July it was awarded a contract by EGP to replace a single 1.6 MW horizontal Francis turbine and generator at the 5.6 MW Bardonecchia plant in the northwestern province of Torino, as well as a complete water-to-wire contract by ACEA, the Rome-based multi-utility, for the 6.7 MW

Mandela plant in the region of Lazio. The latter contract entails the turnkey supply of two vertical Kaplan turbines, one of 2 MW and one of 5 MW, as well as electrical balance of plant, hydromechanical equipment and parts of the penstock. Mandela has two units, the oldest of which has been operating since 1956.

At the beginning of this year, Water GenPower was also contracted by EGP to supply three 1.9 MW horizontal Francis turbines and associated generators, as well as main inlet valves for installation at the Bonate plant in the province of Bergamo. This plant, which was commissioned in 1932, has an installed capacity of 4.85 MW and output of 26.7 GWh/year.

Water GenPower, which was established in 2008, is majority owned by its former shareholder Mario Bianchi and 49 per cent by CQME, a subsidiary of the Chinese state industrial group CME.

The Gandellino plant in Italy, where an upgrade will include the supply of three Francis turbines and generators and new main inlet valves.

