REMOTE MONITORING SOLUTION FOR BIOGAS PRODUCTION PROCESS

DATATAKER DT80M DATA LOGGER TURNS WASTE TO WATTS

PMP Environmental's tapioca starch plant in Sumatra, Indonesia became increasingly concerned about the impact of greenhouse gas emissions and rising energy costs. These factors became the impetus for the plant to search for a solution to these pressing environmental issues, and eventually the plant began considering biogas, a combination of methane and other gases, as an alternative source of electricity. PMP Environmental Australia was a long-time developer of safe energy solutions in the biogas generation industry and had the technology to make this biogas production process a viable proposition for a wide range of projects. Their new 'green' solution was to construct an adjacent methane recovery plant to provide electricity to power their tapioca starch plant.

The wastewater from the starch plant was pumped into aerobic ponds where the collected methane gas was harvested and then burned in engines used to drive electrical generators. These converted the biogas into electricity to power the plant. However, shortly after operations were underway, plant management recognized that the conversion process would need a remote monitoring solution since frequent access to the monitoring device would not be feasible. Key requirements for this device included a modem for remote monitoring and remote data retrieval/accessibility, the ability to send data through FTP and emails to plant management, high accuracy measurements, real-time calculations, and reliable data storage.

INSTALLATION

Plant engineers installed a dataTaker DT80M Intelligent Universal Input Data Logger in the methane recovery plant and connected it to several gas flow sensors to closely monitor the methane flow. The DT80M data logger was chosen for its flexibility, remote monitoring performance and built-in 2G/3G cellular modem. The DT80M monitored the gas collected from the ponds, the amount of gas used to power the generator, and the amount of gas burnt by the flare. These values were all required by the governing regulatory body as evidence of total gas saved and were subsequently used to determine the number of carbon credits to be allocated to the plant. The data logging platform also monitored the run time of the gas blowers using its digital input capability and ran calculations based on this data for purposes of maintenance, efficiency and power consumption. The data logger was also able to monitor many other types of readings including temperature, voltage, current, 4-20mA loops, resistance, bridges, strain gages, and frequency. The dataTaker DT80M universal data logger also recorded high-precision measurements at 18-bit resolution with a ± 30Vdc input measurement range. Up to 10,000,000 data points could be stored on internal memory, and USB memory stick support was included for convenient data and program transfer. Additionally, the DT80M's rugged design and construction provided reliable operation even in extreme conditions, especially for the biogas production process.

USAGE

The DT80M functioned as a cost-effective remote monitoring and real-time data acquisition solution expandable to 300 single-ended analog inputs. The device featured a built-in LCD display and 5 to 15 universal analog sensor channels as well as a built-in web and FTP server to enable remote access to logged data, configuration and diagnostics.

The DT80M also featured a serial 'smart sensor' channel for interfacing to SDI-12 and Modbus sensors, and also offered Modbus slave and master functionality to allow connection to Modbus sensors and devices as well as to SCADA systems.
The built-in 2G/3G cellular modem's communications capabilities saved management the need to travel long distances to collect the data or receive alarms, both of which were remotely accessible thanks to the built in cellular modem.

The DT80M data logger also included free dEX configuration software for hassle-free logger setup and configuration directly in a web browser and also performed live data analysis and post-treatment functions. The software also allowed users to view the real-time data as mimics or charts in an intuitive Windows-Explorer-style interface. As an added convenience, the DT80M's internal modem arrived predominantly preconfigured, letting engineers get a rapid start to the conversion project, and for future ease of use, dEX also enabled remote reconfiguration over the Internet.
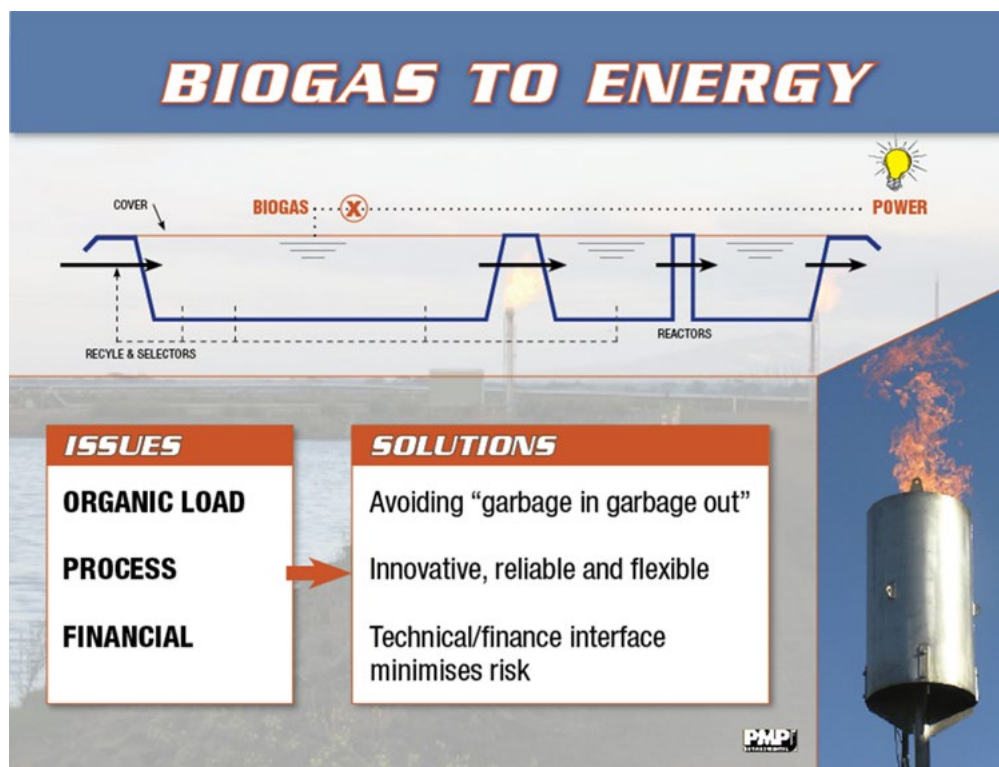
Bio Energy: A graphical overview of the biogas production process

Benefits

The starch plant's engineers and management realized several benefits from installing the DT80M, the most important of which was that the data logger acted as a flexible remote monitoring solution to capture the methane flow recordings and blower run times in the biogas production process. Additionally, the DT80M's advanced communications features enabled local, remote, and Internet connections via Ethernet and USB ports. The inbuilt modem's automatic data delivery features guaranteed scheduled emails of all captured data to specified emails--plant management now had access to the remote data anytime, anywhere via FTP and SMS text messages. Recordings were accessible from the data logger on the plant floor to a remote office PC, providing plant management the data and calculations they needed. Thanks to the advantages of biogas as a fuel, 250,000 tons of greenhouse gas per year was saved, and the carbon credits earned could then be sold on the open market.

The DT80M's compact and low-power design made it an efficient installation, and the included dEX software was popular with both novice and expert users and enabled quick configuration and data accessibility. As an additional option, up to 5 dataTaker CEM20 Expansion Modules could be connected to the data logger to add even more channels, forming a very cost-effective solution to tackle larger projects.

For further information on the dataTaker DT80M Data Logger, remote monitoring solutions 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.