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# **The World Market for Pressure Transmitters, 5<sup>th</sup> Edition**

**– Proposal –**



**Publication Date: Q3 2018**

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## **The World Market for Pressure Transmitters, 5<sup>th</sup> Edition**

Flow Research plans to launch a new study on the worldwide pressure transmitter market. The primary goal is to determine the size of the pressure transmitter market in 2016. Forecasts through 2021 will be included.

The study is called **The World Market for Pressure Transmitters, 5<sup>th</sup> Edition**.

The 4<sup>th</sup> 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 do not tell the whole story of the pressure transmitter market. We believe the size of the installed base is a major reason 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 capital projects in Asian and other countries, and especially due to growth in China and the Mideast.

Second, while oil prices experienced a downturn from 2014–2016, oil and gas projects came back in 2017 now that oil prices have stabilized in the \$60 per barrel range. This trend is continuing in 2018. Our study will determine the extent of this recovery and how it is affecting 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 customers a reason to buy into this market, or to upgrade their existing products.

## Rationale for Study

Flow Research published the 4<sup>th</sup> edition of our worldwide pressure transmitter study in 2015. With significant growth returning to in the oil and gas and other energy markets, we believe it is an optimal time to see what happened to the pressure transmitter market in 2017 after the downturn that many companies experienced in 2015 and 2016.

The primary goal of this most recent edition is to determine the size of the pressure transmitter market in 2017, and to forecast market size through 2022. This study has multiple other purposes:

- Determine worldwide and regional market shares for pressure transmitters in 2017
- Forecast market growth for each of the four types of pressure transmitters through 2022
- Identify 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 products for the main companies selling into the pressure transmitter market
- Offer strategies to manufacturers for selling into the pressure transmitter market
- Profile main pressure transmitter suppliers
- Identify all of the factors causing the market to grow

## Background

In conducting this study, we will contact all known manufacturers of pressure transmitters worldwide to assemble a picture of the total pressure transmitter market. We will 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 will identify where growth is occurring in the market, as well as 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 have temperature sensors on board to measure temperature. In some cases, this temperature measurement is used along with a pressure and volumetric flow measurement to compute mass flow.

## A History of Pressure Measurement

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

These early methods of pressure measurement have been replaced in today's environment with pressure transducers and transmitters.

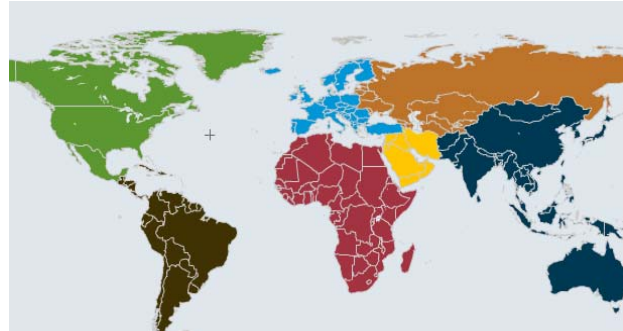
One advantage of today's electronic pressure transmitters is that they can signal when actions need to be taken, depending on the pressure reading of a gas, liquid, or steam. Electronic signals from a pressure transmitter allow it to be integrated into a control system, unlike earlier mechanical methods, including pressure gages, that were manually read.

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 by 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.

### DP and Multivariable Pressure Transmitters by Fluid Type

These transmitters are segmented by fluid type:

- Gas (all types)
- Hydrocarbon Liquids
- Non-hydrocarbon Liquids
- Steam (all types)

### DP and Multivariable Transmitter Types by Function

These transmitter types are a valuable measurement device in a wide variety of applications. This study quantifies the use of all types of DP transmitters in the following three categories:

- Flow
- Level
- Process 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

### Pressure Transmitters by Smart vs. Conventional

Pressure transmitters are also segmented as follows:

- Smart
- Conventional (includes “low cost” transmitters)

### Pressure Transmitters by Communication Protocol

Smart pressure transmitters are segmented by the following protocols:

- Analog only
- Foundation Fieldbus<sup>®</sup>
- Proprietary Digital
- *Wireless*HART<sup>®</sup>
- HART<sup>®</sup>
- Profibus
- 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

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

### DP Transmitters by Wireless Capability

DP transmitters are segmented by the following communications characteristics:

- With wireless capability
- Without wireless capability

### 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 & absolute pressure transmitters in relation to plant safety and efficiency



### Pressure Transmitters by Industry

We include the following industries in this study:

- Upstream Oil & Gas
- Midstream Oil
- Midstream Gas
- Downstream Oil
- Downstream Gas
- Refining
- Petrochemical
- Chemical
- Food & Beverage
- Pharmaceutical
- Power
- Water & Wastewater
- HVAC/Industrial Utilities
- Other

### 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 (Partial List):

- ABB
- Anderson Instruments
- Azbil (Yamatake)
- Emerson Automation Solutions
- Endress+Hauser
- Foxboro (Schneider)
- Fuji Electric
- Honeywell/Elster
- Schlumberger (Cameron)
- Siemens
- SMAR Equipamentos
- Thermo Fisher
- Yokogawa



Thank you for reviewing the proposed segmentation for this study. We always seek to improve our research plans, and proposal feedback from people such as yourself has proven to be the best manner of doing so. Please let us know your opinion on the following subjects:

- 1) Is there new segmentation that you believe should be added?
- 2) Do you have any changes to suggest regarding the existing segmentation?
- 3) Are there any product developments in pressure transmitters we should focus on?
- 4) Are there growth factors driving this market that deserve special attention?

Please contact Dr. Jesse Yoder directly at Flow Research at +1 781 245-3200 to provide your feedback on the above questions or any other matter that you believe would improve the planned research for **The World Market for Pressure Transmitters, 5<sup>th</sup> Edition**.

## **Flow Research, Inc.**

**Flow Research** is the only market research company whose primary mission is to research flowmeter, calibration, level device, and other 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 have included 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 such as Oil & Gas. Flow Research has also started a working group focused on flowmeter calibration, and has completed two studies on flowmeter calibration facilities. Further information on our studies, links for articles and more can be found by visiting the Flow Research website at [www.flowresearch.com](http://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 29 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 written over 250 market research studies and published more than 280 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.

**Belinda Burum**, Vice President, worked in journalism and advertising before entering high tech 18 years ago as a writer, marketing communications manager, and customer references consultant. She joined Flow Research in 2002, and has worked on many projects, and studies.

**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, he is involved in project development, research, analysis and writing. In addition to working on our off-the-shelf studies, custom projects are a specialty. He also contributes to White Papers, *Worldflow* and other publications.

**Harry Lund**, Manager of Strategic Services, joined Flow Research in October 2016. He has 45 years experience in the flow measurement industry with several US and international corporations. From beginning as a technical writer, he advanced through communication systems, application engineering, and product management to VP Sales, Service, and Marketing. At Flow Research, with the valuable resource of his experience and skills with people, products and the flow measurement business world, he specializes in formulating strategies to enable companies to compete more effectively in the marketplace.

**David Goldstein**, Business Analyst, joined Flow Research in September 2016. David has an MBA from Boston University and 30 years of professional experience including various management positions in Sales and Marketing with consumer product companies. He developed products and programs for customers as large as Walmart and as small as independent corner drug stores. At Flow Research, he combines his market research and business analyst skills with his creativity and organizational abilities to assist in researching and writing these studies.

**Leslie Buchanan**, 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, *Worldflow* and other publications.

**Victoria Tuck**, Administrative and Research 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 assists with administrative and other office functions, including outreach and the database. She also does news research for the *Worldflow* publications.

**Christina Glaser**, Website Design & Maintenance, is a seasoned software programmer, systems architect, and developer with significant website experience. She joined Flow Research in October 2010 assisting with various tasks, and soon took on the major role of refreshing, improving and maintaining our many company websites.



## 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](http://www.flowstudies.com).

- The World Market for Coriolis Flowmeters, 5<sup>th</sup> Edition [www.flowcoriolis.com](http://www.flowcoriolis.com)
- The World Market for Magnetic Flowmeters, 6<sup>th</sup> Edition [www.flowmags.com](http://www.flowmags.com)
- The World Market for Ultrasonic Flowmeters, 5<sup>th</sup> Edition [www.flowultrasonic.com](http://www.flowultrasonic.com)
- The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition [www.flowvortex.com](http://www.flowvortex.com)
- The World Market for Primary Elements, 2<sup>nd</sup> Edition [www.flowplate.com](http://www.flowplate.com)
- Worldwide Survey of Flowmeter Users, 2<sup>nd</sup> Edition [www.flowresearch.com](http://www.flowresearch.com)
- The World Market for PD Flowmeters, 2<sup>nd</sup> Edition [www.flowPD.com](http://www.flowPD.com)
- The World Market for Turbine Flowmeters, 2<sup>nd</sup> Edition [www.flowturbine.com](http://www.flowturbine.com)
- The World Market for Pressure Transmitters, 5<sup>th</sup> Edition [www.pressureresearch.com](http://www.pressureresearch.com)
- Volume X: The World Market for Flowmeters, 7<sup>th</sup> Edition [www.flowvolumex.com](http://www.flowvolumex.com)
- Vol. X: Module A: Strategies, Industries, and Applications [www.flowvolumex.com](http://www.flowvolumex.com)
- The World Market for Natural Gas and Gas Flow Measurement, 2<sup>nd</sup> Edition (six volumes) [www.gasflows.com](http://www.gasflows.com)
- The World Market for Steam Flow Measurement [www.steamflows.com](http://www.steamflows.com)
- The World Market Mass for Flow Controllers, 3<sup>rd</sup> Edition [www.flowmfc.com](http://www.flowmfc.com)
- The World Market for Thermal Flowmeters, 2<sup>nd</sup> Edition [www.flowthermal.com](http://www.flowthermal.com)
- The World Market for Liquid Analytical Instruments [www.flowanalytical.com](http://www.flowanalytical.com)
- The World Market for Oil and Oil Flow Measurement [www.oilflows.com](http://www.oilflows.com)

In addition, Flow Research provides quarterly updates on the flow and energy industries in our *Market Barometer* and *Energy Monitor* publications. *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](http://www.worldflow.com).



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*Daniel Bernoulli*

## **The Flow Research *Founding Sponsor Program***

To produce studies that most closely match our clients' needs, Flow Research instituted the Founding Sponsor 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, Founding Sponsors 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, Founding Sponsors receive a proposal that includes the proposed segmentation. Founding Sponsors 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 will 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 Founding Sponsors, who are then invited to provide any additional input or comments into the study.

Being a Founding Sponsor requires making an early commitment to purchase the study. However, in return, Founding Sponsors 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 Founding Sponsor program applies to any particular study, please contact Flow Research. We look forward to working with you!

If you have any questions about the Founding Sponsor program, please contact Norm Weeks at +1 781 245-3200, or [norm@flowresearch.com](mailto:norm@flowresearch.com).

## Pressure Transmitter Articles

Flow Research has extensively contributed pressure-related articles in the indicated industry journals listed below. You can find these and more articles at [www.pressureresearch.com](http://www.pressureresearch.com)

- [2017: The year of oil: How the oil price crash affected the global flowmeter market](#) - *Fluid Handling International*, November/December 2016
- [LNG'S Role In the Natural Gas Marketplace](#) - *Flow Control*, March 2015
- [FLOWMETERS for Oil & Gas Measurement: How flow measurement technology is responding to changes in the energy sector](#) - *Flow Control*, February 2015
- [How Hydraulic Fracturing Is Influencing the Price of Oil](#) - *Flow Control*, December 2014
- [Custody-Transfer Applications Drive Ultrasonic Flowmeter Growth](#) - *Flow Control*, December 2014
- [DP Maintains a Powerful Place in the World of Flow Measurement](#) - *Flow Control*, December 2014
- [Differential Pressure Flowmeters: Legacy Technology adds Features to Meet Application Needs](#) - *Flow Control*, December 2013
- [Part II: Trend Watch. A Look at Recent Developments in Traditional Technology Flowmeters](#) - *Flow Control*, June 2013
- [Part I: Flow Trend Watch. A Look at Recent Developments in New-Technology Flowmeters](#) - *Flow Control*, May 2013
- [Energy Applications Drive Flowmeter Technology Improvement](#) - *Flow Control*, December 2012
- [Custody Transfer of Oil & Gas - Flow Measurement Accuracy with Money on the Line](#) - *Flow Control*, October 2012
- [Differential-Pressure Flowmeters - An Old Standard Remains Strong](#) - *Flow Control*, December 2012
- [DP: Seizing Opportunity from a Rise in Oil & Gas Exploration](#) - *Flow Control*, December 2011
- [The Exclusive Large Line Size Meter Club](#) - *Processing*, November 2011
- [Part II: Pros and Cons of Gas Flowmeters](#) - *Flow Control*, September 2011
- [Turbine Flowmeters: A Strong Position in Gas Flow Applications](#) - *Flow Control*, December 2010
- [Differential-Pressure Flowmeters: A Traditional Technology Incorporates Advanced Features](#) - *Flow Control*, December 2010
- [Flow Update: Something to be Said for Tradition](#) - *FlowControlNetwork.com*, November 2010
- [Flowmeter Battle Royale - The Competition in an Expanding Custody Transfer Market](#) - *Processing*, July 2010
- [Energy Demand Propels Custody Transfer Flow Measurement](#) - *Pipeline & Gas Journal*, July 2010
- [Accuracy Matters - The Where and Why of Flowmeter Calibration](#) - *FlowControlNetwork.com*, July 2010
- [Measuring Gas Flows - Flowmeter Suppliers Jockey for Position in Critical Applications](#) - *Flow Control*, June 2010
- [Turbine Flowmeters -An Industry Standard Faces New Competition](#) - *Flow Control* - December 2009
- [Not so Elementary - New Primary Elements Expand the Reach of DP Flow Measurement](#) - *Flow Control*, September 2009
- [The Heavyweights of Flow Measurement - Coriolis, Magnetic, and Ultrasonic Flowmeters Square Off for Flow Measurement Supremacy](#) - *Processing*, July 2009

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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

[www.PressureResearch.com](http://www.PressureResearch.com)