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**For Immediate Release**

## **Flow Research Study Finds Flowmeters Vital for Oil & Gas Industry Measurement as the Industry Rebounds**

Wakefield, Massachusetts; December 23, 2021 — A 2021 research study from Flow Research, *Flowmeters in the Oil and Gas Industry* ([www.oilflows.com](http://www.oilflows.com)), finds that worldwide revenues for all flowmeters sold to the oil & gas industry in 2019 amounted to \$1,640 million and forecasts a solid compound annual growth rate (CAGR) of 2.6 percent over the next five years, for a total annual revenue exceeding \$1,860 million in 2024.

The oil & gas industry is one of the largest industries for flowmeters and the flowmeter market tends to parallel its ups and downs. Both the flowmeter market — and oil & gas prices — had a very strong year in 2018. Though oil & gas prices declined in 2019, they were strong enough to help support a modest increase in flowmeter sales in 2019. However, sales of all types of flowmeters dropped in 2020 due to a decline in oil prices, the effects of the COVID-19 pandemic, and a decline in demand for energy products. In 2021, both the oil & gas and the flowmeter markets are recovering and Flow Research sees this trend continuing into 2022 and through 2024.

Differential pressure (DP) flowmeters account for about one-third of flowmeter revenues sold into the oil & gas industry. DP flowmeters consist of DP transmitters together with primary elements, such as orifice plates, Pitot tubes, Venturis, flow nozzles, and other elements. Though DP

transmitters and primary elements are quantified separately in the study, they together make up the differential pressure flowmeter market. DP flowmeters are deeply entrenched in the oil & gas industry and have the advantage of a large installed base.

Coriolis flowmeters are second behind DP flowmeters in terms of revenues sold into the worldwide oil & gas industry, followed by ultrasonic and positive displacement meters. Magnetic flowmeters — which do not measure oil, gas, or other nonconductive fluids — are also playing an increasingly important role in the oil & gas industry for water/brine injection, recovery, and disposal. Magnetic flowmeters are widely used to measure the water and chemicals pumped into oil and gas wells during chemical injection for in hydraulic fracturing, or “fracking.” They also measure the water that comes out of the well after the fracking operation is complete.

Flow measurement plays a vital role in all three industry segments: upstream, midstream, and downstream.

**Upstream.** Once an oil well is in production, underground pressures push fluid containing the oil to the surface, where it passes through a series of test and production separators. Flowmeters measure the fluid as it enters the separators and also as the separated oil, gas, and water are sent to different locations. Sometimes multiple wells feed into a common flowstream, and the fluid amount from each well also has to be measured. Depending on the ownership of the various wells, this step may require custody transfer measurement. Often ultrasonic, differential pressure, or turbine meters make upstream measurements. Coriolis meters can also be used, but they perform better with liquids than gas and also have line size limitations.

**Midstream.** Transporting the oil or gas from the upstream oil field down to a refinery or gas processing plant (or storage tank) by pipeline, truck, railcar, or ship typically involves custody transfer. Custody transfer of natural gas, especially for large natural pipelines, is one of the fastest growing niches within the flowmeter markets and predominantly uses ultrasonic, differential pressure, and turbine flowmeters. Ultrasonic flowmeters have been gaining ground because they are non-intrusive, with no moving parts. They are also highly accurate, and ultrasonic meters with three or more paths typically meet industry guidelines for custody transfer accuracy.

To send natural gas by ship, it must first be transformed into liquefied natural gas (LNG), which is a rapidly growing aspect of distributing the world's supply of natural gas. Liquefaction is a complex process and provides opportunities and challenges for flow measurement. The natural gas is measured as it enters and leaves the liquefaction plant. Later, the LNG is transferred to a ship, where it is stored in insulated tanks to maintain its low temperature. Once the ship arrives at its destination, the LNG is warmed to atmospheric temperature, regasified, and typically transferred to a pipeline or storage area.

Measuring the LNG at cryogenic temperatures requires a meter with no moving parts and, to avoid LNG vaporization, low pressure drop. In addition, an LNG meter needs to have provable custody transfer accuracy. Coriolis and ultrasonic meters, which most consistently meet these requirements, dominate in LNG flow measurement.

**Downstream.** Refineries and gas measurement plants offer many opportunities for flow measurement both intraplant and downstream. Flowmeters approved for custody transfer typically measure the crude oil entering a refinery from pipelines, railcars, trucks, or ships and the refined fuels leaving the refinery. Within the refinery, flowmeters measure flow at various points as the crude oil goes is distilled and converted into various types of refined fuels, including gasoline, diesel, kerosene, jet fuel, and fuel oil. Ultrasonic, differential pressure, turbine, and vortex meters are all used for flow measurement inside refineries. In some cases, steam measurement is required, which favors differential pressure and vortex meters.

Refined products coming out of the refinery are often stored temporarily in large tanks on a tank farm. From here, pipelines, trains, and trucks carry the refined fuels to their points of use. Positive displacement flowmeters are widely used for this purpose, since they excel in measuring the flow of petroleum liquids of a wide range of viscosities and flowrates. When trucks are used to deliver gasoline and fuels, either positive displacement or Coriolis meters are often installed on the back of the delivery trucks as part of an integrated system that includes pumps and valves.

Natural gas and industrial gas processing plants offer opportunities for temperature and pressure measurement as well as for flow measurement. Flowmeters approved for custody transfer

typically measure the gas as it enters the plant. Vortex, thermal, differential pressure, and turbine meters are often used for non-custody transfer measurement within the plant.

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

“While 2020 was a difficult year for the oil & gas industry and for the flowmeter market, 2021 has been a year of recovery. This trend towards recovery can be expected to continue in 2022, with pent-up demand for travel, spending, and a return to a normal life will propel the demand for energy. Expect higher oil and gas prices in 2022, and with it a renewed demand for flow measurement in the oil & gas industry. Despite the pain of the past two years, we have much to look forward to in 2022 and beyond. Expect ultrasonic, Coriolis, positive displacement, and turbine flowmeters to play especially important roles in this energy recovery.”

*Flowmeters in the Oil & Gas Industry*, a Flow Research first, provides both a comprehensive and deep-dive view of the oil & gas flowmeter market from a variety of perspectives. The study examines the oil & gas industry flow measurement market both worldwide and by region, with detailed information on each region’s oil & gas picture, market influences, growth factors, and flowmeter shipments. It provides data in both dollars in units for Coriolis, magnetic, ultrasonic, vortex, thermal, differential pressure transmitters, primary elements, positive displacement, and turbine flowmeter shipments worldwide and by region. The study also provides data on natural gas and oil production worldwide and by region, including selected countries that are most likely to have the greatest opportunities for flow measurement. *Flowmeters in the Oil & Gas Industry* is based on 2019 and 2020 data along with projections for 2021 and forecasts through 2024.

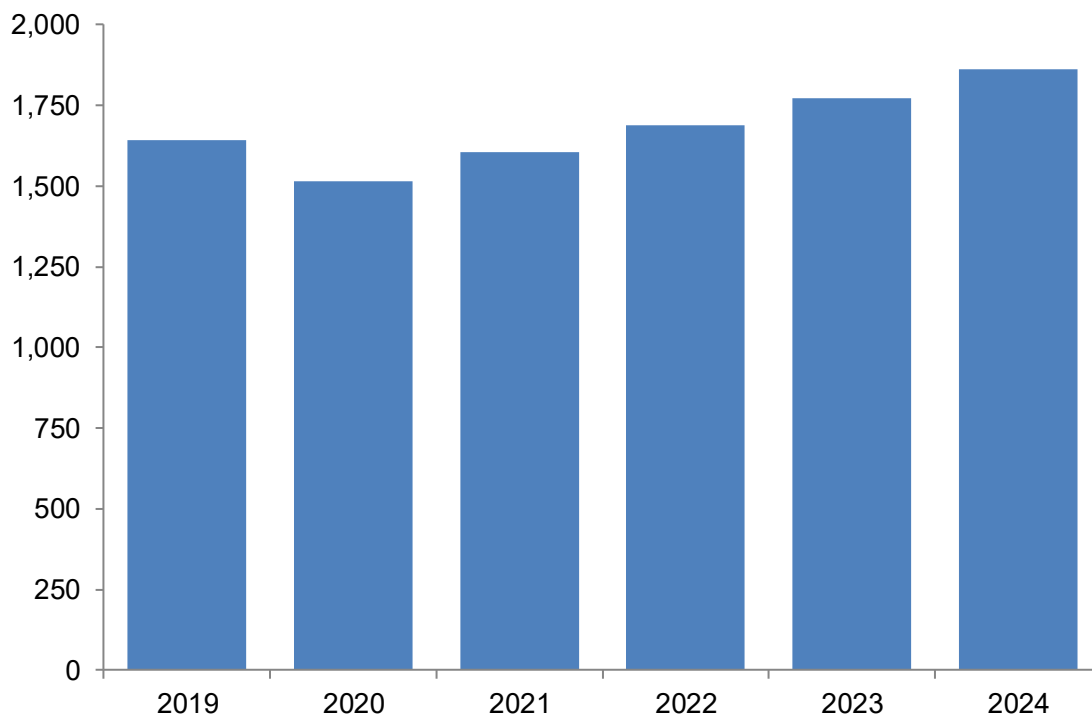
### **About Flow Research**

Flow Research ([www.flowresearch.com](http://www.flowresearch.com)) is the only independent market research company whose primary mission is to research flowmeter and other instrumentation products and markets worldwide. Flow Research, founded in 1998 in Wakefield, Massachusetts, specializes in flow measurement devices, and conducts market research studies in a wide variety of instrumentation areas. These studies are developed through interviews with suppliers, distributors, and end-users. Topics include all of the flowmeter technologies – both new and conventional – 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. 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.

### **Total Shipments of Flowmeters to the Oil & Gas Industry Worldwide (Millions of Dollars)**



**Compound Annual Growth Rate (CAGR) = 2.6%**