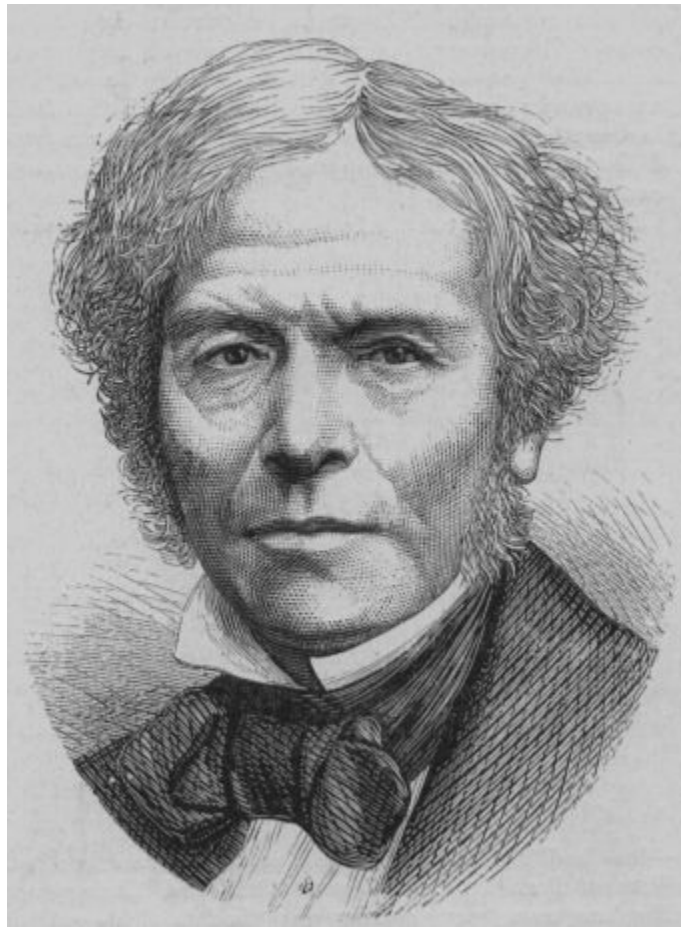


# The World Market for Magnetic Flowmeters, 6<sup>th</sup> Edition

## — Overview —



*Michael Faraday*

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

Flow Research is conducting a new market study on the worldwide magnetic flowmeter market. The name of the study is *The World Market for Magnetic Flowmeters, 6<sup>th</sup> Edition*. The study determined the size of the worldwide market in 2016, and the market shares of all major suppliers. Market forecasts through 2021 are included.

This study meets the following important objectives:

- To provide the 2016 market size in US dollars and unit volume for magnetic flowmeters worldwide
- To provide 2016 market shares of the leading suppliers of magnetic flowmeters worldwide
- To provide a forecast of the growth market for magnetic flowmeters in dollars and unit volumes through 2021
- To provide segmented data both on a worldwide basis and for each of eight global regions
- To provide a product analysis for all of the primary suppliers selling into the magnetic flowmeter market
- To identify the industries and applications where magnetic flowmeters are used, and to identify market growth sectors
- To provide market and product strategies for suppliers of magnetic flowmeters worldwide
- To provide company profiles for the significant suppliers of magnetic flowmeters worldwide



*Magnetic flowmeters. Photo from the Flow Research archive.*

## Rationale for Study

Flow Research published the 5<sup>th</sup> edition of our worldwide magnetic flowmeter study in 2014. We follow the magnetic flowmeter market regularly, providing quarterly updates in our **Market Barometer** ([www.worldflow.com](http://www.worldflow.com)). We have also conducted user interviews that show that interest in magnetic flowmeters remains at a very high level. We believe that this is an optimal time to accurately quantify the size and growth of this flowmeter technology, and to provide a comprehensive view of its expanding market. In this 6<sup>th</sup> edition, we are introducing some new segmentation that will make the results of this study even more valuable.

## Background of Study

Magnetic flowmeters are among the most widely used types of flowmeters for measuring the flow of water and other liquids. They have been around for more than fifty years. The Tobinmeter Company first introduced magnetic flowmeters for commercial use in Holland in 1952. Foxboro introduced them to the United States in 1954. More than 50 suppliers worldwide now offer magnetic flowmeters for sale. Magnetic flowmeters generate more revenues worldwide than any other type of flowmeter.

Magnetic flowmeters generate more revenues worldwide than any other type of flowmeter. The story is different in terms of units, however. More DP and variable area flowmeters are sold

annually than are magnetic flowmeters. The higher average selling price of magnetic flowmeters enables them to generate more revenues annually than variable area meters.

Magnetic flowmeters are most widely used in the water and wastewater and chemical industries. Over 40 percent of the revenues generated by magnetic flowmeters are sold into these industries. These meters are also widely used in the food and beverage and pharmaceutical industries, which often require flowmeters to conform to sanitary requirements. Flowmeter suppliers meet these requirements in part by placing hygienic liners inside the meters to make them suitable for use in sanitary applications.

Recent battery-operated entrants into the product market are enabling users to install magnetic flowmeters in remote locations. In this study, we shed light on these new products.

### **Key Issues Addressed in This Study**

- The growth outlook for magnetic flowmeters worldwide and by region
- The demand for 2-wire, 4-wire, and battery meters
- The displacement of AC magnetic meters with DC types
- The competitive price pressure on magnetic flowmeters
- The need for insertion magnetic flowmeters
- The line sizes where magnetic flowmeters are most frequently used
- The types of liners used in magnetic flowmeters and their proportions of the market
- The adoption rates of communication protocols in smart magnetic flowmeters
- Features that end-users are looking for in magnetic flowmeters

### **Operating Principle**

Magnetic flowmeters use Faraday's Law of Electromagnetic Induction. According to this principle, when a conductive medium passes through a magnetic field, a voltage is generated. This voltage is directly proportional to the velocity of the conductive medium, the density of the magnetic field, and the length of the conductor. In Faraday's Law, these three values are multiplied together, along with a constant, to yield the magnitude of the voltage.

Magnetic flowmeters use wire coils mounted within or outside of the meter body. A current is then applied to these coils, generating a magnetic field. As the conductive liquid passes through the body of the meter, a voltage is generated and detected by electrodes, which are mounted on either side of the meter body. The flowmeter uses this value to compute the flowrate.

Magnetic flowmeters are used to measure the flow of conductive liquids and slurries, including paper pulp slurries and black liquor. Their main limitation is that they cannot measure hydrocarbons (which are nonconductive), and thus are not widely used in the oil & gas or refining industries. Magmeters, as they are also known, are highly accurate and do not create pressure drop. Their initial purchase cost is in the medium range, and comparable to the cost of vortex flowmeters. Magnetic flowmeters typically cost more than positive displacement and turbine flowmeters, but are significantly less than Coriolis and ultrasonic flowmeters.

## Study Segments

Our segmentation has been the result of our own experience in previous research, combined with input from multiple companies who suggest important new categories for our latest studies. We are always grateful for the cooperation of all the firms who assist in the final design of the study questionnaire. Flow Research believes that this cooperative approach to research ultimately yields the best and most useful data. (See the description of the *Founding Sponsor Program* enclosed in this overview.)

### What's in this study for your 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
- Having the best information helps you make the best decisions

Below is a review of this study's most important data segments.

## ALL STUDY INFORMATION IS PROVIDED WORLDWIDE AND BY REGION

### Geographic Segmentation

- North America
- Western Europe
- Eastern Europe/FSU
- Mideast/Africa
- Japan
- China
- Asia/Pacific
- Latin America (including Caribbean and Mexico)



### Magnetic Flowmeters by Mounting Type

- Wafer
- Flanged
- Insertion

### Average Selling Prices

*Average selling prices are provided on both a geographic and mounting type basis.*

- Worldwide average selling prices
- Regional average selling prices (for all eight regions in the study)
- Average selling prices by mounting type
  - Wafer
  - Flanged
  - Insertion

### Magnetic Flowmeters by Configuration Type

- Compact/Integral
- Remote

### Magnetic Flowmeters by Power Type

Battery-operated and wireless options are becoming more important in this market, with the release of several new 'go-anywhere' products in the last few years.



- 2-wire
- 4-wire
- Battery

### Battery-powered Magnetic Flowmeters by Wireless Capability

- Wireless-equipped
- Not wireless-equipped

### Magnetic Flowmeters by Coil Power Type

AC is still an option in a market that has largely moved to DC.

- AC
- Standard DC
- High Strength DC
- Dual Frequency DC



### Wafer and Flanged Magnetic Flowmeters by Liner Type

- PFA (perfluoroalkoxy)
- PTFE (polytetrafluoroethylene)
- EPDM (ethylene propylene diene monomer)
- ETFE (ethylene tetrafluoroethylene)
- Ceramic
- Polypropylene
- Polyurethane
- Hard Rubber
- Soft Rubber
- Other

### Magnetic Flowmeters by Line Sizes

- ½ inch or less
- >½ inch to 1 inch
- >1 to 2 inches
- >2 to 4 inches
- >4 to 8 inches
- >8 to 12 inches
- >12 to 20 inches
- >20 to 24 inches
- >24 inches

*Dr. Yoder walking inside an 86-inch magnetic flowmeter*



### Magnetic Flowmeters by Smart or Conventional

- Smart
- Conventional

### Smart Magnetic Flowmeters by Communication Protocol

- Foundation Fieldbus
- HART
- Ethernet
- Profibus DP
- Profibus PA
- Modbus
- DeviceNet
- Serial
- Other

## Magnetic Flowmeters by Industry

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



## Magnetic Flowmeters by Applications

- Water Flow
- Water-based Chemicals
- Slurries
- Sanitary
- Hydrofracking
- Process Control
- Custody Transfer
- Dosing/Filling Machines
- Other



## Magnetic Flowmeter by Distribution Channel

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

## Magnetic Flowmeter by Customer Type

- End-Users
- Systems Integrators
- Engineering and Consulting Firms
- OEM's

### This study also includes:

Market shares, Company Profiles, Strategies for Success

## Market Shares of Major Suppliers

- Market Shares Worldwide and by Region



## Strategies for Success

- Discussion of market forces at work
- Strategic action perspectives
- Real world success stories

## Company Profiles

*We provide complete company profiles on all of the major magnetic flowmeter suppliers. The following is a partial list of the companies that are included:*

- ABB
- azbil (Yamatake)
- Badger Meter
- Bürkert
- Danaher: McCrometer
- Emerson Automation Solutions:  
    Rosemount Division
- Endress+Hauser
- GEA Diessel
- Georg Fischer Signet
- KROHNE
- Schneider Electric: Foxboro
- Siemens
- Sparling Instruments
- Toshiba
- Yokogawa

## 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 include all of the flowmeter technologies – both new and traditional – as well as pressure transmitters; temperature sensors and transmitters, infrared thermometers and thermal imagers; analytical instrumentation; selected API-certified valves; and studies specifically focused on certain major markets for flowmeters such as the oil and gas markets. Flow Research also started a working group focusing on flowmeter calibration, and has completed two studies on flowmeter calibration facilities. Further information on studies, links for articles and more can be found by visiting the Flow Research website at [www.flowresearch.com](http://www.flowresearch.com) or call 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 a patent for a new flowmeter design. He has given presentations at conferences and seminars, and done webinars. He has written more than 200 market research studies, numerous custom projects, and published more than 250 articles on flow and instrumentation in industry journals.

His latest book, *The Tao of Measurement, A Philosophical View of Flow and Sensors*, by Jesse Yoder and Richard E. Morley, as co-contributors, was published in January of 2015 by the International Society of Automation (ISA). This book looks at the past, present and future of flow, sensors and measurement. It reveals underlying principles of flow and measurement, explains engineering practices, how our units of measurement were derived, present day

measurement practices, and how today's scientific tools can improve our units of measurement. 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, studies and publications.

**Norm Weeks**, Senior Market Analyst, joined Flow Research in November 2004 after 24-years with Verizon specializing in innovative solutions for major corporate enterprises, introducing new products and lifecycle management strategies, and product marketing. Prior to this, he was the Managing Director of the Urban Fellows Institute in New York. At Flow Research, his contributions in project development, research, analysis and writing are significant. In addition to working on 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, and Publication Production Associate, 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.

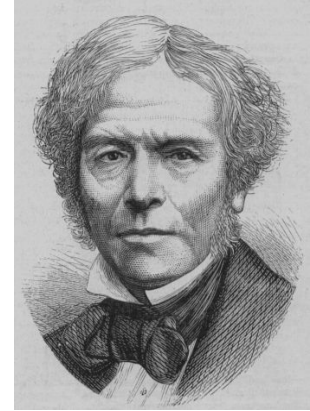
**Victoria Tuck**, Administrative and Research Assistant, joined Flow Research in June, 2012. She has experience in both the fast-paced law firms of Boston, and in various nonprofit organizations. She assists with administrative and other office functions, including outreach and the database. She also does news research for the Worldflow publications.

**Christina Glaser**, Website Design & Maintenance, and Research Assistant, 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.





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

Flow Research instituted the Founding Sponsor Program to produce studies that most closely match our clients' needs. 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 purchase of the study upon its completion.

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 do our best to accommodate the specific needs of each of our clients.

During the research phase of a study, Flow Research issues interim reports to program sponsors that provide updates on the progress of the research. These reports are sent to the Founding Sponsors, who are then invited to provide any additional input or comments to 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 usual retail 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 completed study.

For additional details, or to learn how the Founding Sponsor Program might benefit you, please contact Norm Weeks at [1] 781-245-3200, or at [norm@flowresearch.com](mailto:norm@flowresearch.com).

We look forward to working with you!

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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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