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An Ideal Solution for Emissions & Certain Gas Flow Applications

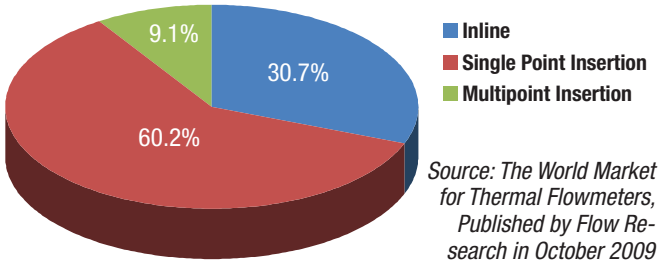
Thermal flowmeters were developed in the 1970s in the context of tests of hot-wire anemometers. Hot-wire anemometers were used to research airflow turbulence and air velocity profiles. These anemometers worked well in laboratory environments, but were not rugged enough to withstand industrial applications. John Olin, Ph.D., and Jerry Kurz, Ph.D., designed thermal flowmeters in the 1970s that would measure gas flow in industrial environments.

Thermal flowmeters came into their own in the early 1990s when the Environmental Protection Agency (EPA, *epa.gov*) began requiring companies to detect and reduce the emissions of sulfur dioxide (SO_2) and nitrous oxide (NOx), the main causes of acid rain. During this time, continuous emissions monitoring (CEM) was developed as a means of controlling atmospheric pollution. In response, thermal flowmeter suppliers developed multi-point thermal flowmeters that measure flow at up to 16 separate points within large stacks.

While there is still a need for CEM, the 21st century has brought a new set of environmental applications, as scientific thinking has evolved substantially in the past 10 years. While global warming and the need to reduce carbon emissions were once viewed as scientific theory, they are now widely accepted as scientific fact. And in the United States, the Obama administration has made a commitment to reduce greenhouse gas emissions 80 percent by 2050.

Some of the new applications for thermal flowmeters include recovery of methane from coal mines, measurement of flare gas flows, measuring emissions from steam generators and boilers, measurement and recovery of landfill gas, ethanol distillation and refining, and monitoring of flue gas. Since many of these are new measurement applications, thermal flowmeters are not necessarily replacing other types of meters. Instead, they are being selected as the meter of choice since they handle large line sizes and are mainly designed to measure gas flow.

Shipments of Thermal Flowmeters by Mounting Type in North America in 2010 (Percent of Dollars)



Source: The World Market for Thermal Flowmeters, Published by Flow Research in October 2009

Biomass gasification is another application for thermal flowmeters. Thermal flowmeters measure gas flow at multiple points along the way during the process, helping to provide optimal production, control and reporting.

While the thermal flowmeter market is smallest in terms of new-technology, it is among the fastest-growing in percentage terms. Thermal flowmeters are uniquely suited to make many of the new environmental measurements. The need for these measurements can be expected to grow substantially in the next 5–10 years. As a result, so will the demand for thermal flowmeters.

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