FDA Central Utility Plant Expansion

CLIENT PROFILE

Food & Drug Administration (FDA) and the General Services Administration (GSA) worked together to consolidate the FDA at the government-owned White Oak site in Maryland. This consolidation created an increased demand for chilled water, steam and electricity for the campus.

The GSA awarded Honeywell an energy savings performance contract (ESPC) to expand their Utility Microgrid by adding a Central Utility Plant (CUP2) to provide 21.5MW of new generation, steam distribution and 10,000Tons of added chilled water production for a 1.2-million square foot expansion at the site. Major equipment of CUP2 includes two (2) 7.5MW Solar CTGs, one (1) 4.5MW Solar CTG, two (2) 2.25MW diesel generators, one (1) 5MW STG, four (4) 2,500Ton electric chillers, and one (1) 2-million gallon Thermal Energy Storage (TES) tank. The complete system provides a combined electrical generation of 40MW, expected annual savings of 48-million kW-hrs of electricity, and reduction of CO2 emissions by 24,000 metric tons per year (equaling removal of 4,600 cars from the road).

TECHNOLOGY HIGHLIGHTS

- Allen Bradley ControlLogix Redundant PLCs
- Wonderware IAS SCADA
- Load Management System (LMS) Solution
- Power Management System (PMS) Solution

PROJECT HIGHLIGHTS

Thermo Systems was initially hired by Hankins & Anderson, the project A&E firm, on a design-build basis to provide control systems integration design services. In this role, Thermo Systems designed the complete Plant Control System (PCS) utilizing non-proprietary redundant Allen Bradley PLCs coupled with a Wonderware IAS SCADA HMI front end. Thermo Systems deliverables included Automation Specifications, Communication Systems Architecture, PCS and SCADA Hardware/Software Specifications and Field Device Specifications.

Thermo Systems was subsequently contracted for the implementation of the PCS. This was a complex project in that all plant operations in CUP2 had to be coordinated/coupled with operations in the existing CUP1, since they collectively serve a common chilled water header and electrical bus. Additionally, Thermo Systems was contracted for the power management and electrical integration of CUP1 and CUP2 and the campus buildings. This integration enabled island mode operation of the expanded Microgrid to effectively deal with load shed, load share and load restoration events while minimizing down time of critical operations around the campus.

RESULTS

As a result of successfully implementing the project, Thermo Systems was awarded an annual life cycle and preventative maintenance support contract by Honeywell.