

ENERGY USAGE MONITORING AND EFFICIENCY MEASUREMENT IN A DISPLAY HOME

DATA TAKER DT85 HELPS DEMONSTRATE COST BENEFITS OF MATERIALS

CAS Dataloggers provided the datalogging solution for a large manufacturer of thermally efficient and lightweight building panels whose insulated products were used extensively in the construction of a highly energy-efficient home. The manufacturer wanted to set up continual energy usage monitoring over an extended period of time to demonstrate all the energy and cost benefits of its thermally-efficient materials. The house would initially be used for display purposes, after which time it would be occupied for a full year to validate its high energy efficiency rating. In order to prove that its materials and design were superior and would save customers money through lower monthly utility bills, the manufacturer began searching for a datalogging solution with the flexibility to measure both internal and external environmental conditions via a wide range of sensors and which offered both a large number of inputs for temperature sensors and a large data storage capacity.



INSTALLATION

CAS DataLoggers designed a complete turn-key solution for energy usage monitoring within the home, based around a [dataTaker DT85 Intelligent Universal Input Data Logger](#). The DT85 was installed in a secure wall-mounted enclosure to monitor the environment both within and outside the home. Additionally, the dataTaker boasted a rugged design and construction which provided reliable operation even under extreme conditions, useful for the year-long project.

The DT85 was then expanded using 3 dataTaker CEM20 channel expansion modules for a maximum of 219 analog inputs, enough to accommodate the large scope of the project. The data logger also featured a smart serial sensor channel capable of interfacing to RS232, RS485, RS422 and can also connect to SDI-12 sensors.

USAGE

The dataTaker logger was then connected to a wide variety of sensors, including a [Latronics kWh energy meter](#), a Vaisala GMW116 CO2 Transmitter, a Vaisala HMW40Y Humidity Transmitter measuring internally and externally, a Vaisala WXT520 Weather Transmitter measuring external temperature on the roof, and several RTD temperature sensors monitoring each room. By analyzing the internal and external temperatures and their rate of change, the manufacturer successfully identified the efficiency of the insulating properties used in their building materials. The energy meter output one pulse per watt-hour of electricity consumed within the home, which helped determine how energy efficient the home was throughout the year. The



carbon dioxide (CO₂) transmitter measured internal CO₂ levels, which was a reliable gauge of how well the house was sealed and ventilated; this was especially important to the manufacturer because rising CO₂ levels were a clear sign of poor ventilation.

The dataTaker system transmitted all its logged data via the logger's Ethernet connection, and also featured a built-in web and FTP server allowing for remote access to logged data, configuration and diagnostics. The dataTaker also included USB memory stick support for easy data and program transfer. Additionally, Modbus slave and master functionality allowed connection to Modbus sensors and devices and to SCADA systems.

BENEFITS

The manufacturer's energy efficiency validation greatly benefited due to the cost-effective dataTaker datalogger. The DT85 was chosen due to its durable design, its large number of analog inputs for temperature sensors using the CEM20 expansion modules, and its compatibility with almost any sensor to measure both internal and external environmental conditions. This single turn-key solution interfaced with all the various sensors to accurately monitor energy usage within the home. The logger also had a large data storage capacity, especially useful for the extensive duration of the project. Data accessibility was simplified through the logger's Ethernet connection and remote access to the logged data via the built-in web and FTP server.

For further information on the [dataTaker DT85 Intelligent Universal Input Data Logger](#), energy usage monitoring, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.