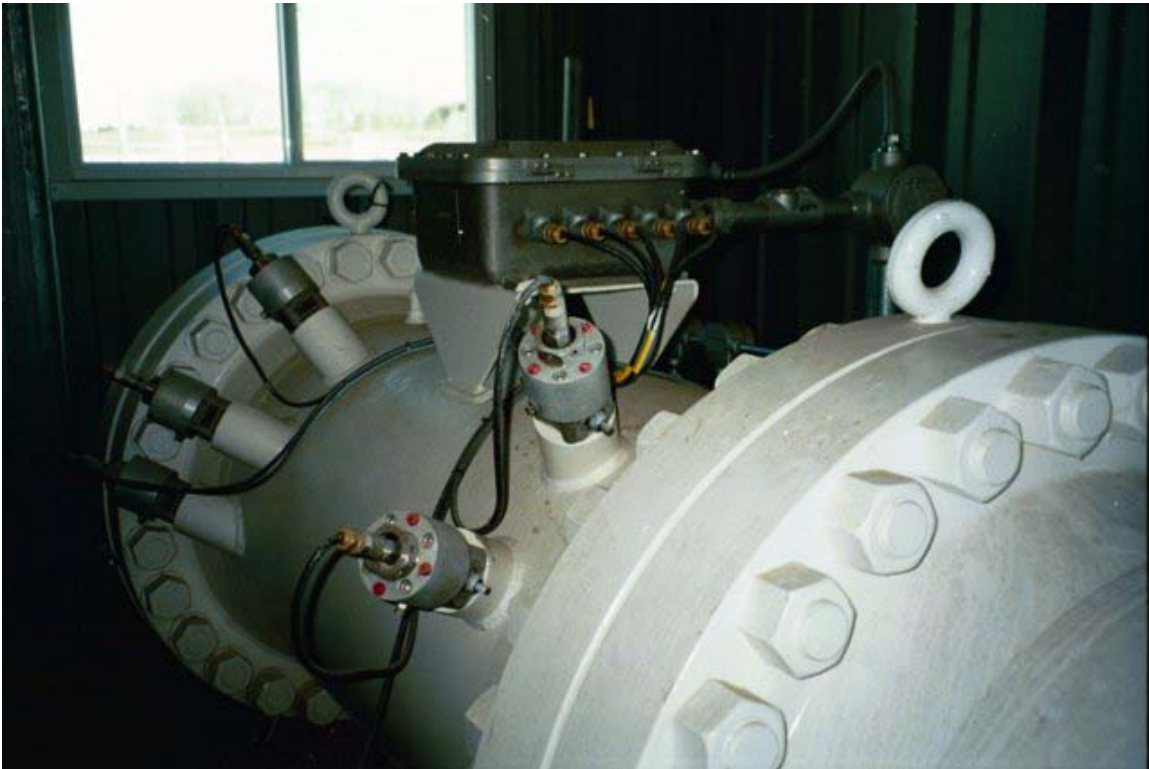


Flow Study Overview

The World Market for Ultrasonic Flowmeters, 3rd Edition



Flow Research, Inc.

Wakefield, Massachusetts

USA

Worldflow Monitoring Service



The *Worldflow Monitoring Service* is a package of resources designed to serve the information needs of flowmeter and instrumentation manufacturers, distributors, and end-users. Each component offers timely data, meaningful news, and insightful commentary on the markets it covers. Each complements and updates the studies that Flow Research regularly conducts in the same markets, and keeps readers informed of events and trends in their industry.

Worldflow, which was initiated in 2002, has four components:

Market Barometer (MB) (40–60 pages)

This quarterly publication focuses on the flowmeter industry. *MB* reports on important technology introductions, mergers and acquisitions, and application trends. “State of the Industry” highlights recent industry events and their meaning. And, in every issue, we review each flowmeter technology and interpret changes, giving you the information and ideas you need to implement winning product strategies and to make more informed decisions. Your subscription includes *Flash Reports*, a PDF file of each issue, and two printed and bound hardcopy volumes.

Energy Monitor (EM) (40–70 pages)

This quarterly publication focuses on the oil & gas, refining & petrochemical, and power and renewable industries in relation to flow and temperature measurement, and other instrumentation. Each issue surveys the energy scene to discover significant new events, trends, and opportunities. Every issue is packed with what you need to know. Your subscription includes *Flash Reports*, a PDF file of each issue, and two printed and bound hardcopy volumes.

Flash Reports (2–6 pages each)

Just as the *Worldflow Monitoring Service* informs during the interval between studies, *Flash Reports* activate as soon as important news breaks. *Flash Reports* include both the key facts and a “What it Means” section. Subjects of past *Flash Reports* include Siemens’ purchase of Controlotron, the API’s formulation of standards for vortex flowmeters, and Nu-Flo’s acquisition of Caldon.

Living Database (LD) (24/7 access)

This web-based tool is an instant library of information for anyone who wants to know everything from how to select a flowmeter to what flowmeters are available worldwide and from whom. A centralized database with subscriber access via user name and password, *LD* is the way to conveniently locate information from past reports and articles, and to keep current on new product applications. Better data = better decisions.



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A Proposal for a Market Research Study on the Worldwide Ultrasonic Flowmeter Market

Flow Research is proposing a new market study on the worldwide ultrasonic flowmeter market. The study will be conducted by Flow Research. The primary goal is to determine the size of the ultrasonic flowmeter market in 2006. In addition, forecasts through 2011 will be included. The study will be called **The World Market for Ultrasonic Flowmeters, 3rd Edition**.



The study has multiple purposes:

- To determine worldwide market size and market shares for ultrasonic flowmeters in 2006
 - To forecast market growth for all types of ultrasonic flowmeters through 2011
 - To identify industries and applications where ultrasonic flowmeters are used, and to identify market growth areas
 - To provide a product analysis for the main companies selling into the ultrasonic flowmeter market
- To provide strategies to manufacturers for selling into the ultrasonic flowmeter market
 - To provide company profiles of the main suppliers of ultrasonic flowmeters.

One main goal of this study is to determine the size of the ultrasonic flowmeter market worldwide in 2006. This market continues to be one of the fastest growing flowmeter markets, which is driven in part by the expanding market for custody transfer of natural gas.

One important issue is the growth in the contrast between **transit time and Doppler flowmeters**. While Doppler flowmeters remain one of the best solutions for dirty liquids, transit time flowmeters have been showing faster growth in recent years. Much of the new product development is going into transit time meters. Transit time flowmeters are typically more accurate than Doppler meters, and multipath transit time meters are widely used for custody transfer of natural gas. This study will also look at growth in the hybrid flowmeter market.

This study will also examine the growing use of **ultrasonic flowmeters for gas flow measurement**. Custody transfer of natural gas is a fast growing market, especially with the increased popularity of natural gas as an energy source, and due to the rising price of both oil and natural gas. Custody transfer is one of a number of gas applications that are boosting sales of ultrasonic flowmeters.



Steam flow measurement is a new frontier for ultrasonic flowmeters. Currently, this market is dominated by differential pressure (DP) and vortex flowmeters. However, as the technology improves, this is becoming a growth area for ultrasonic flowmeters. Steam flow measurement is growing in importance as companies look to increase energy efficiency and cut energy costs. The high accuracy and reliability of ultrasonic meters make this an attractive option for some steam flow applications.

Background of Study

There are two main types of ultrasonic flowmeters: transit time and Doppler. A transit time ultrasonic flowmeter has both a sender and a receiver. It sends two ultrasonic signals across a pipe at an angle: one with the flow, and one against the flow. The meter then measures the “transit time” of each signal. When the ultrasonic signal travels with the flow, it travels faster than when it travels against the flow. The difference between the two transit times is proportional to flowrate.

Doppler flowmeters also send an ultrasonic signal across a pipe. Instead of tracking the time the signal takes to cross to the other side, a Doppler flowmeter relies on having the signal deflected by particles in the flowstream. These particles are traveling at the same speed as the flow. As the signal passes through the stream, its frequency shifts in proportion to the mean velocity of the fluid. A receiver detects the reflected signal and measures its frequency. The meter calculates flow by comparing the generated and detected frequencies. Doppler ultrasonic flowmeters are used with dirty liquids or slurries. They are not used to measure gas or steam flow.

Ultrasonic flowmeters were first introduced for industrial use in 1963 by Tokyo Keiki (which later became Tokimec) in Japan. Tokimec is located in Tokyo, Japan. In 1972, Controlotron

(Hauppauge, New York) became the first U.S. manufacturer to market ultrasonic flowmeters in the United States. In the late 1970s and early 1980s, both Panametrics (Waltham, Massachusetts) and Ultraflux (Poissy Cedex, France) experimented with the use of ultrasonic flowmeters to measure gas flow. Initially, ultrasonic flowmeters were not well understood, and were sometimes misapplied. Many technological improvements have been made in the past 10 years, and the limitations of ultrasonic meters are better understood. Advances in transit time technology have broadened the types of liquids that transit time flowmeters can be used on. Many transit time meters today can handle liquids containing some impurities.

Rationale for Study

Since completing our first ultrasonic study in 2001, we have been following this market very closely. We published the second edition of this study in 2003. Many developments have been described in our quarterly report, the Market Barometer. Each issue of the Market Barometer includes an update on the ultrasonic flowmeter market. This new study builds on the knowledge we have gained over the years, but it is a completely new look at this market. For more information on the Market Barometer, go to www.worldflow.com.

Key Issues Addressed

This study will address the key issues in the ultrasonic flowmeter market, including:

- Growth in the ultrasonic transit time flowmeter market
- Shipments of clamp-on, spoolpiece, and insertion meters
- Comparison of portable vs. fixed ultrasonic flowmeters
- The expanding use of ultrasonic flowmeters for custody transfer of natural gas
- The emerging market for ultrasonic flowmeters in steam flow measurement
- The market for Doppler and hybrid ultrasonic flowmeters
- Mergers and acquisitions in the ultrasonic flowmeter market

Proposed Segmentation

The proposed segmentation for this study is as follows.

Geographic Segmentation:

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

Ultrasonic Flowmeters by Technology Type

There are three kinds of ultrasonic flowmeters:

- Transit time ultrasonic flowmeters
- Doppler ultrasonic flowmeters
- Hybrid ultrasonic flowmeters

Transit Time Ultrasonic Flowmeters by Number of Paths

Transit time flowmeters are distinguished by path type as follows:

- Single path transit time ultrasonic flowmeters
- Multipath transit time ultrasonic flowmeters

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

Multipath Transit Time Ultrasonic Flowmeters by Fluid Type

Multipath transit time flowmeters are distinguished by fluid type as follows:

- Liquid
- Gas
- Steam

The multipath transit time ultrasonic flowmeter market for gas applications is equivalent to the fast-growing ultrasonic flowmeters for custody transfer of natural gas market.

Ultrasonic Flowmeters by Mounting Type

This study distinguishes between mounting types as follows:

- Clamp-on ultrasonic flowmeters
- Spoolpiece ultrasonic flowmeters
- Insertion ultrasonic flowmeters

Clamp-On Flowmeters by Mounting Type

This study distinguishes between mounting types for clamp-on ultrasonic flowmeters as follows:

- Portable clamp-on ultrasonic flowmeters
- Fixed clamp-on ultrasonic flowmeters

Ultrasonic Flowmeters by Fluid Type

Ultrasonic flowmeters, including all types, are segmented in this study according to fluid type:

- Liquid
- Gas
- Steam

Ultrasonic Flowmeters by Line Size

This study distinguishes line sizes for Ultrasonic flowmeters as follows:

- < 2 inch
- > 2 - 4 inches
- > 4 – 8 inches
- > 8 – 12 inches
- > 12 – 20 inches
- > 20 inches

What makes Flow Research 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.

Ultrasonic Flowmeters by Type:

Ultrasonic flowmeters are segmented in this study according to type:

- Smart
- Conventional

Ultrasonic Flowmeters by Communication Protocol

Ultrasonic flowmeters are segmented by the following protocols:

- HART
- Foundation Fieldbus
- Profibus
- Modbus
- Proprietary Protocols
- Other



Ultrasonic flowmeters by Industry

Ultrasonic flowmeters are used mainly in the process industries. We propose to include the following industries in this study:

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

Ultrasonic flowmeters by Sales Channels

The Ultrasonic flowmeter market will be segmented according to the following sales channels:

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

Ultrasonic flowmeters by Customer Type

The Ultrasonic flowmeter market will be segmented according to the following customer types:

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

Ultrasonic flowmeters for Industrial District Heating Applications

This section analyzes the ultrasonic flowmeter market for industrial heating applications. These numbers are separate from the numbers in the rest of the study, because this is a specialized niche market.

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

Publication Date

The target date for publication of this study is October 2007.

Founding Sponsorship

We are offering the opportunity for companies to become Founding Sponsors for 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 on page nine. We hope you will decide to become a Founding Sponsor for this study.

Please review the above segmentation and let us know if there is any additional segmentation you would like to see, or if you would like to propose changes to the existing segmentation.

Thank you in advance for your input, and we hope to hear from you!

Background

Dr. Jesse Yoder is President of Flow Research Inc., a company he founded in 1998. Dr. Yoder has 20 years' experience as a writer and analyst in process control and instrumentation. Since 1990, he has written more than 100 market research studies, most of them in the area of flow and instrumentation. Some of the recent and currently scheduled Flow Research studies are as follows:

- [Volume I: The World Market for Coriolis Flowmeters, 3rd Edition](#) (2007)
- [Volume II: The Global Market for Magnetic Flowmeters, 3rd Edition](#) (September 2005)
- [Volume III: The World Market for Ultrasonic Flowmeters, 3rd Edition](#) (2007)
- [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 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](#) (July 2007)
- [Volume X: The World Market for Flowmeters \(includes all flow technologies\)](#) (2008)
- [Volume XI: The World Market for Gas Flow Measurement](#) (September 2004)
- [Volume XII: The World Market for Steam Flow Measurement](#) (March 2007)
- [Volume XIII: The World Market for Mass Flow Controllers](#) (September 2007)
- [The Market for Temperature Sensors in the Americas, 2nd Edition](#) (May 2006)
- [The Market for Temperature Transmitters in the Americas, 2nd Edition](#) (November 2006)

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

Dr. Yoder has also written more than 70 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, and has already completed several studies.

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 is a very talented writer, and 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.





Christian Doppler

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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 standard retail 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.

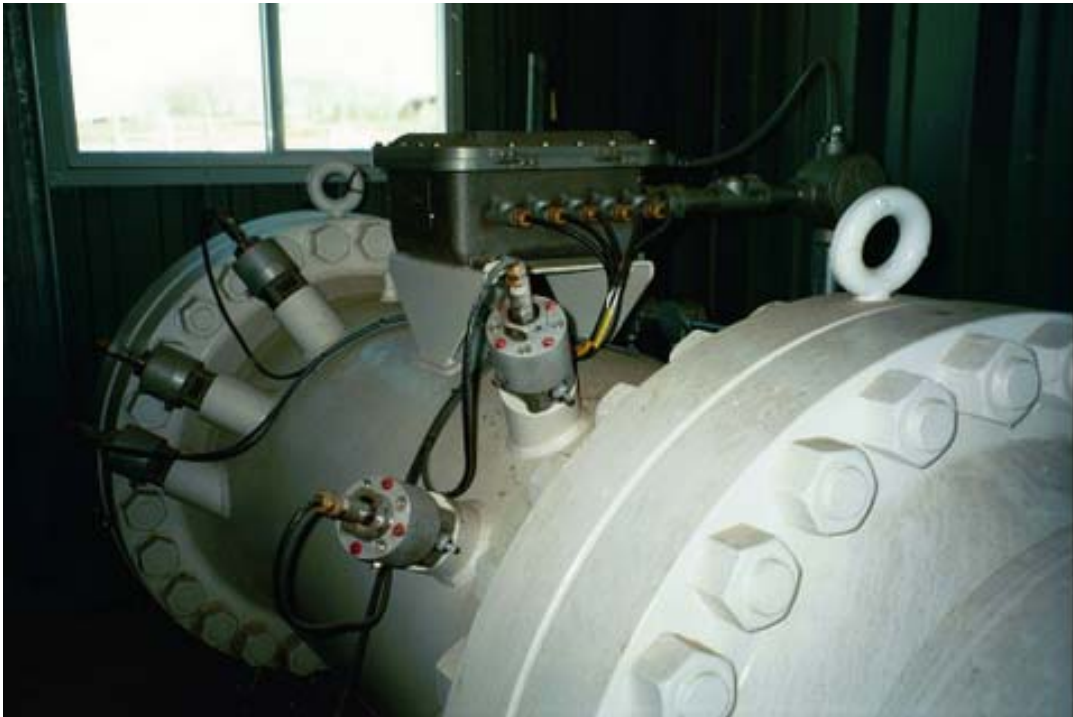
During the research phase of a study, Flow Research will issue regular reports that provide updates on the progress of the research. These reports will be sent to Founding Sponsors, who are then invited to provide any additional input or comments into the study.

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.

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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

About Flow Research

Flow Research Incorporated, founded in 1998, is the only market research company whose primary mission is researching flowmeter markets. We produce two quarterly Worldflow reports — **Market Barometer** and **Energy Monitor** — and an online **Worldflow Living Database**. **Flash Reports** keep you posted on breaking news in the flowmeter and energy industries.

Our analysis of the world flowmeter market includes more than 5,000 pages of data and a new worldwide survey of flowmeter users. We analyze the market from many different perspectives to provide a more comprehensive view. Studies on the world market for each type of new-technology flowmeter and for each type of traditional technology flowmeter are available. We also have a world study that includes all flow technologies. Our most recently published studies include **The World Market for Pressure Transmitters, 2nd Edition**, **The World Market for Steam Flow Measurement**, and **The World Market for Differential Pressure (DP) Flowmeters and Primary Elements**.

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