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# **The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition**

## **Overview**



**Date of Publication: Q3 2018**

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



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## The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition

Flow Research will publish a new study on the worldwide vortex flowmeter market in Q2 2018. One important focus of this study is to determine the size of this market in 2017. Forecasts through 2022 will be included.

This study is called **The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition**.

This study has multiple purposes:

- To determine worldwide market size and market shares for all vortex flowmeters in 2017
- To forecast market growth for all types of vortex flowmeters through 2022
- 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
- To provide strategies to manufacturers for selling into the vortex flowmeter market
- To provide company profiles of the main suppliers of vortex flowmeters



### Rationale for Study

Flow Research published the 5<sup>th</sup> edition of this worldwide study in December 2014, and have been following the vortex flowmeter market regularly since then. We provide quarterly updates in our *Market Barometer* publication ([www.Worldflow.com](http://www.Worldflow.com)). We have also done user interviews that show that interest in vortex flowmeters remains at a very high level. One reason for this interest is that vortex flowmeters are approved for use in custody transfer applications by the American Petroleum Institute, and investment in oil & gas operations are increasing once again. We believe that this is an optimal time to analyze and quantify this measurement technology's market, a market which appears to be expanding.

## Background of Study

Vortex flowmeters were first introduced to the industrial markets in the early 1970's. 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. Even so, the past several years have seen important changes in the vortex flowmeter market.

In conducting this study, we have contacted all known manufacturers of vortex flowmeters worldwide. Flow Research identified more than 100 vortex flowmeter manufacturers around the world. By obtaining detailed information about each company, we can assemble a new picture of the total vortex flowmeter market. We ask 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 will accurately identify 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 will address 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
- 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 the flow. Under the right conditions, the presence of an obstacle generates a series of alternative vortices called the von Karman street. This phenomenon can be made to occur in liquid, gas, and steam flows. The effect can actually be observed in many everyday contexts such as cloud layers passing over an island or downstream of rocks in 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. The flowrate is calculated by using an algorithm that essentially multiplies 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 (USA and Canada)
- Western Europe
- Central / Eastern Europe/FSU (Former Soviet Union)
- Mideast/Africa
- Japan
- China
- Asia without Japan/China
- Latin America (Mexico, South/Central America)



### Vortex Flowmeters by Mounting Type

All three kinds of vortex flowmeters:

- Wafer
- Flanged
- Insertion

### Vortex Flowmeters by Variable Type

- Single Variable
- Multivariable

### Single and Multivariable Vortex Flowmeters by Fluid Type

Single and multivariable vortex flowmeters are segmented in this study according to the fluid type measured:

- Gas
- Saturated Steam
- Liquid
- Superheated Steam

### Vortex Flowmeters by Bore Reduction

- Single-meter Size
- Two-meter Size
- No Reduction

### Vortex Flowmeters by Mounting Type

Inline vortex flowmeters are distinguished by mounting type as follows:

- Compact (Integral)
- Remote

### Vortex Flowmeters by Communication Protocol

Smart vortex flowmeters are segmented by the following protocols:

- Foundation Fieldbus™
- HART
- Profibus DP
- Profibus PA
- Modbus
- Other

### Vortex Flowmeters by Configuration

- Single shedder bar with single sensor
- Single shedder bar with dual sensor downstream
- Dual vortex flowmeters calibrated together





### Vortex Flowmeters by Line Size

This study determines line sizes for vortex flowmeters as follows:

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

#### 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 Industry

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

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



### Vortex Flowmeters by Application:

- Custody Transfer: Petroleum Liquids
- Custody Transfer: Natural Gas
- Custody Transfer: Steam
- Non-custody Transfer: Petroleum Liquids
- Non-custody Transfer: Natural Gas
- Non-custody Transfer: Steam
- Non-petroleum Liquids
- Industrial Gases
- Slurries
- Water
- 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 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
- OEM's
- Systems Integrators
- Engineers/Consultants

### Market Shares of the Leading Suppliers

*This study provides company market share data in multiple categories. Worldwide market share data is provided as well as market share data for the following eight geographic regions:*

- North America (USA, Canada)
- Western Europe
- Central/Eastern Europe/FSU
- Mideast/Africa
- Japan
- China
- Asia without Japan/China
- Latin America

### Strategies for Success

- Discussion of market forces at work
- Product and technical comparisons
- Company analyses
- Strategic action perspectives
- Action items to compete more successfully



### Company Profiles

Complete company profiles on the leading vortex flowmeter suppliers are included.

The following is a partial list of the companies profiled in this study:

- Aalborg
- ABB
- Azbil Vortek LLC
- Badger Meter
- Bopp & Reuther Messtechnik
- Emerson Process – Rosemount
- Endress+Hauser
- Höntzsch GmbH
- Kofloc
- KROHNE
- OVAL Corporation
- Schneider Electric - Foxboro
- Shanghai Yinuo Instrument Co.
- Sibnefteavtomatika (SIBNA)
- Sierra Instruments
- Teplopribor Industrial Group
- Tokico Technology
- VorTek Instruments (an azbil company)
- Yokogawa Corporation
- YuYao Yinhuan Flowmeter Instrument Co.
- Zhejiang Tancy Instrument Company
- and others

**Publication Date**

This study will be published in Q2 2018.

**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.

**Research Team Background**

Dr. Jesse Yoder is President of Flow Research Inc., a company he founded in 1998. Dr. Yoder has 27 years of experience as a writer and an analyst in process control and instrumentation. Since 1990, he has written more than 160 market research studies, most of them regarding flow and instrumentation. Dr. Yoder has also written more than 220 articles on flow and instrumentation for trade journals. Links to many of these can be found at [www.FlowArticles.com](http://www.FlowArticles.com).

**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 studies, custom projects are a specialty. He regularly contributes articles and editorial assistance to our *Market Barometer* and *Energy Monitor* publications as well as contributions to White Papers and other publications.

**Harry Lund**, Sales Director, 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, his experience and skills with people, products and the flow measurement business world are a valuable resource for our customers and us. Harry also has a forte for formulating strategies to enable companies to compete more effectively in the marketplace.

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

**Leslie Buchanan**, Research Associate, joined Flow Research in March 2010. She assists with research and writing for Flow Research studies and publications, develops and implements standards for publication formats, serves as a customer liaison, and manages the contacts database.

## Recent and Scheduled Flow Research studies:

- I. The World Market for Coriolis Flowmeters, 5<sup>th</sup> Edition [www.FlowCoriolis.com](http://www.FlowCoriolis.com)
- II. The World Market for Magnetic Flowmeters, 6<sup>th</sup> Edition [www.FlowMags.com](http://www.FlowMags.com)
- III. The World Market for Ultrasonic Flowmeters, 5<sup>th</sup> Edition [www.FlowUltrasonic.com](http://www.FlowUltrasonic.com)
- IV. The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition [www.FlowVortex.com](http://www.FlowVortex.com)
- V. The World Market for Differential Pressure (DP) Flowmeters and Primary Elements [www.FlowDP.com](http://www.FlowDP.com)
- VI. Worldwide Survey of Flowmeter Users, 2<sup>nd</sup> Edition
- VII. The World Market for Positive Displacement Flowmeters, 2<sup>nd</sup> Edition [www.FlowPD.com](http://www.FlowPD.com)
- VIII. The World Market for Turbine Flowmeters, 2<sup>nd</sup> Edition [www.FlowTurbine.com](http://www.FlowTurbine.com)
- IX. The World Market for Pressure Transmitters, 4<sup>th</sup> Edition [www.PressureResearch.com](http://www.PressureResearch.com)
- X. The World Market for Flowmeters, 6<sup>th</sup> Edition [www.FlowVolumeX.com](http://www.FlowVolumeX.com)
- XI. The World Market for Gas Flow Measurement, 2<sup>nd</sup> Edition [www.GasFlows.com](http://www.GasFlows.com)
- XII. The World Market for Steam Flow Measurement [www.SteamFlows.com](http://www.SteamFlows.com)
- XIII. The World Market for Mass Flow Controllers [www.FlowMFC.com](http://www.FlowMFC.com)
- XIV. The World Market for Thermal Flowmeters, 2<sup>nd</sup> Edition [www.FlowThermal.com](http://www.FlowThermal.com)
- XV. The World Market for Liquid Analytical Instruments [www.FlowAnalytical.com](http://www.FlowAnalytical.com)

These studies are described at [www.FlowStudies.com](http://www.FlowStudies.com)

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 suppliers. Both reports are part of the Worldflow Monitoring Service. More details are available at [www.Worldflow.com](http://www.Worldflow.com).

For more information on vortex flowmeters, you're welcome to visit [www.FlowVortex.com](http://www.FlowVortex.com), a Worldflow™ Knowledge website that is dedicated to vortex flowmeter technology and products. During your visit, be sure to click on and take a look at some of the more than a dozen articles we've published on this subject in the last several years. We've looked at vortex flowmeters from many perspectives. Among the articles you'll see there are:

[Part I: Flow Trend Watch. A Look at Recent Developments in New-Technology Flowmeters](#)

*Flow Control* magazine

[A Decade Dominated by the Rise of New-Technology Flowmeters](#)

*Processing* magazine

[Vortex Flowmeters - Positioned Well for More Widespread Use Going Forward](#)

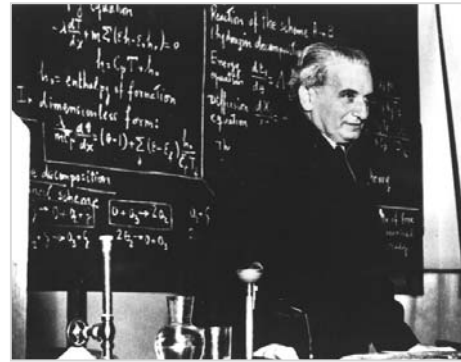
*Flow Control* magazine

For more information on Flow Research, please visit our website at [www.FlowResearch.com](http://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 +1 781 245-3200, or [norm@flowresearch.com](mailto: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

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