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## **Volume X: The World Market for Flowmeters, 2<sup>nd</sup> Edition**

Flow Research presents a new market study on the worldwide flowmeter market. This study has determined the 2007 market size of the worldwide market for all flowmeter technologies. In addition, this 600+ page, full-color study includes:

- **Market size** forecasts for each flowmeter type through 2012
- **Market shares** for each flowmeter type in 2007 with annual forecasts through 2012
- All market size and market share data is provided on both a **global** and a **regional** basis
- A **technology description and analysis** for each flowmeter type, including major competitive strengths and weaknesses
- A **product line analysis** for all of the major manufacturers of each technology type
- Informative **selling strategies** for those already in a market segment, or planning to enter one

### ***What else might interest me?***

We've divided the market into its three types: **New-Technology**, **Traditional Technology**, and **Emerging Technology** flowmeters. From there, we've looked at each of the flowmeter technologies individually. We applied our paradigm case method of analysis, and determined the most suitable applications for each flowmeter type - and backed up our findings using our customer survey results, extensive supplier questionnaires, and other elements of our long-term involvement in the instrumentation field.



*The view from 20,000 feet*

### ***Anything else?***

Our clients have told us what product segmentation is most important to them for each technology. We've listened to what they have to say, and made sure our research results cover all of the most important elements of each flowmeter market segment.

For example, the Coriolis chapter gives the breakdown between smart and conventional Coriolis flowmeters. You'll learn how the magnetic market is divided between wafer, flanged, and insertion types, and how the ultrasonic market is split among single, dual, and multipath transit time, Doppler, and hybrid flowmeters. All flowmeter technologies are treated in similar detail.

## **What are these new-technologies and traditional technologies?**

Our research shows that the 2007 global market for flowmeters is just over US\$4.5 billion. That's a big market! In order to make this market more understandable, we have divided it into three segments. These segments are:

- New-Technology Flowmeters
- Traditional Technology Flowmeters
- Emerging Technology Flowmeters



*Taking a closer look*

Below are these three categories and the flowmeter technologies found within each segment:

<b>New-Technology Flow</b>	<b>Traditional Technology Flow</b>	<b>Emerging Technology Flow</b>
<ul style="list-style-type: none"><li>• Coriolis</li><li>• Magnetic</li><li>• Ultrasonic</li><li>• Vortex</li><li>• Thermal</li></ul>	<ul style="list-style-type: none"><li>• DP Flow</li><li>• Primary Elements</li><li>• Positive Displacement</li><li>• Turbine</li><li>• Open Channel</li><li>• Variable Area</li><li>• Target</li></ul>	<ul style="list-style-type: none"><li>• Optical</li><li>• Sonar</li></ul>

Over the years, Flow Research has conducted individual studies of each of these technologies. **The World Market for Flowmeters** contains updated 2007 data for each flowmeter type. Our method has always been to use a bottom-up approach when analyzing any market. In this way, we are able to both confirm what we believe we already know as well as discover important new trends. Our success is based upon identifying what is new and comparing this information with our long term knowledge of the market under study. We report all of our findings to you.

### **Key Issues Addressed:**

- Growth in the ultrasonic market, especially in custody transfer applications
- Comparison of DP flowmeters and primary elements to other flowmeter markets
- Impact of the expanding oil & gas industries on the flowmeter markets
- Effects of growth in China, India, and other developing countries on global markets
- Continued expansion of magnetic and vortex flowmeter opportunities and markets
- Impact of new-technology flowmeters on the turbine and positive displacement markets
- Continued growth of the Coriolis flowmeter market
- Mergers and acquisitions in the worldwide flowmeter market
- The impact of new standards, such as the API standard for vortex in custody transfer

## **Selling Strategies**

Company strategies are provided that apply to the entire flowmeter market, and also to individual product lines. Tactical and strategic recommendations are included for suppliers in each market segment. A world view of the market forecasts the best areas for future growth.

### **Valuable supplier information is included!**

This study includes detailed **company profile** information of all major suppliers into each of the individual flowmeter markets. In addition, each of the dedicated flowmeter chapters include a product analysis, manufacturer by manufacturer, that allows you to quickly compare the product lines of all major suppliers. There is no other report available today with this critical information combined into a single comprehensive view of the market.

The company profiles include important data such as contact information, revenues, product lines, company history, recent acquisition activity, and sales strategies. Each company's flowmeter product line is summarized in easy-to-read charts which include Series and Model names and designations. Sale strategies include descriptions of operating geographies, and the strengths and weaknesses of the firm's product offering within the context of their market.

A partial list of the manufacturers profiled in this study includes:

- ABB
- Bopp & Reuther Messtechnik GmbH
- Cameron Measurement Systems
- Elster-Instromet
- Emerson Process Management
  - Bristol Division
  - Micro Motion
  - Rosemount
- Endress+Hauser
- Foxboro (Invensys Process Systems)
- Fuji Electric
- GE Sensing
- McCrometer
- OVAL Corporation
- Racine Federated
- Siemens
- Sierra Instruments
- SMAR Equipamentos Industriais
- Solartron ISA
- Spirax Sarco
- Tokyo Keiso
- Venture Measurement
- Yamatake
- Yokogawa Electric Corporation

#### **What are New-Technology' Flowmeters?**

New-Technology flowmeters include Coriolis, magnetic, ultrasonic, vortex, and thermal technologies. They share four features:

1. They have been introduced since 1950.
2. They incorporate technological advances that avoid some of the problems inherent in earlier flowmeters.
3. They are the focus of more of the product development efforts undertaken by the major manufacturers.
4. Their measured performance, especially accuracy, is superior to that of Traditional Technology meters on a standard basis.

New-Technology meters have enhanced features, including self-diagnostics, and will make use of up-to-date communication protocols such as HART, Foundation Fieldbus™, and Profibus. New-Technology meters have other advantages as well, including few or no moving parts, and reduced pressure drop.

Traditional Technology flowmeters include differential pressure, open channel, positive displacement, target, turbine, and variable area technologies.

This study includes a basic set of segmentations for each flowmeter technology, as well as unique segmentations that are specific to each flowmeter technology.

Below are the worldwide geographic breakouts provided for each flowmeter technology:

***The following geographic segmentations are provided:***

- North America
- Europe (including Central Europe and the FSU)
- Japan
- Asia without Japan
- Rest of World (Latin America, Africa, Middle East)

Below are the market segments included in each flowmeter technology chapter:

***Market segmentations common to each flowmeter technology chapter:***

- Market Size in Dollars and Units
- Manufacturer Market Shares
- Average Selling Prices by Region
- Technology Analysis
- Product Summaries by Major Manufacturer
- Supplier Tables by Fluid, Hardware, or Technology

Below are unique segments that are provided for specific flowmeter technologies:

***Market segmentations specific to individual flowmeter technologies:***

- |   |  |
|---|--|
| • Coriolis Flowmeters<br>Smart vs Conventional  | • Primary Elements<br>Shipments by Primary Element Types                               |
| • Magnetic Flowmeters<br>Wafer, Flanged, and Insertion                                      | • Positive Displacement Flowmeters<br>Municipal Water, Muni/Ind Gas, Oil, Ind. Liquids |
| • Ultrasonic Flowmeters<br>Single, Dual, and Multipath Transit Time,<br>Doppler, and Hybrid | • Turbine Flowmeters<br>Municipal Water, Muni/Ind. Gas, Oil, Ind. Liquids              |
| • Vortex Flowmeters<br>Multivariable, Smart, Conventional                                   | • Open Channel Flowmeters<br>Shipments by Type   |
| • Thermal Flowmeters<br>Liquid vs Gas   | • Variable Area Flowmeters<br>Liquid, Steam, Gas                                       |
| • Differential Pressure Transmitters<br>Single Variable vs Multivariable                    | • Target Flowmeters<br>Average Selling Prices by Region                                |

***How is such a complex subject organized?***

This study devotes an overview chapter to each of the flowmeter groups: New-Technology, Traditional Technology, and Emerging Technology. Each of these chapters includes valuable summary data for its flowmeter group. For example, the New-Technology chapter provides

technology descriptions, compares new-technology flowmeters to the DP standard, describes the paradigm case method and its several criteria, and details new-technology flowmeter shipments on a worldwide and regional basis. The chapter treatments on Traditional Technology and Emerging Technologies are equally as detailed, and there are individual chapters for each of the New-Technology and Traditional Technology flowmeters.

### ***How can this study be of value to you and your business?***

Most would agree that having the best information available on a subject will help promote the best decisions being made. Flow Research has always been a source of reliable, accurate data that companies can trust whether they are making an instrument purchase decision or are assessing a merger or acquisition opportunity.

Below are a few of the ways that we have learned this study is used to help businesses succeed:

- To compare growth rates and market sizes of different flow technologies
- To gain a worldwide perspective of competing suppliers in an industry, market, or technology
- To make an informed choice when in a product purchasing mode
- To use as a training document for new employees or for those who desire to learn more
- To quickly survey merger and/or acquisition targets
- To accurately forecast market demand for the many flowmeter technologies
- To understand the technical differences between new, traditional, and emerging technologies
- To have a reference standard of competitive technologies and models

#### **Why Flow Research?**

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

This study will quickly bring any reader up-to-speed on the global flowmeter market and its many components.

For more information on Flow Research, please visit our website at [www.flowresearch.com](http://www.flowresearch.com), or call us anytime at [1] 781 245-3200.

### ***Background of Study***

The worldwide flowmeter market has changed substantially since the first edition of this study was published in 2003. While 2003 was a down year for many companies, the flowmeter market began improving in the fourth quarter of that year. The last four years, 2004-2007, have been years of significant growth for the worldwide flowmeter market. Growth in the energy markets and demand for instrumentation in China and



*Dr. Yoder visits a flowlab in Iowa.*

India are some of the reasons for this growth. In addition, suppliers have released a steady stream of new products, especially for “new-technology” flowmeters. It was time to take a fresh look at the worldwide flowmeter market in 2007, to determine the amount of growth that has occurred, and to see how the different technologies compare with each other today.

Listed below is a summary of Flow Research studies completed during the last few years in the area of process control instrumentation. Conducting these studies has contributed to our understanding of the flowmeter technologies included in **Volume X: The World Market for Flowmeters, 2<sup>nd</sup> Edition**:

- Volume I: The World Market for Coriolis Flowmeters, 3rd Edition (September 2008)
- Volume II: The World Market for Magnetic Flowmeters, 4th Edition (February 2009)
- Volume III: The World Market for Ultrasonic Flowmeters, 3rd Edition (January 2008)
- Volume IV: The World Market for Vortex Flowmeters, 3rd Edition (March 2006)
- Volume V: The World Market for DP Flowmeters and Primary Elements (January 2007)
- Volume V-A: The World Market for DP Flow Transmitters (September 2007)
- Volume V-B: The World Market for Primary Elements (September 2007)
- Volume VI: Worldwide Survey of Flowmeter Users, 2nd Edition (January 2006)
- Volume VII: The World Market for Positive Displacement Flowmeters (2002)
- Volume VIII: The World Market for Turbine Flowmeters (2002)
- Volume IX: The World Market for Pressure Transmitters, 2nd Edition (October 2007)
- Volume X: The World Market for Flowmeters (includes all flow technologies) (April 2008)
- Volume XI: The World Market for Gas Flow Measurement (September 2004)
- Volume XII: The World Market for Steam Flow Measurement (March 2008)
- Volume XIII: The World Market for Mass Flow Controllers (July 2008)

These studies are further described at [www.flowresearch.com/flow.htm](http://www.flowresearch.com/flow.htm)

### **Abbreviated Table of Contents: World Market for Flowmeters, 2<sup>nd</sup> Edition**

<b>Chapter One: Executive Summary</b>	<b>Chapter Twelve: Primary Elements</b>
<b>Chapter Two: Scope and Method</b>	<b>Chapter Thirteen: Positive Displacement Flowmeters</b>
<b>Chapter Three: Worldwide Flowmeter Market</b>	<b>Chapter Fourteen: Turbine Flowmeters</b>
<b>Chapter Four: New-Technology Flowmeters</b>	<b>Chapter Fifteen: Open Channel Flowmeters</b>
<b>Chapter Five: Coriolis Flowmeters</b>	<b>Chapter Sixteen: Variable Area Flowmeters</b>
<b>Chapter Six: Magnetic Flowmeters</b>	<b>Chapter Seventeen: Target Flowmeters</b>
<b>Chapter Seven: Ultrasonic Flowmeters</b>	<b>Chapter Eighteen: Emerging Technology Flowmeters</b>
<b>Chapter Eight: Vortex Flowmeters</b>	<b>Chapter Nineteen: Supplier Market Shares</b>
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<b>Chapter Ten: Traditional Technology Flowmeters</b>	<b>Chapter Twenty One: Supplier Profiles</b>
<b>Chapter Eleven: Differential Pressure Flow Transmitters</b>	