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For immediate release

Growth in Large Pipe Applications Drives Coriolis Flowmeter Market, Finds Flow Research Study

Wakefield, MA (November 10, 2014) — According to a new market study from Flow Research, the market for Coriolis flowmeters totaled $1.3 billion in 2013, and is projected to grow to almost $2.0 million by 2018. Growth in the energy markets, especially in oil and gas, is creating greater demand for the accuracy and reliability of Coriolis flowmeters. High crude oil prices are a part of this equation. Coriolis flowmeters remain the most accurate flowmeter made, and both accuracy and reliability are critically important for measuring the flow of crude oil and petroleum liquids. While Coriolis flowmeters are used for both upstream and downstream petroleum applications, they are especially suited to downstream applications of petroleum liquids.

Another important force driving the market is the development of large line size Coriolis flowmeters. For many years, nearly all Coriolis flowmeters were used in pipes with diameters of six inches or less. In the past five years, four major suppliers have developed Coriolis flowmeters for use with pipes from 8 to 16 inches in diameter. While these flowmeters can be quite expensive, they are becoming increasingly popular with flowmeter users. Most of these large line size Coriolis flowmeters are designed for custody transfer applications. Companies that have brought out these large line size meters include GE Measurement (which acquired

Rheonik), Micro Motion (part of Emerson Process Management), Endress+Hauser, and KROHNE.

Coriolis flowmeters have also benefited from industry approvals that previously worked mainly in favor of differential pressure (DP) and turbine flowmeters. The American Gas Association approved a report on the use of natural gas for custody transfer applications in 2003. This report helps explain the growing use of Coriolis flowmeters for natural gas. The American Petroleum Institute (API) has also issued a draft standard for the use of Coriolis flowmeters to measure hydrocarbon fluids. This document was added to the API Library in July 2012. The API also approved a draft standard called Measurement of Crude Oil by Coriolis Meters. While Coriolis flowmeters compete with differential pressure and turbine flowmeters for natural gas applications, they compete with positive displacement (PD) flowmeters for downstream measurement of petroleum liquids.

While the use of Coriolis flowmeters is growing rapidly in the oil & gas and refining industries, the chemical industry remains the largest industry for Coriolis flowmeters. They are also widely used in the food & beverage and pharmaceutical industries. All these industries have sanitary applications where Coriolis flowmeters do well. Coriolis flowmeters compete with magnetic flowmeters for sanitary applications. Magnetic flowmeters have specialized liners that make them especially suited for sanitary applications. While most Coriolis flowmeters have single or dual bent tubes, fluids are less likely to build up in straight-tube meters since the fluids don't have to travel around bends or curves. Straight-tube meters also have less pressure drop than bent-tube meters.

Even though Coriolis flowmeters are being used more widely to measure both natural gas and industrial gases, liquids still account for more than 75 percent of Coriolis flow applications. Liquids are denser than gas, and Coriolis flowmeters rely on the momentum of the fluid as it travels through the meter to generate the flowmeter measurement. And even though measurement of the flow of petroleum liquids is growing at a faster rate than measurement of non-petroleum liquids, measurement of non-petroleum liquids still represents a larger segment of the fluid measurement market.

According to Dr. Jesse Yoder, president of Flow Research, continued expansion is expected for the Coriolis flowmeter market:

> Continued growth in the energy markets is a major reason for projected growth in the Coriolis flowmeter market. At the same time, Coriolis suppliers have shown a readiness to bring out new products to meet changing market requirements. This is shown in the development of both straight-tube and large line size Coriolis flowmeters. While they remain somewhat expensive, the twin benefits of high accuracy and long-term reliability outweigh the upfront purchase price of Coriolis flowmeters for many flowmeter users.

The Coriolis flowmeter market size and forecasts are part of a new research study from Flow Research, *Volume X: The World Market for Flowmeters, 5th Edition* (http://www.flowvolumex.com). This study includes 12 flowmeter types, and covers both new-technology and traditional technology flowmeters. Coriolis flowmeters are included among the new-technology flowmeters. Flow Research has also published a standalone study on Coriolis flowmeters called The World Market for Coriolis Flowmeters, 4th Edition (http://www.flowcoriolis.com)

About Flow Research

Flow Research, with headquarters in Wakefield, Massachusetts, is the only independent market research company whose primary mission is to research flowmeter and other instrumentation products and markets worldwide. Flow Research specializes in flow measurement devices, and conducts market research studies in a wide variety of instrumentation areas that can be purchased by anyone interested in the topics. These studies are developed through interviews with suppliers, distributors, and end-users. Topics include all of the flowmeter technologies - both new and traditional - as well as temperature sensors, temperature transmitters, level products, and pressure transmitters. The company has a special focus on the energy industries, especially on oil and gas production and measurement. For more information, visit http://www.flowresearch.com or call +1 781 245-3200. For information on the Coriolis flowmeter studies, visit http://www.flowcoriolis.com.

Total Shipments of Coriolis Flowmeters Worldwide
(Millions of Dollars)