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The World Market for Pressure Transmitters, 5th Edition

– Overview –



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www.PressureResearch.com



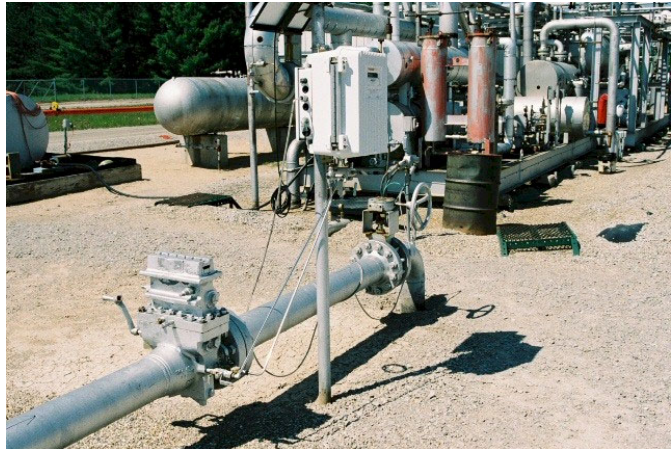
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The World Market for Pressure Transmitters, 5th Edition

Flow Research is working on a new study on the worldwide pressure transmitter market. The primary finding of the research is to determine the actual size of the pressure transmitter market in 2019. Forecasts based on this finding and other important data points through 2024 will be included.

The study is called **The World Market for Pressure Transmitters, 5th Edition**.

The 4th edition of this study, published in May 2015, observed that pressure transmitter revenues had grown substantially during the previous five years. Further, we found that the total size of the worldwide pressure transmitter market was a little less than half the size of the worldwide flowmeter market in terms of revenues.



But annual sales alone do not tell the whole story. We believe that the size of the installed base together with recent networking innovations in the acquisition of process data are two of the major reasons why the pressure transmitter market is strong and will continue to hold its own within the instrumentation world.

Reasons for Growth

Several factors account for the growth in the pressure transmitter market. First, the pressure transmitter market has grown due to growth in the number of new capital projects in Asian and other countries, and especially due to growth in China, India, and the Mideast.

Second, while oil prices experienced a significant downturn from 2014–2016, oil and gas projects have made a recovery since that time now that oil prices have stabilized in the \$50-\$60 per barrel range. This circumstance has continued to prevail through 2019. Our study describes the effects of this recovery and how it has affected the pressure transmitter market.

Finally, suppliers have made significant technological improvements to their pressure transmitters - resulting in more stable and accurate products - and this has given users further reason to buy into this market, or to upgrade their existing instruments.

Rationale for Study

Flow Research published the 4th edition of the worldwide pressure transmitter study in 2015. With significant growth returning to the oil and gas and other energy markets, we believe it is an optimal time to see what happened to the pressure transmitter market after the downturn that many companies experienced in 2015, 2016, and beyond.

The primary goal of this new edition is to determine the size of the pressure transmitter market in 2019 and to forecast market size through 2024. This study has multiple other purposes as well:

- Determine worldwide and regional market shares for pressure transmitters in 2019
- Forecast market growth for each of the four types of pressure transmitters through 2024
- Identify the industries and applications where pressure transmitters are used, and to focus especially upon high growth areas
- Provide average selling process for all types of pressure transmitters worldwide and by region
- Analyze the products from the main companies selling into the pressure transmitter market
- Offer strategies for success to manufacturers who sell into the pressure transmitter market
- Profile the main pressure transmitter suppliers
- Identify all of the factors causing the market to grow

Background

In conducting this study, we are contacting all known manufacturers of pressure transmitters worldwide to assemble a picture of the total pressure transmitter market. We ask suppliers to provide detailed information about geographic segmentation, industries sold into, types of pressure transmitters sold, and many other product segments. As a result, the study identifies where growth is occurring in the market, and the underlying factors driving that growth.

Pressure transmitters are typically made up of a pressure sensor, an amplifier or conditioning element, and an output signal. The output signal is used to transmit the pressure reading to a flow computer, controller, or distributed control system (DCS).

While pressure transmitters are used to measure pressure, they also have an important relation to three other widely measured variables: flow, level, and temperature. Differential pressure (DP) transmitters can measure both flow and level, and some pressure transmitters also utilize temperature sensors to measure process temperature. In some cases, this temperature measurement is combined with pressure and volumetric flow measurements to compute mass flow.

A History of Pressure Measurement

The history of pressure measurement goes back to the 17th century, when both Evangelista Torricelli and Blaise Pascal experimented with early versions of the barometer. Originally, pressure was measured with a manometer, a U-shaped tube partially filled with mercury, oil, or some other liquid. When gas pressure was introduced into one end of the tube, an amount of liquid was displaced. The amount of displacement was proportional to the amount of gas pressure.

The earliest techniques of pressure measurement have been replaced in today's environment with pressure transducers and transmitters.

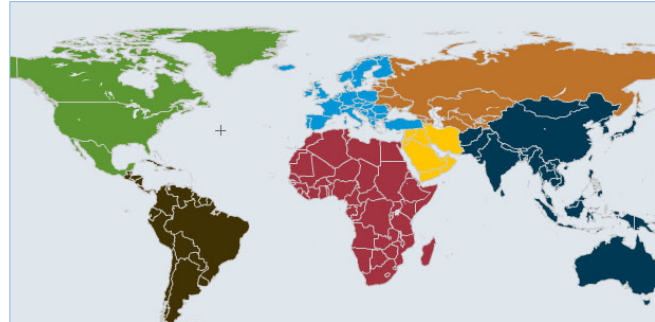
One advantage of today's electronic pressure transmitters is that they can signal when actions need to be taken, depending on the pressure reading of a gas, liquid, or steam. Electronic signals from a pressure transmitter allow it to be integrated into a managed control system, unlike earlier mechanical methods such as pressure gages that required manual readings via visual observations.

This study does not include pressure transducers, which are generally lower in cost and smaller than pressure transmitters, and are typically not used in the process industries.

Segmentation

Geographic Segmentation

- North America (U.S. and Canada)
- Western Europe
- Eastern Europe (including Central Europe and FSU)
- Mideast and Africa
- Japan
- China
- Rest of Asia/Pacific
- Latin America (Mexico, Central and South America)



Pressure Transmitters by Type

Pressure transmitters are divided into the following four types and further subdivided according to whether they are used to measure flow or level:

- *Multivariable* (MV) pressure transmitters that measure two or more process variables – usually pressure and temperature – in a single device.
- *Differential Pressure* (DP) transmitters that measure the difference in pressure upstream and downstream of a constriction in a pipe called a primary element.
- *Gage* pressure transmitters that measure an amount of pressure that includes atmospheric pressure.
- *Absolute* pressure transmitters that measure an amount of pressure that does not include atmospheric pressure.

Pressure Transmitters by Mounting Accessories

Pressure transmitters are distinguished by whether they are shipped with any of the following mounting accessories, or with none:

- Remote Seals
- Manifolds only
- Primary Element assemblies
- None of the above

Pressure Transmitters by Smart vs. Conventional

Pressure transmitters are also segmented as follows:

- Smart
- Conventional (including “low cost”)



Smart Pressure Transmitters by Communication Protocol

Pressure transmitters are segmented by the following protocols:

- HART®
- *Wireless*HART®
- Foundation Fieldbus®
- ISA100.11a
- Modbus®
- Profibus®
- Proprietary Digital
- Ethernet
- Other

Pressure Transmitters by Sensing Technology

Pressure transmitters are segmented in this study by the following sensing technologies:

- Capacitive
- Piezoresistive
- Strain Gage
- Other

Pressure Transmitters by Wiring and Power Type

- 2-Wire
- 4-Wire
- Battery-powered
- Other

Pressure Transmitters by Industry

The following industries are included in this study:

- Oil & Gas
- Oil Refining/Gas Processing
- Petrochemical
- Chemical
- Food & Beverage
- Pharmaceutical (incl Biotech, Life Sciences)
- Pulp & Paper
- Metals & Mining
- Power
- Water & Wastewater
- HVAC/District Energy
- Other

Key pressure transmitter market issues addressed in this study

- Factors causing the market to grow
- Growth in the use of multivariable transmitters
- Impact of new-technology flowmeters on DP transmitter sales
- Impact of higher-accuracy pressure transmitters on user practices and purchases
- Role of installed base in maintaining pressure transmitter growth
- Trend toward pressure transmitters with increased diagnostic capabilities
- Acceptance rate of communication protocols such as Foundation Fieldbus in the market
- Extent to which primary element sales are driving sales of DP transmitters
- Trend towards integrating primary elements with DP transmitters into a single flowmeter
- New product and technology developments
- Growth strategies for pressure transmitter suppliers
- Importance of gage and absolute pressure transmitters in relation to plant safety and efficiency

Pressure Transmitters by Sales Channels

The pressure transmitter market is segmented according to the following sales channels:

- Direct Sales
- Independent Representatives
- Distributors
- E-Business

Pressure Transmitters by Customer Type

The pressure transmitter market is segmented according to the following customer types:

- End-users
- OEMs
- Systems Integrators
- Engineers/Consultants

Market Shares of Leading Pressure Transmitter Manufacturers

- Worldwide
- By Region

Strategies for Success

- Discussion of market forces at work
- Strategic action perspectives and forming alliances to enhance product offerings

Company Profiles of Major Manufacturers Worldwide:

- | | | |
|--------------------------------|--------------------------|---------------------|
| • ABB | • Fuji Electric | • SMAR Equipamentos |
| • Anderson-Negele | • Honeywell/Elster | • Yokogawa |
| • Azbil | • Schlumberger – Cameron | • and more |
| • Emerson Automation Solutions | • Siemens | |
| • Endress+Hauser | • Schneider – Foxboro | |

Flow Research, Inc.

Flow Research is the only market research company whose primary mission is to research process control instrumentation markets. Flow Research market research studies can be purchased by anyone interested in the topics. We create these studies through interviews with suppliers, distributors, and end-users. Topics include all of the flowmeter technologies – both new and traditional – as well as pressure transmitters; temperature sensors and transmitters, infrared thermometers and thermal imagers; level devices; analytical instrumentation; selected API-certified valves; and studies specifically focused on certain major markets for flowmeters such as the oil and gas markets. Flow Research also started a working group focusing on flowmeter calibration, and has completed two studies on flowmeter calibration facilities. Further information on studies, links for articles and more can be found by visiting the Flow Research website at www.flowresearch.com or by calling us at +1 781-245-3200.

Dr. Jesse Yoder, President of Flow Research and the lead analyst for this study, has over 30 years of experience writing about and analyzing process control and instrumentation markets, beginning as president and founder of Idea Network. In addition to the years he has spent writing market studies, Dr. Yoder spent 10 years as a technical writer. Almost four years of this were spent writing technical manuals and training guides for the process control division of Siemens. He also taught technical writing at the graduate level at Northeastern University and

the University of Massachusetts Lowell. Dr. Yoder spent 10 years as an adjunct philosophy professor at the University of Massachusetts Lowell and Lafayette College.

Dr. Yoder has received two patents for new flowmeter designs. Several prototypes of these designs have been built and are currently being tested. He has led the research of over 250 market studies and published nearly 300 articles on flow and instrumentation in industry journals.

His latest book, *The Tao of Measurement: A Philosophical View of Flow and Sensors*, with Richard E. Morley as co-contributor, was published in 2015 by the International Society of Automation (ISA). Topics covered include temperature, pressure, flow, time, length, and area. Dr. Yoder is currently writing a third book called *Advances in Flow Measurement* that will be published in 2020 by CRC Press.

Belinda Burum, Vice President, worked in journalism and advertising before entering high tech as a writer, marketing communications manager, and customer references consultant. She joined Flow Research in 2002, and has worked on many projects, studies and publications.

Norm Weeks, Senior Market Analyst, joined Flow Research in November 2004 after 24-years with Verizon specializing in innovative solutions for major enterprises, introducing new products and lifecycle management strategies, and product marketing. He also served as Director of the Urban Fellows Institute in New York. At Flow Research, his involvement and contributions in project development, research, analysis and writing are significant. In addition to working on studies, custom projects are a specialty. He also contributes to White Papers, Worldflow and other publications.

Leslie Buchanan, Publication Production Associate, and Research Assistant, joined Flow Research in March 2010, with skills from a variety of work and life experiences. Early on, she worked with the contacts database, assisted with customer liaison, and took on our publication formats. She has since become increasingly involved in many capacities with Flow Research studies, projects, Worldflow and other publications.

Victoria Tuck, Administrative Assistant, joined Flow Research in June, 2012. She has experience in both the fast-paced law firms of Boston, and in various nonprofit organizations. She handles a variety of office functions – essential to keep any business running – as well as assisting in other ways, including the contacts database and news for the Worldflow publications.

Gabriella DeCologero, Director of Marketing, joined Flow Research in June 2019. She is in charge of our social media outreach, and has brought her graphic design talents to our marketing efforts. Gabriella is also assisting in our customer contacts and outreach.

Flow Research studies contribute to an ongoing view of the flowmeter market

Listed below is a summary of recent and upcoming Flow Research studies in the area of process control instrumentation. These studies are further described at www.FlowStudies.com.

The World Market for Coriolis Flowmeters, 5 th Edition	www.FlowCoriolis.com
The World Market for Magnetic Flowmeters, 6 th Edition	www.FlowMags.com
The World Market for Ultrasonic Flowmeters, 5 th Edition	www.FlowUltrasonic.com
The World Market for Vortex Flowmeters, 6 th Edition	www.FlowVortex.com
The World Market for Primary Elements	www.FlowPlate.com
Worldwide Survey of Flowmeter Users, 2 nd Edition	www.FlowResearch.com
The World Market for Positive Displacement Flowmeters, 2 nd Ed.	www.FlowPD.com
The World Market for Turbine Flowmeters, 2 nd Edition	www.FlowTurbine.com
The World Market for Pressure Transmitters, 5 th Edition	www.PressureResearch.com
The World Market for Flowmeters, 7 th Edition and, Module A: Strategies, Industries, and Applications	www.FlowVolumeX.com
The World Market for Natural Gas and Gas Flow Measurement, 2 nd Edition (six volumes)	www.GasFlows.com
The World Market for Steam Flow Measurement	www.SteamFlows.com
The World Market Mass for Flow Controllers, 3 rd Edition	www.FlowMFC.com
The World Market for Thermal Flowmeters, 2 nd	www.FlowThermal.com
The World Market for Liquid Analytical Instruments	www.FlowAnalytical.com
The World Market for Oil and Oil Flow Measurement	www.OilFlows.com

In addition, Flow Research provides quarterly updates on the flow and energy industries in the *Market Barometer* and *Energy Monitor*. *Market Barometer* provides current information on process control instrumentation and the companies within the industry. *Energy Monitor* analyzes the current state of the Oil & Gas, Refining, Power, and Renewable industries, and the implications for instrumentation suppliers. Both reports are part of the Worldflow Monitoring Service. More details are available at www.worldflow.com.



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Daniel Bernoulli

The Flow Research *Gold Partner Program*

To produce studies that most closely match our clients' needs, Flow Research has instituted the Gold Partner Program. This program enables companies who wish to participate at a high level in a study's research to influence its scope and segmentation. In addition, Gold Partners receive regular updates from Flow Research on study progress, and receive a significant discount on the regular price of the study.

Procedure: Early in the planning phase of a study, Gold Partners receive a proposal that includes the proposed segmentation. Gold Partners can propose additional segmentation, and can also suggest changes to the proposed segmentation. While the decision to adopt particular segmentation ultimately lies with Flow Research, and is based on input from all contributors, we do our best to accommodate the specific needs of each of our clients.

During the research phase of a study, Flow Research will issue regular reports that provide updates on the progress of the research. These reports will be sent to Gold Partners, who are then invited to provide any additional input or comments into the study.

Being a Gold Partner requires making an early commitment to purchase the study. However, in return, Gold Partners receive a significant discount off the regular price of the study. Payment can be made either in one amount at the beginning of the study, or split into two, with the second payment due upon delivery of the study.

For additional details, or to find out how the Gold Partner Program applies to any particular study, please contact Flow Research. We look forward to working with you!

For answers to any question you may have regarding the above, please contact Norm Weeks at +1 781 245-3200, or norm@flowresearch.com.

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Why Flow Research?

- We specialize in flowmeter markets and technologies
- We have researched all flowmeter types
- We study suppliers, distributors, *and* end-users
- Our worldwide network of contacts provides a unique perspective
- Our mission is to supply the data to help your business succeed

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