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SCE Peaker Generation Station BESS Conversions:

Project Location:

Site #1:
SCE Center Peaker Generation Station
10639 Firestone Blvd
Norwalk, CA 90650

Site #2:
SCE Grapeland Peaker Generation Station
12408 6th Street
Rancho Cucamonga, CA 91730-6140

Names and contact details of the owner and the owner’s project leader for the reference project:
Owner: Southern California Edison
Contact: Matt Zents
Project Leader: Matt Zents
Matthew K. Zents, P.E.
Major Construction Project Manager
Generation Major Projects and Engineering
1515 Walnut Grove Avenue, Rosemead, CA 91770
T. 626-302-0334 | M. 714-474-1527 | matthew.zents@sce.com

Facility information and use cases:
Southern California Edison had existing LM6000 gas turbines built to operate at peak power of 50 megawatts. Their goal was to integrate a 10 megawatt Battery Energy Storage System (BESS) and allow the turbine to operate from 2 megawatts to 50 megawatts.
The existing turbine, emissions system, and compressor system were designed to run at full load, so changes in communications and sequencing were required for the equipment to run at variable load. The system had to be integrated into the state power grid while still maintaining current and legacy control. Due to its location, the facility required extremely stringent emissions standards while testing and operating the new system.

Project year performed
2017

Detailed description of situation:
Retrofit two SCE Peaker generating stations with GE LM6000 50 megawatts each, to integrate a GE 10 megawatt Battery Energy Storage System (BESS) and allow the turbine to operate from 2 megawatts to 50 megawatts.
Detailed description of work scope performed by EN Engineering:

- Interface BOP to the new GE Battery system (BESS)
- Support new functionality to the GE LM6000 -- EGT (Enhanced Gas Turbine)
- Support new functionality into the Distributed Cimplicity HMI
- Support local operation as well as remote operation from both the main & backup control centers
- Add AGC operation
- Optimize SCR Ammonia Injection
- Optimize KOBLECO Gas compressor system
- Development of control algorithms

Detailed description of outcomes and results from the work scope performed:

The design-build project involved the integration of a revolutionary power generation system into the current company power infrastructure, and then into the national grid system at two different locations. The revolutionary Hybrid Power Generation System maximizes the client’s existing capital assets by enhancing them with modern technology. The expertise of EN Engineering’s Automation team allowed the project to progress smoothly, remain on schedule, and produce a flexible and responsive system.

With the addition of the BESS to the turbine, it moved the system into a different power assist model. The EN Engineering team worked with the turbine and BESS manufacturers to create a groundbreaking control system that would handle the communications and sequencing changes required for this new system. The control algorithms that were specially developed for the hybrid system will translate to other applications in the power generation industry.

A major benefit of the new hybrid system is a substantial energy savings that is achieved from the BESS syncing with the grid and adding or shedding power as needed without starting the turbine. The turbine only needs to start if the demand exceeds the storage of the batteries.

Firm’s direct role in design, construction, testing, operation and planning for this project:

- PLC and HMI programming for balance of plant systems and SCR
- Systems integration
- Testing and on-site commissioning