Software company benefits from controlling mechanicalloads with electrical metering

Power metering equipment

Challenge

A large software company was looking for a solution to electrical metering and basic HVAC mechanical controls built into one device. Key requirements from the customer were:

1. Control VFD's to maintain operating temperature/RH of sensitive electronic systems

2. Utilize analog temperature/ RH and pressure as control inputs

3. Monitor, log and alarm the kW, voltage, amp, fan speed and internal interior and outside ambient air temperature and pressure

4. Provide web-based monitoring that could be seen from anywhere in the world

5. Provide XML data to end customer third party software

6. Battery back-up entire control system

7. Small enclosure, space limitations

8. Read and write commands to the VFD's via Modbus communications

9. Utilize existing advanced metering equipment already being installed

Solution

The Siemens engineering team reviewed the unique requirements and decided the required functions were possible within the power metering equipment. The advanced electrical metering would be used to control a typical PID loop within the meters firmware. It was a matter of combining the right modules within the meter for the task.

The Siemens Advanced 9610 meter was the answer, since the base programming was PLC module driven. The Proportion Integral and Derivative (PID) control was established as the basis of control, designed into the meters firmware.

Analog 0-20ma temperature/RH and pressure sensors were wired to the analog inputs of the Siemens 9610 electrical meter. The PID programming allowed Modbus commands to be sent to the VFD's thus allowing control of fan motor speed, as well as feed back control readings.

Since the electrical meter took the role of a Modbus Master, the rest of the customers local visibility needs was easily accomplished.

To finish the total "stand-alone" solution, the meters on-board XML web pages were programmed to display all the metered and calculated data. This data was also setup to transmit this information to the customer's global EPMS software.

Results

All the customer requirements were meet, along with added features like e-mail alarming and remote set point change. The end customer was very pleased with the compact Siemens solution which saved them time and money by utilizing the existing Siemens hardware. They also realized all the potential Siemens had in its high end metering devices and our personnel!

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