

Monitoring Energy Consumption Remotely Using Data Loggers

MiniOMNIAlog from Next Industries Enables Remote Monitoring

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In order to find the best way to reduce energy costs, an industrial company contacted [CAS DataLoggers](#) for an electric power consumption control system. Two separate premises approximately 500 ft. away needed to be monitored concerning the electric power usage: a manufacturing plant and an office building. The energy provider's bill doesn't have enough details for the customer to fully understand their energy requirements and consequently to decide useful corrective actions. Rather they needed to monitor specific circuits and their usage over time; for example energy cost reductions can often be achieved by simply changing the time usage patterns of equipment.

Energy Data Collection

Industrial and office energy audits are useful if conducted over a sufficient period of time, so the customer decided to start using a monitoring period of one month. First the customer chose representative energy-consuming pieces of equipment inside the manufacturing plant to test and to analyse, which in this case are several three-phase AC motors.



For this purpose CAS DataLoggers provided an [NI-400 miniOMNIAlog data logger](#) with integral modem from **Next Industries**. This small-size IP67 device is perfectly suited for use in an industrial manufacturing environment. OMNIAlog series data loggers feature universal input channels for flexible connection with a wide range of input signal types. The **miniOMNIAlog's** 2GB non-volatile data memory has plenty of space for this one-month data logging period. Installation has been easy thanks to the ability to keep operating on ultra-low power over months using the internal batteries.

Concerning the office building, the main electrical power consumption was instead related to the HVAC system, so the customer installed another NI-400 data logger to record the related energy consumption over the month.

Voltage and Current measurement

In order to measure the current and voltage on the manufacturing plant's 3-phase electric network, the customer utilizes an **NI-AD4 transducer** together with one 70A current transformer. The same setup is being used for the HVAC electric motors.

The NI-AD4 is connected on the RS-485 serial interface of the OMNIAlog data logger, so precise energy measurements are also possible with reactive loads. In fact, in order to obtain correct values, electric motors require simultaneous voltage and current acquisition.

Office Temperature and Humidity measurement

In order to properly evaluate the HVAC system efficiency, it's also necessary to precisely measure the temperature and humidity variations in different locations of the buildings during the day.

This is done using four **NI-EE160 temperature and relative humidity sensors**, connecting their 4-20mA outputs to the analog measurement inputs of the miniOMNIAlog data logger. The NI-EE160 is a precision temperature and relative humidity sensor, specifically designed for this kind of application.

Automatic Data Transmission

The customer opted for the miniOMNIAlog's **integrated GPRS modem version** for its standalone and remote monitoring capabilities. OMNIAlog data loggers can send data via FTP, e-mail or SMS. This makes them ideal for remote data transmission between the two buildings. No other configuration/analysis software package is needed. If desired, users can also view data from the web using a PC, tablet or smartphone. Users can also display their data trends in charts via the OMNIAlog's Web browser interface and store them for further analysis. This is particularly useful when presenting energy audit results to installers and technicians.



Energy Audit Benefits

The miniOMNIAlogs are well-suited to this application, being compact, quick to deploy and cost-effective for monitoring all the values required. Remote connection and management allows users to share data between the two buildings. The data loggers also operate standalone and automatically transmit their data without anyone having to travel out to the devices to collect data.

At the end of the energy audit period, the company had relevant information about its energy consumption. According to the collected data, they've decided to make some changes to their manufacturing system in order to obtain the best time pattern for electric energy usage. Consequently this is projected to result in a significant reduction of their total energy costs.

For further information on [Next Industries dataloggers](#), additional monitoring solutions, or to find the ideal solution for your application-specific needs, contact a **CAS Data Logger Applications Specialist** at **(800) 956-4437** or visit our website at www.DataLoggerInc.com.

Contact Information:
CAS DataLoggers, Inc.
12628 Chillicothe Road
Chesterland, Ohio 44026
(440) 729-2570
(800) 956-4437
sales@dataloggerinc.com
www.dataloggerinc.com