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For Immediate Release

Flow Research: A Large Installed Base and New Environmental Regulations Generate Growth in the Gas Primary Elements Market

Wakefield, Massachusetts; March 31, 2016 — A new research study, *The World Market for Gas Flow Measurement, 3rd Edition*, by Flow Research (www.flowresearch.com) finds substantial growth in the gas flow measurement market. Differential pressure (DP) transmitters are used with primary elements such as orifice plates and flow nozzles to generate flow measurements.

According to this new study, the worldwide gas flowmeter market exceeded \$1.7 billion in 2014. Traditional technology gas flowmeters revenues are still strong in this market, accounting for \$930 million of the total. DP flow is especially strong in North America. Primary elements accounted for almost 43 percent of total worldwide primary element sales in 2014.

One growth factor for primary elements has been the increased use of multivariable flowmeters. Multivariable transmitters are used with primary elements to generate a differential pressure (DP) flow measurement. Some prominent companies in the multivariable transmitter market include Emerson Process Management, Honeywell, ABB, Foxboro, and Yokogawa. Multivariable DP flowmeters measure more than one process variable, usually differential pressure and/or static pressure and temperature. Many of them incorporate a pressure and a temperature transmitter into a single device, making it unnecessary to order these products separately. Multivariable DP transmitters are mainly used to measure mass flow, and they are primarily used for steam and gas flow measurement.

Growth in the Use of Integrated DP Flowmeters

Some companies such as Emerson Rosemount offer integrated DP flowmeters that incorporate a primary element with a DP flow transmitter to create a DP flowmeter. This reduces the need for impulse piping and valves, and also makes it possible to calibrate the device before shipping with the primary element already attached. Emerson Rosemount offers both its orifice plates and its Annubar averaging Pitot tube as an integrated flowmeter. The popularity of these integrated flowmeters is likely to increase as end-users seek to cut costs and simplify the installation process. Since these integrated flowmeters require a primary element, this is a growth factor for primary elements.

Strengthened Environmental and Emission Regulations

In the early 1990s, new environmental regulations began requiring companies to detect and reduce the emission of sulfur dioxide (SO₂) and nitrous oxide (NO_x) into the air. SO₂ and NO_x are two principal causes of acid rain.

The Environmental Protection Agency (EPA) initiated a program to reduce pollution in the atmosphere. It is possible to determine how much of these substances are released into the atmosphere by combining a measurement of the flowrate with a measurement of the concentration of SO₂ and NO_x. EPA regulations have resulted in the development of an entire industry around CEM, including the introduction of Continuous Emission Systems (CEMs).

In response to CEM requirements, primary elements companies developed averaging Pitot tubes. In many cases, continuous emissions monitoring occurs in large stacks that emit pollution from industrial sources. Single point Pitot tubes measure flow at a one location, making it difficult to accurately compute flow in a large pipe or smokestack. Pitot tube manufacturers developed averaging Pitot tubes that use measurements at multiple locations to compute flow for the entire pipe, duct, or stack.

Today concern with greenhouse gas emissions is providing additional applications for averaging Pitot tubes. Environmental regulations concerning flare gas and stack gas emissions are being

strengthened in the United States and in other countries around the world. For this application, averaging Pitot tubes compete with multipoint thermal flowmeters and with ultrasonic flowmeters. Because the application for monitoring emissions is growing, it is likely that all three flowmeter types will benefit from these strengthened requirements.

Barriers to Growth for Primary Elements

Primary elements are perceived as an “old” technology, and many end-users are selecting new-technology meters such as Coriolis and ultrasonic, especially for new plants and applications. Primary elements are by nature intrusive, especially orifice plates, since they have to create a pressure drop to make a flow measurement. DP flowmeters typically do not have the same accuracy levels as Coriolis, ultrasonic, or even turbine meters. Even so, DP flowmeters have a very large installed base, and this is preventing the market from declining.

This study, *The World Market for Gas Flow Measurement, 3rd Edition* (<http://www.gasflows.com>), analyzes the world market for all types of flowmeters used for gas flow measurement. It includes a technology analysis, 2014 market size and market share data, market growth projections through 2019, and provides in-depth segmentation of the market by various product and geographic categories.

According to Dr. Jesse Yoder, president of Flow Research:

“When talking about primary elements, it is important to understand that there are many different types. These include orifice plates, Venturi tubes, flow nozzles, Pitot tubes, wedge elements, laminar flow elements, and others. In addition, each of these types has multiple varieties. Some companies manufacture only primary elements, and let the buyer specify the type of transmitter to use. One of the newest type of primary element is the cone meter, which was pioneered by McCrometer with its V-Cone. While some companies are making improved primary elements, this is an area of the flow industry that deserves more attention.”

About Flow Research

Flow Research, with headquarters in Wakefield, Massachusetts, is the only independent market research company whose primary mission is to research flowmeters and other instrumentation products and markets worldwide. Flow Research has years of experience in doing both off-the-

shelf studies and custom work. Published studies can be purchased by anyone interested in the topics. These studies are developed through interviews with suppliers, distributors, and end-users, and are presented in a clear and consistent manner. Topics include all of the flowmeter technologies – both new and traditional – as well as temperature sensors, temperature transmitters, level products, and pressure transmitters.

A growing area of interest – especially related to custody transfer – is flowmeter calibration. Flow Research has recently completed two studies, one on gas and one on liquid, of flow calibration facilities and markets (<http://www.flowcalibration.org>).

The company also focuses on the energy industries, especially on oil and gas production and measurement. Special topics include custody transfer, multiphase measurement, and liquefied natural gas (LNG). A series of quarterly reports called the Worldflow Monitoring Service provides regular updates on both the flowmeter markets and the energy industries (<http://www.worldflow.com>).

For more information, visit <http://www.flowresearch.com> or call +1 781-245-3200.