



Guatemala city school energy storage

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One of the installations undertaken in the Latin American region is located at Colegio Agustiniano in Mixco, Guatemala City, Guatemala. The project comprises 100 QT2 units with an anticipated expansion. Currently, it generates 220 kW to supply electrical energy to the institution.

Project name: Colegio Agustiniano Location: Mixco, Guatemala, Guatemala Installer: Infinite Power Capacity: 220 kW Microinverter: APsystems QT2 208V Number of microinverters: 100

In operation since 2000, TECO Energy Inc.'s 132-MW San Jos  Power Station was the first coal-fired power plant built in Central America and is still the largest one. Used as a baseload plant, the facility successfully combines high availability with a business model that promotes sustainable environmental practices and a safe workplace.

A representative democracy, Guatemala has a population of approximately 13,550,440. Sugar production, textiles and clothing, furniture, chemicals, petroleum, metals, rubber, and tourism are its main industries. Guatemala's electricity production and consumption were approximately 8.425 billion kWh and 7.115 billion kWh (2007 estimates), respectively. Recent statistics show that the country exports approximately 131.9 million kWh of electricity annually.

In order to promote increased prosperity in Guatemala, the most populous Central American nation, abundant and reliable electricity is required. To meet this growing need, TECO Energy Inc. and two partners started construction of the San Jos  Power Station in 1998 as an investment. During construction, TECO bought out the other partners to become the sole owner. The plant was commissioned by the end of 1999 and went commercial on January 19, 2000 (Figure 1).

"The San Jos  Power Station has a 15-year power purchase agreement with the local distribution utility for the first 120 MW and has another 12 MW available to sell to the spot market," Mauricio de la Torre, the San Jos  Power Station plant manager, told POWER. "Since the plant began commercial operation, it has been dispatched on a baseload basis, with very little load swings through the year. The plant keeps a very high PPA availability of above 96%."

The San Jos  Power Station is located near the town of Masagua, Guatemala, about 75 kilometers (km, 47 miles) south of Guatemala City, the nation's capital. Included in the project's scope is a fuel-receiving facility located at Puerto Quetzal on the Pacific Coast, 40 km away.

The plant was constructed under a contract with J.A. Jones Construction and Black & Veatch International on a turnkey basis. The project included port modifications to accommodate the importation of coal, as well as a transmission line to connect the plant to the Alborada substation.

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The plant has a DB Riley, coal-fired furnace with three duplex, Atrita pulverizers feeding 12 burners in three rows of four burners each. The boiler feeds about 1,200 kpph of 1,000F/1,905 psia superheated steam to the turbine.

The single-flow, 11-stage Mitsubishi turbine has five steam extractions and a closed-loop condensing system that utilizes cooling water from a four-section cooling tower. The generator is a 160-MVA, three-phase, 60-Hz, brushless generator made by Brush (England), directly coupled to the high-pressure side of the turbine. The plant also has a 43.2-MVAR capacitor bank to assist with reactive power.

“All the water used at the power plant comes from seven wells, with the main problem being a high silica content due to the fact that the plant is in a volcanic region of Guatemala,” de la Torre said.

Operating with an overall efficiency of 10,800 Btu/kWh, the plant generates close to 1,000 GWh annually. That total may vary, depending on the rainy season and the dispatch of hydro plants. Scheduled maintenance requires between 18 and 30 days per year, and the plant has an annual availability of approximately 98%.

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