



TO MEASURE OR NOT TO MEASURE?

Measuring and recording natural gas consumption helps facilities get a handle on usage to save money.

By Martin Marincic, Lanly Co.

So, your company wants to go green in 2010. Perhaps your boss has given you the task of recommending an energy plan to help reduce consumption and save money. Where do you start? What are your first steps? It may be tempting to say you are going to reduce your energy consumption by 10 percent, or you are going to reduce your energy bill by 15 percent — without doing any serious homework.

However, the real first step is to actually measure energy consumption, so you can benchmark where you are starting from



and use the recorded data to help justify investments to improve that number. As an example, if your plant has several gas-fired heat processing lines, you would want to start by simply measuring and recording the natural gas consumed on each machine over a period of time. While it may seem like a waste of time, below are some common questions and answers that prove otherwise.

Q. Why would I want to spend money on measuring natural gas consumption when simply knowing how much energy is used really doesn't save any money? Am I just throwing money out the window?

A. The latest gas-metering devices incorporate many advanced features that can be used to interface with many other

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types of equipment. For instance, many gas-metering systems are available with serial communication interface options that allow communication to programmable logic controllers (PLCs), chart recorders and personal computers. Many users will take a two-step approach by manually recording data at first and then incorporating advanced communication features at a later date. This way, the initial investment in an energy conservation program will not be lost as you progress through your program.

Q. What type of data should be captured?

A. Different types of heat processing equipment will consume varying degrees of energy, depending on the type of products being produced. Most natural gas meters are calibrated to measure in cubic feet of gas consumed per hour. Production rates for heat processing are measured in pounds of product per hour. Measuring cubic feet of gas used per hour, converting to BTUs per hour, and dividing by pounds of product produced per hour yields BTUs per pound of product. This process is repeated for each product until you have a comprehensive list showing the energy required to produce each product.

Q. How can the energy consumption data be used?

A. Measuring and recording total energy consumption is certainly useful. For instance, it provides historical data that can provide clues about which machines have high energy consumption due to inefficient, unreliable or misapplied equipment. These machines are good candidates for retrofits or replacement with newer, higher efficiency equipment. Knowing the local cost of gas, the

Left: If your plant has several gas-fired heat processing lines, it is important to measure and record the natural gas consumed by each machine. **Above:** The main purpose of any gas meter is to provide the user with an accurate record of gas usage. Many meter manufacturers offer advanced features that increase the usefulness of the instrument.



total energy consumption and energy efficiency of the replacement equipment allows you to calculate the payback period of any new equipment investment.

Knowing the amount of energy each product consumes allows you to accurately forecast the total amount of gas you are expecting to use.

Q. Why is it useful to know how much energy is required to manufacture each product?

A. Knowing the amount of energy each product consumes allows you to accurately forecast the total amount of gas you are expecting to use — as long as you know which products will be run-

many manufacturers offer advanced features that increase the usefulness of the instrument. Solid-state technology enables meters without moving parts that could “lock up” or stop gas flow. This feature may be necessary in applications where continuous gas service is critical.

requires the meter to withstand slam-open or slam-shut equipment. Network communication capabilities with PLCs, PCs, human-machine interfaces (HMIs) and chart recorders allow the user to store and manipulate large amounts of data.



Solid-state gas meters can offer a digital display, volume totalizing, data logging and Modbus communications.

Q. What does a typical measurement and data recording system entail?

A. A typical system would include one or more solid-state gas meters connected to a PLC using a network protocol such as Modbus or Ethernet. The PLC would store the gas usage data and allow access to an operator via a HMI color touchscreen. The HMI can be programmed to provide instantaneous as well as historical gas usage data. Managerial reports can be created and sent to a printer, the customer's mainframe or stored on a local hard drive for later use. The system can be programmed to calculate the estimated gas usage based on the backlog and order schedule. The forecasted gas usage is sent to the gas supplier to avoid costly surcharges. **PH**

ning. This data can be provided to your natural gas supplier to avoid surcharges for too high or too low of a demand for a particular billing period. In addition, accurate product cost information is used to set selling prices and predict profitability. Measuring and accurately forecasting natural gas consumption will enable you to avoid costly gas supplier surcharges.

Overflow capability allows the meter to withstand flow rates many times the rated capacity without any damage to the meter. Solid-state meters without moving parts are desirable when the application

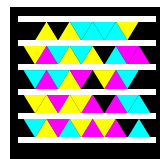
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WEB EXCLUSIVE

Where Can I Learn More About Measuring Gas Usage?

After learning about the benefits associated with measuring natural gas usage, many facilities want to learn more. Fortunately, there are many avenues of information.



Q. What are the considerations when selecting a gas meter?

A. Certainly, the main purpose of any gas meter is to provide the user with an accurate record of gas usage. However,

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