APPLICATION NOTE

CAS DATALOGGERS

Utility Monitoring In A School Building

Universal Input Data Loggers Offer Total Building Solution

As part of an energy study, a school district needed a system to monitor utility usage in a school building. They needed to present this data in an easy-to-understand dashboard for each wing and as an aggregate total for the entire building. The building also had electric sub-panels for the different areas, but they are separated from the main utility rooms; these needed to be integrated into the dashboards as well to capture the full usage pattern.

Installation

The district outfitted each area's utility room with a dataTaker DT80 Universal Input Data Logger. The DT80 was connected to sensors that captured Chilled Water Flow, Hot Water Flow, and Gas Flow. A key feature of the logger is the universal analog and digital inputs which could measure the signals from the different sensors including 4-20 mA current loops, DC voltage, or pulse signals. The logger also has built-in math functions to allow calculations for scaling and totalization of the different parameters. The DT80 comes with dEX 2 software which provides easy to create, customizable dashboards for the different measurements with displays such as thermometers, digital meters, dial meters, and trend graphs. To capture electrical energy use, the DT80 is connected to a Wattnode WND-WR-MB power meter located in the electrical utility rooms.

Using the loggers built-in RS-485 serial interface. and industry-standard Modbus/RTU protocol, the DT80 could easily read the desired parameters, including AC voltage and current, power (kW), and energy use (kWH) from the power meter.

The individual dataTaker DT80 units in each area are connected via Ethernet to the existing school LAN, with one unit designated as the client or "master" and the other DT80s configured as servers. Using Modbus TCP, the master will periodically request data from the servers in the different areas. This allows the master unit to give both an individual view for each area plus a totalized view of the energy usage for the whole building. For example, the ground floor dashboard displays the Chilled Water Flow, Hot Water Flow, and Gas Flow for the gym and cafeteria. The DT80 represents this data in a simple visual format on the customer's PC, including gauges for water and gas flow and meters for electrical energy use.

Usage

The customer greatly increased their data accessibility immediately after installing the DT80s and having a visual dashboard for the combined data from the different areas greatly helped the school's administration to closely monitor their utilities. The entire building's usage is recorded with pinpoint accuracy, while the operator is free to view the data in a convenient dashboard display arranged by floor, wing, and aggregate total. Each floor's remote sub-panels are now included. The dataTaker DT80-based solution provided an ideal Utility Monitoring System. The customer has additional options available with this solution for increased monitoring down the road. With a DT80 already on every floor, future expansion to monitor other inputs is easy to

accomplish. For example, measuring chilled and hot water temperature, utility room temperature, and filter status is easy to add to the existing system. The cafeteria could install its own DT80 since this room has its own data to monitor, including temperatures in refrigerators and freezers.

Another DT80 could be added in the boiler room to closely monitor this high-energy usage area; this is also ideal for EPA requirements to monitor and track stack emissions. Further, a separate power meter could be installed for submetering to measure just the lighting use in relation to the total electrical load. For a green solution, solar water heaters are one of the most popular new energy-saving devices being considered by schools--the DT80 can easily monitor temperatures inside and out, and also monitor the water flow through the solar panel itself.

For more information on the DT80 Intelligent Universal Input Data Logger, or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.