TYPICAL APPLICATIONS INCLUDE:

- Furnaces
- Burners
- Ovens
- Heaters
- Kilns
- Smelters
- Dryers
- Heat-treating systems
- Natural gas back-up power systems
- Emission reduction systems

THERMAL FLOW METERS HELP REDUCE ENERGY COSTS IN PROCESS HEATING

Improving combustion control reduces energy costs for burners, furnaces and other heat-treating equipment.

Although manufacturers have made significant improvements in process heating efficiency, the U.S. industry's total energy use for process heating is expected to increase. With overall thermal efficiency of process equipment varying from 15% to 80%, compared to the thermal efficiency of steam generation, which varies from 65% to 85%, there is clearly an opportunity to achieve significant energy savings, improve productivity and enhance competitiveness.

The U.S. Department of Energy's Industrial Technologies Program (www.eere.energy.gov) has identified improved burner control systems as a significant opportunity for reducing energy operating costs, waste and environmental emissions. Tuning burners to reduce excess air is a cost-effective technique for reducing heat lost in exhaust. Monitoring and adjusting air-to-fuel ratios to maintain optimum combustion not only conserves fuel but also helps reduce emissions.

One of the most effective techniques for improving efficiency and reducing emissions in these applications is a precise control strategy, based on mass flow measurement of fuel and air flow rates.

Sophisticated burner control systems optimize air/fuel ratio control to obtain peak thermal efficiency over the entire range of the burner, and to facilitate proactive emissions control. Mass flow control of air and fuel is used to automatically compensate for changes in temperature or pressure that affect combustion performance. Many systems also integrate fuel totalizing, air/fuel flow and valve position analog outputs for DCS interfacing, and remote system monitoring.

Accurate, repeatable measurement of air and gas, at low and varying flow rates, is a critical variable in advanced combustion control. Conventional flow meters, such as orifice plates, venturis, vortex and turbine meters are volumetric measuring devices, and they require pressure and temperature transmitters to compensate for density changes.

The thermal mass flow meter, however, measures gas mass flow directly, with no need for additional hardware. The thermal meter also provides better rangeability and a lower pressure drop than volumetric flow meters.

Fox thermal flow meters are designed for use in fuel gas and air feed lines found in process heating and utility operations. In addition to the primary benefits of direct measurement of mass flow rate, low-flow sensitivity, and fast response, the meter's no-moving parts design also helps reduce maintenance costs.

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