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The World Market for Vortex Flowmeters, 4th Edition

Overview

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The World Market for Vortex Flowmeters, 4th Edition

Flow Research has completed a new study on the worldwide vortex flowmeter market. The primary goal was to determine the size of the vortex flowmeter market in 2009. Forecasts through 2014 are included. The study is called **The World Market for Vortex Flowmeters, 4th Edition**.

The study had multiple purposes:

- To determine worldwide market size and market shares for vortex flowmeters in 2009
- To forecast market growth for all types of vortex flowmeters through 2014
- To identify the industries and applications where vortex flowmeters are used, and to identify market growth sectors
- To provide a product analysis for the main companies selling into the vortex flowmeter market

Flow Research photo of oil field pumpjack near Houston, TX

- To provide strategies to manufacturers for selling into the vortex flowmeter market
- To provide company profiles of the main suppliers of vortex flowmeters.

These purposes were achieved.

Rationale for Study

Flow Research published the 3rd edition of our worldwide vortex flowmeter study in March 2006. We have been following the vortex flowmeter market regularly since then, providing quarterly updates in our *Market Barometer* publication (www.worldflow.com). We have also done user interviews that show that the interest in vortex flowmeters remains at a very high level. In January 2007, the American Petroleum Institute (API) approved a draft standard for the use of vortex flowmeters in custody transfer applications. We believe that this is an optimal time to quantify the growth in this market, and to take another in-depth look at what appears to be an expanding market.

Background of Study

Vortex flowmeters were first introduced to the industrial markets in the early 1970s. Since that time, growth in the vortex flowmeter market has been relatively slow. Vortex flowmeters have never undergone a period of rapid growth that would enable them to catch up to ultrasonic, Coriolis, or magnetic flowmeters in terms of market size. Still, the past several years have seen important changes in the vortex flowmeter market.

In conducting this study, we contacted all known manufacturers of vortex flowmeters worldwide. Flow Research has identified 35 vortex flowmeter manufacturers around the world. By obtaining detailed information about each company, we assembled a picture of the total vortex flowmeter market. We asked suppliers to provide detailed information about geographic segmentation, industries sold into, types of vortex flowmeters sold, and many other product segments. As a result, the study identifies where growth is occurring in the market, as well as the underlying factors for that growth. Our end-user survey provides additional perspectives on this market.

Key issues addressed in this study

This study addresses the following key issues in the vortex flowmeter market:

- The factors causing the market to grow
- Growth in the use of multivariable flowmeters
- The effects of the API's adoption of a custody transfer standard on vortex sales
- The use of vortex flowmeters in district heating applications
- The increased number of suppliers in the vortex flowmeter market
- Line sizes for vortex flowmeter applications
- The use of vortex flowmeters in steam applications
- The importance of reducer vortex flowmeters
- New product and technology developments
- Growth strategies for vortex flowmeter suppliers

Operating Principle

Vortex flowmeters operate on a principle called the von Karman effect. This principle concerns the behavior of fluids when an obstacle is placed in the path of flow. Under the right conditions, the presence of an obstacle generates a series of alternative vortices called the von Karman street. This phenomenon occurs in liquid, gas, and steam, and has been observed in many diverse contexts such as cloud layers passing an island and whitewater rapids.

In vortex flowmeters, the obstacle takes the form of an object with a broad, flat front called a bluff body. The bluff body is mounted at right angles to the flowstream. Flow velocity is proportional to the frequency of the vortices. Flowrate is calculated by multiplying the area of the pipe times the velocity of the flow.

In order to compute the flowrate, vortex flowmeters count the number of vortices generated by the bluff body. They use a variety of techniques for sensing the presence of a vortex. The majority of vortex flowmeters use a piezoelectric sensor. However, some use a capacitive sensor, and still others use an ultrasonic sensor to detect vortices.

Segmentation

The segmentation for this study is as follows.

Geographic Segmentation

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

Vortex Flowmeters by Type

There are three kinds of vortex flowmeters:

- Wafer
- Flanged
- Insertion

Multivariable Flowmeters by Type

- With Temperature Only
- With Integrated Temperature and Pressure
- With Pressure Only

Vortex Flowmeters by Variable Type

- Multivariable
- Single Variable

Multivariable Vortex Flowmeters by Fluid Type

Multivariable vortex flowmeters are segmented in this study according to fluid type:

- Gas
- Liquid
- Saturated Steam
- Superheated Steam

Single Variable Vortex Flowmeters by Fluid Type

Multivariable vortex flowmeters are segmented in this study according to fluid type:

- Gas
- Liquid
- Steam

What's in this for my company?

- See the emerging applications and where the growth is
- Understand world and regional markets
- Get to know your real competition
- Learn what other suppliers manufacture, where, and for whom
- The best information creates the best decisions

Vortex Flowmeters by Configuration
Inline vortex flowmeters are distinguished by mounting type as follows:

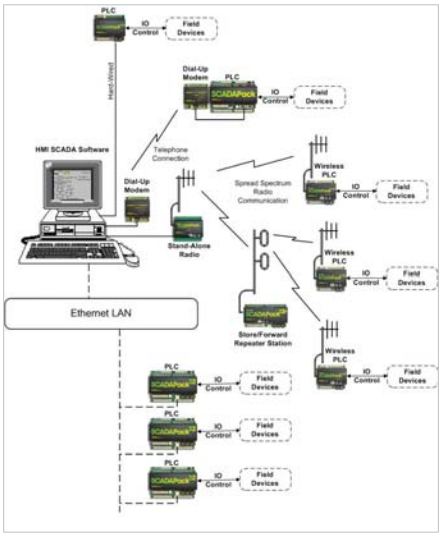
- Compact
- Remote

Vortex Flowmeters by Bore Type
Inline vortex flowmeters are distinguished by bore type as follows:

- Single Reduced Bore (reduced one line size)
- Double Reduced Bore (reduced two line sizes)
- Standard bore (no reduction)

Vortex Flowmeters by Body Material
Inline vortex flowmeters are distinguished by material of construction as follows:

- 316 Stainless Steel
- Duplex
- Hastelloy
- Inconel
- Carbon Steel
- Plastic
- Other



Vortex Flowmeters by Communication Protocol
Smart vortex flowmeters are segmented by the following protocols:

- Foundation® Fieldbus
- HART
- Profibus DP
- Profibus PA
- Modbus
- Serial
- Other (mainly proprietary protocols)

Vortex Flowmeters by Sensing Technology
Vortex flowmeters are segmented in this study according to sensing type:

- Piezoelectric
- Capacitive
- Ultrasonic
- Other

What makes a Flow Research study so special?

- Our only focus is flowmeters and process instrumentation.
- We research the big three: manufacturing, distribution, and application.
- Our end-user surveys and perspectives are unique to the industry.
- Our Worldflow Monitoring Service keeps you up-to-date between studies.
- We only succeed when you do.

Vortex Flowmeters by Line Size
This study distinguishes line sizes for vortex flowmeters as follows:

- >0 - ½ inch
- >½ - 1 inch
- >1 - 2 inches
- >2 - 4 inches
- >4 - 6 inches
- >6 - 8 inches
- >8 - 12 inches
- >12 inches

Vortex Flowmeters by Accuracy Levels
Vortex flowmeters are distinguished by accuracy levels as follows:

Liquids:	≤ 0.5%	>0.5% and ≤ 0.75%	>0.75% and ≤ 1.0%	>1.0%
Gas:	≤ 0.75%	>0.75% and ≤ 1.0%	>1.0% and ≤ 1.5%	>1.5%
Steam:	≤ 0.75%	>0.75% and ≤ 1.0%	>1.0% and ≤ 1.5%	>1.5%

Vortex Flowmeters by Pressure Rating
Vortex flowmeters are segmented in this study according to pressure rating type:

- ANSI
- PN
- JIS
- Other

ANSI-Rated Vortex Flowmeters by Pressure Rating
ANSI-rated vortex flowmeters are segmented in this study according to pressure rating:

- ANSI 300 or less
- ANSI 600
- ANSI 900
- ANSI 1500
- ANSI 2500

PN-Rated Vortex Flowmeters by Pressure Rating

- PN40 or less
- PN100
- PN160
- PN250
- PN300
- Other (e.g., tri-clamp, threaded, etc.)

Sanitary Vortex Flowmeters
Vortex flowmeters are segmented in this study as follows:

- Sold with Sanitary Approvals
- Sold without Sanitary Approvals

Vortex Flowmeters by Industry
Vortex flowmeters are used mainly in the process industries, although some are used for utility applications. We included the following industries in this study:

- Oil and Gas Production, Transportation, and Distribution
- Refining
- Chemical
- Food & Beverage
- Pharmaceutical
- Pulp & Paper
- Metals & Mining
- Power
- Water & Wastewater
- Semiconductor
- District Energy
- Other

Vortex Flowmeters by Sales Channel
The Vortex flowmeter market is segmented according to the following sales channels:

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

Vortex Flowmeters by Customer Type
The Vortex flowmeter market is segmented according to the following customer types:

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

How will the *Founding Sponsor Program* help me?

- You can have your specific data requirements included in the study
- You help determine the scope and final objectives
- You receive periodic updates as the research progresses
- You are among the first to receive final study results
- You receive favorable pricing and other purchase terms

See the following pages for more details.

Market Shares of the Leading Suppliers
This study provides company market share data in multiple categories. Market share data is provided for the following geographic regions:

- Worldwide
- North America (United States, Canada)
- Western Europe
- Eastern Europe
- Japan
- China
- Asia without Japan/China
- Rest of World

Strategies for Success

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

Company Profiles

Complete company profiles on the leading vortex flowmeter suppliers are included. The following is a partial list of the 32 companies profiled in this study:

- ABB
- Azbil (formerly Yamatake)
- Delta Controls
- Endress+Hauser
- Emerson Process Management
- Hontzsch GmbH
- Inconel
- Invensys Group (Foxboro)
- J-TEC Associates
- KROHNE
- Metran Industrial Group
- Oval Corporation
- Racine Federated
- Sierra Instruments
- Spirax Sarco (EMCO Flow Systems)
- Trolex Ltd.
- Yokogawa
- Zhejiang Tancy Instrument Co.

Publication Date

This study was published in early July 2010.

Founding Sponsorships

We offered the opportunity for companies to become Founding Sponsors of this study. Benefits of being a Founding Sponsor include being able to participate in determining study scope and direction, being sent regular updates on study progress, and receiving a favorable discount pricing package. The Founding Sponsor program is explained for your consideration later in this document.

Background

Dr. Jesse Yoder is President of Flow Research Inc., a company he founded in 1998. Dr. Yoder has 23 years of experience as a writer and an analyst in process control and instrumentation. Since 1990, he has written more than 100 market research studies, most of them regarding flow and instrumentation. A selection of recent and scheduled Flow Research studies include the list on the following page.

Recent and Scheduled Flow Research studies:

I. The World Market for Coriolis Flowmeters, 3rd Edition (*9/08)*
II. The World Market for Magnetic Flowmeters, 4th Edition (*5/09)*
III. The World Market for Ultrasonic Flowmeters, 3rd Edition (*1/08)*
IV. The World Market for Vortex Flowmeters, 4th Edition *(7/10)*
V. The World Market for Differential Pressure (DP) Flowmeters and Primary Elements *(1/07)*
VI. Worldwide Survey of Flowmeter Users, 2nd Edition *(1/06)*
VII. The World Market for Positive Displacement Flowmeters *(Q4/10)*
VIII. The World Market for Turbine Flowmeters *(Q3/10)*
IX. The World Market for Pressure Transmitters, 2nd Edition (*10/07)*
X. The World Market for Flowmeters, 3rd Edition *(8/10)*
XI. The World Market for Gas Flow Measurement, 2nd Edition (*8/10)*
XII. The World Market for Steam Flow Measurement (*3/08)*
XIII. The World Market for Mass Flow Controllers *(7/08)*
XIV. The World Market for Thermal Flowmeters *(10/09)*
XV. The World Market for Liquid Analytical Instruments *(Q3/10)*

These studies are described at http://www.flowresearch.com/flow.htm

Dr. Yoder has also written more than 110 articles on flow and instrumentation for trade journals. Links to many of these can be found at http://www.flowresearch.com/articles.htm.

Norm Weeks, Market Analyst, joined Flow Research in November 2004 after a 24-year stint with Verizon. At Verizon, Norm specialized in creating innovative customer solutions, product management, and product marketing. He is now a fulltime market analyst for Flow Research, has completed several studies, and regularly contributes articles and editorial assistance to our *Market Barometer* and *Energy Monitor* publications.

Belinda Burum, Vice President and Editor, has worked in high tech for 16 years as a technical writer and marketing communications manager. She joined the company in 2002, and has since then worked on many projects. She has a strong customer focus. In addition to her work on market studies, Belinda is serving as associate editor of the *Market Barometer* and the *Energy Monitor*.

Besides writing and publishing studies of this type, Flow Research specializes in user surveys that include a detailed analysis of customer perceptions. In addition, Flow Research provides quarterly updates on the flow and energy industries in the **Market Barometer** and the **Energy Monitor**. The **Energy Monitor** analyzes the current state of the oil & gas, refining, power, and renewables industries, and the implications for instrumentation supplier. Both reports are part of the Worldflow Monitoring Service; more details are available at www.worldflow.com. For more information on Flow Research, please visit our website at www.flowresearch.com.

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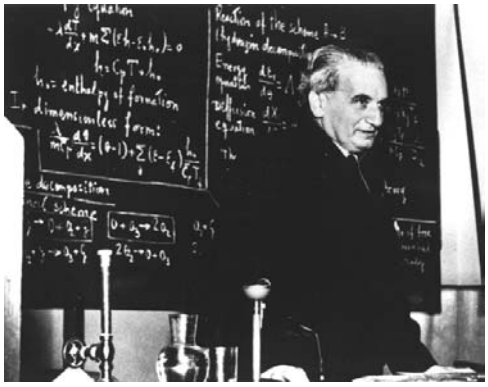

Theodore von Karman

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 (781) 245-3200, or norm@flowresearch.com.

Our www.FlowVortex.com Website

Visit www.flowvortex.com for complete information on our new study. Also, read eight informative articles about vortex flowmeters (see below).

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The World Market for Vortex Flowmeters, 4th Edition – Current study – July 2010

The World Market for Vortex Flowmeters, 3rd Edition - Provides historical perspective

The World Market for Vortex Flowmeters, 2nd Edition - Provides historical perspective

The World Market for Vortex Flowmeters, 1st Edition - Provides historical perspective

Vortex Flowmeter Articles

This page contains links to articles about vortex flowmeters. Articles are in PDF format. Click on the link to view the article. Watch this space for more articles.

A Hot Technology for Steam and Gas Flows – Flow Control, March 2010

What's So Great About Vortex Flowmeters? - Flow Control, June 2009

Measuring the World's Water Supply - Flowmeters for Water & Wastewater Applications - Flow Control, February 2009

Market Outlook for Flowmeters by Technology - Flow Control, December 2008

7 Technologies for Steam Flow - Flow Control, May 2008

Dramatic Changes Ahead for Vortex Flowmeter Market - Processing, May 2006

Vortex Flowmeters Gaining Traction (Finally) -Technology Enhancements, Standardization Efforts are Reason for Optimism - Flow Control, August 2006

An Exclusive Look at Vortex Flowmeter Market Penetration - Flow Control, May 2003

Multivariable: The Hot New Trend in Vortex Flowmeters - Flow Control, June 2002

The Paradigm Case Method of Flowmeter Selection

The World Market for Vortex Flowmeters, 4th Edition

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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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