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- Today's boiler room controls generate a lot of data

- Understanding and correctly applying the data helps a facility increase its efficiency

- Information should be logged and trended to maximize fuel efficiency, sustainability, reliability and safety

Analyzing Boiler Room Control Data to Improve Operations

Today's boiler room controls are capable of generating a lot of data. Being able to understand the data and how to apply it will help a facility reduce energy costs and conserve resources as well as improve uptime and safety.

Inside a boiler room, there are many pieces of equipment that impact efficiency, sustainability, reliability and safety. In addition to the boiler itself, there is the Burner Management System (BMS), which controls and sequences the burner. The Combustion Control System (CCS) monitors other related functions such as fuel/air metering, feed water metering, draft, motor speeds, etc.

Boiler control and monitoring can be achieved through loop controllers or a PLC-based platform, which is becoming the preferred method because of its high degree of integration and easy field installation. The PLC-based platform can be expanded to include various controls and sensors for capturing valuable data for leveraging plant optimization.

There are a number of measurable and important data pieces that should be collected for analysis.

- **Check various boiler pressure points.** Monitor draft pressure, steam pressure, FW pressure, fuel pressure and combustion air wind box pressure.

- **Retrieve flow data.** Keep track of combustion air flow, steam flow, continuous blowdown flow for controlling TDS, blowdown heat recovery flow and feedwater flow.

- **Examine boiler feedwater.** Look at condensate return, flash steam recovery, deaerator and surge tank drum levels and pressures, and the boiler feed pump pressures.

- **Record temperature data.** Temperatures of the economizer inlet and outlet both on the fireside and waterside are critical for evaluating boiler efficiency. Other important temperatures to monitor include: feedwater, boiler water, outdoor, indoor and oil temperature, if the facility burns heavy oil.

The next step is to correlate the information into meaningful data sets. Among the data pieces that leverage change and improvement within the boiler room are:

- Steam flow versus fuel flow.

- Steam flow versus drum level.

- Drop in feedwater temperature from the normal reading.

- Pressure in the header decaying at unpredictable times.

- Stack temperature versus operating pressure and firing rate.

- Oxygen content in the stack versus firing rate.

The collected information should be logged and trended to maximize fuel efficiency, sustainability, reliability and safety in the plant and throughout the organization. It can be sent through a communication bus network such as Ethernet, DeviceNet,

BACnet, etc., to various receivers and used by the various disciplines within the facility.

In multi-plant operations, this information can be sent to individuals throughout the organization via a SCADA system.

If electronic filing is not desired or is not appropriate for specific activities, the information can be sent to printers for data logging and alarming, if necessary.

To learn more about applying control system data to benefit your facility, watch Leveraging Boiler Room Control Data for Optimized Operations or contact your local Cleaver-Brooks representative.