



Building Management System for R&D Laboratory Facility

Overview

A global manufacturer of over the counter consumer products commissioned EES to implement a building management system for a new R&D laboratory facility. The system was designed to run efficiently and minimize energy usage while maintaining operational reliability.



Owner Requirements

The facility is a new R&D facility that was built next to a manufacturing and warehouse facility. The owner wanted a seamless solution that would utilize the best-in-class hardware for controls of the HVAC systems. The owner also required that the system be integrated with the existing HVAC control system installed in the manufacturing and warehouse facility to minimize the need for extra operating personnel and increase response time to potential problems. The facility consisted of the following:

- Several air handlers serving various laboratory environments including aseptic, oral dosage, tableting, gas chromatography, ophthalmics, microbiology, topical, and toiletries labs
- Chilled water system with back up pumping
- Boiler system with heat exchanger, pumping, and terminal reheat control
- Fume hood and exhaust fan control
- VAV box control for over 100 spaces

Solution

Characteristics of the new control system:

- Monitors all room data and performs air side as well as water side control of the system.
- Automatically stages chillers based on load characteristics for optimized operation



- Takes evasive action in the event of mechanical system failure including damper control, air handler sequencing, chiller sequencing, tower sequencing, and pump operation so that space conditions are maintained.
- Installed separate PLC controllers on each handler and integrated all instrumentation, valves, and VFD interfaces for distributed operation.
- Installed an integrated HMI that displays and trends all direct impact and non-direct impact systems.
- Performed all necessary start up and commissioning on the QBMS as well as the mechanical system.
- Assisted with qualification activities including design and testing document development and execution.

Results

The new facility was up and running in an efficient manner thereby minimizing the overall time to market. This contributed to their overall bottom line. The system was designed to be user friendly and intuitive for the manufacturing environment in Puerto Rico. Upon completion of the project, the client commissioned Engineered Energy Solutions to incorporate additional production suites in Puerto Rico. In addition, EES was commissioned to design and install QBMS systems within the United States that not only included HVAC control / monitoring, chiller plant automation, dust collection, and exhaust control but also warehousing, storage, and active room pressure control.