

The World Market for Mass Flow Controllers, 3rd Edition

Overview



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The World Market for Mass Flow Controllers, 3rd Edition analyzes the market for mass flow controllers (MFCs). The study provides updates to key segmentations of this market, using a base year of 2018 with forecasts through 2023. This study is an update to our previous studies of MFC market completed in 2008, 2012 and 2015, and takes into account recent technological innovations and describes the dynamic business environment that exists today.

The main goal of the study is to determine the size of the mass flow controller market in 2018, and to forecast market growth through 2023. Important segmentation includes total worldwide market size broken down by eight geographic regions, and the basic MFC technology types (Thermal, Pressure, Coriolis, and Ultrasonic). Because MFCs are used both to measure and to control fluid flows, the study identifies their use by fluid type. The study determines the industries and applications where MFCs are found, and quantifies their presence within each category.

Market share data is included. Average selling prices are provided on a worldwide, geographic region, and key technology type basis. This study also includes growth factors, technology analyses, and provides supplier profiles for the leading market participants. All the above data and more is used to build specific marketing strategies for suppliers.

The study accomplishes several important objectives:

- To determine the 2018 market size in US dollars and unit volumes for mass flow controllers worldwide, both thermal and non-thermal types
- To determine the 2018 market shares of leading suppliers of mass flow controllers worldwide
- To forecast market growth for all types of mass flow controllers through 2023
- To identify industries and applications where mass flow controllers are used, and to identify growth areas
- To provide a product analysis for the main manufacturer suppliers selling into the mass flow controller market
- To provide strategies to manufacturers for selling into the mass flow controller market
- To provide company profiles of the main suppliers of mass flow controllers

A number of suppliers asked us to do this 3rd Edition study because the market has changed substantially since our last study was published in 2015. New environmental applications such as fuel cells and solar/photovoltaic have opened up new application avenues for mass flow controllers. The push for automation in factories will continue to favor the installation of MFCs. And growth in the emerging markets of China, India, Australia, Indonesia, and Malaysia will continue to drive growth in the mass flow controller market.

The semiconductor market continues to be cyclical in nature, but is still the dominant industry for mass flow controllers. This study sizes the MFC semiconductor market, and also provides market shares for suppliers to this large market. However, the study has a special emphasis on the industrial segments that provide applications for mass flow controllers outside the semiconductor market. Some of these segments are faster growing than semiconductor, and hold the promise of long-term applications for MFCs. In addition, they are not cyclical in the way that semiconductor is, so they can provide some predictability for companies that want more stable sales growth.

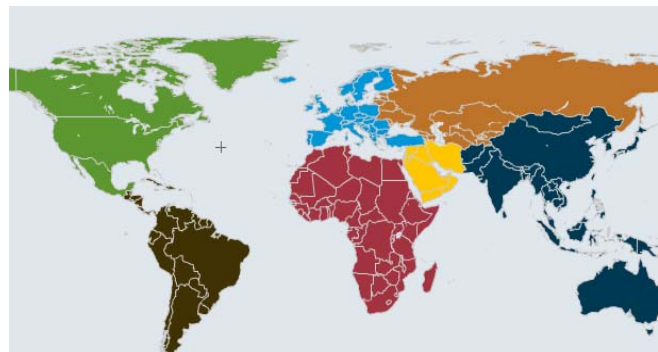
There is a great deal of new segmentation in this study. This includes corrosive and non-corrosive gases (including air), and petroleum and non-petroleum liquids, along with shipments by industrial segments. We also include breakouts of MFCs by flowrates, by wetted material type, and by communication protocols. All in all, this study is more comprehensive than the last study, and is also very timely given the growth in the semiconductor and industrial markets.

Rationale for Study

This new edition of the study includes both the Semiconductor and the Industrial market segments for mass flow controllers. In our 2015 study, much of the MFC market was found in the semiconductor market. We find continued growth in this market, as more companies offer products in them. The semiconductor market grew substantially in 2018, and our new study captures this growth. However, the semiconductor market is notoriously cyclical, and suppliers to it have historically experienced the same uneven fortunes in nearly direct proportion to their reliance upon it. On the other hand, the growth in the semiconductor market may make the total MFC market size larger than projected in the previous study.

The study divides the worldwide market into the following geographic regions:

- North America (United States and Canada)
- Western Europe
- Eastern Europe, Former Soviet Union
- Middle East/Africa
- Japan
- China
- Asia/Pacific
- Latin America (Mexico, Central and South America)



Primary Segmentation

Shipments of Mass Flow Controllers by Technology Worldwide and by Region:

- Thermal
- Differential Pressure (DP)
- Coriolis
- Ultrasonic

Shipments of Mass Flow Controllers by Type Worldwide and by Region

- Semiconductor (including all processes involved in the design and fabrication of semiconductor devices and related equipment)
- Industrial (including all other industrial process control processes as well as research & development)

→ Data is included for both of these market segments worldwide and for each of the eight geographic regions, with both revenues and unit sales provided.

Shipments of Mass Flow Controllers by Industrial Segment

We have identified the following industrial segments as ones where MFCs are typically used:

- | | |
|-----------------------------|--------------------------------------|
| • Aerospace | • Gas Distribution |
| • Analytical/Gas Analyzers | • Heat Treating |
| • Automotive | • LED Lighting |
| • Biotech/Pharmaceutical | • Medical |
| • Chemical/Petrochemical | • Metals Processing |
| • Electronics Manufacturing | • Packaging |
| • Fiber Optics/Glass | • Photovoltaic/Solar/Solar Cells |
| • Food & Beverage | • Power |
| • Fuel Cells | • University/Government/Research Lab |
| • Furnaces | • Other |

Shipments of Mass Flow Controllers by Control Function Worldwide and by Region

- With Control Valve
- No Control Valve (Flowmeter Only)

→ This study identifies those mass flowmeters that are shipped as controllers, and those that are shipped as flowmeters without control.

Shipments of Mass Flow Controllers by Flowrate

- | | |
|------------------|--------------------|
| • <10 sccm | • >50 – 100 slpm |
| • 10 – 1000 sccm | • >100 – 200 slpm |
| • 1 – 10 slpm | • >200 – 500 slpm |
| • >10 – 30 slpm | • >500 – 1000 slpm |
| • >30 – 50 slpm | • >1000 slpm |

(*sccm* = *Standard Cubic Centimeters per Minute*); (*slpm* = *Standard Liters per Minute*)

Average Selling Price of Mass Flow Controllers Worldwide and by Region

- The average selling price of mass flow controllers worldwide and by region
- The average selling price of mass flow controllers by industry type

Shipments of Mass Flow Controllers by Fluid Type

- Corrosive Gases
- Non-corrosive Gases (Including Air)
- Petroleum Liquids
- Non-Petroleum Liquids

Shipments of Mass Flow Controllers by Wetted Material Type

- Stainless Steel (all grades)
- PTFE (Teflon)
- Aluminum
- Plastic
- Other

Shipments of Mass Flow Controllers by Communication Type

- Analog: 0-5 Vdc
- Analog: 4-20 mA
- Digital: All types including RS485, DeviceNet, Profibus, Modbus, and FOUNDATION™ Fieldbus, and all other digital types
- Other

Shipments of Mass Flow Controllers by Distribution Channel Worldwide and by Region

- Direct Sales
- Independent Representatives
- Distributors
- Resellers (e.g. private label, catalog)
- E-Business

Shipments of Mass Flow Controllers by Customer Type Worldwide and by Region

- End-User
- Original Equipment Manufacturers (OEMs)
- Systems Integrators
- Engineering Companies

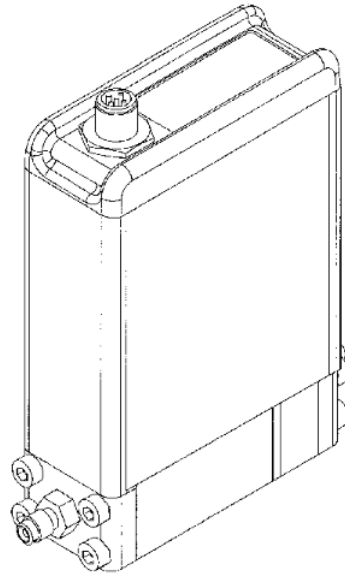


Company Profiles

This study includes extended profiles of major companies that manufacture and supply into the Mass Flow Controller market on a worldwide or regional basis. These profiles include essential business data, company histories, organization and/or subsidiary summaries, product line descriptions, marketing goals and strategies, and related essential information.

Below is a partial list of companies to be profiled in this edition of *The Worldwide Market for Mass Flow Controllers*.

- Alicat Scientific
- Azbil
- Bronkhorst
- Brooks Instrument
- Bürkert
- Hitachi Metals Ltd. (including Aera[®])
- Horiba
- MKS Instruments, Inc.
- Parker Hannifin
- Sierra Instruments
- Teledyne Hastings
- Voegtlin



Background

Dr. Jesse Yoder is President of Flow Research Inc., a company he founded in 1998. Dr. Yoder has 32 years of experience as a writer and analyst in process control and instrumentation. Since 1990, he has written over 260 market research studies, most of them regarding flow and instrumentation, and has published more than 300 articles on flow and instrumentation for trade journals. He also wrote a book with Dick Morley called *The Tao of Measurement*, published in 2015 by the International Society of Automation (ISA). Dr. Yoder holds two U.S. patents on a dual tube flowmeter, granted in 2015 and 2017.

Belinda Burum, Vice President, joined Flow Research in 2002 having worked in journalism and advertising before entering high tech as a writer, marketing communications manager, and customer references consultant. She has assisted with many projects, studies and publications. Today she is writing press releases, website updates, and other analytical publications.

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 also contributes to White Papers, our Worldflow 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 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. Since, she has 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 with experience from both law firms and nonprofit organizations. She handles a variety of office functions – essential to keep any business running – as well as assisting in other ways, including outreach, the contacts database, and news research for the Worldflow publications.

Flow Research studies contribute to an ongoing view of the flowmeter market

Listed below is a summary of Flow Research studies in process as well as studies completed during the last few years in the area of process control instrumentation. The studies below and others are further described at www.flowstudies.com. You can order many of these studies through our secure online store at www.flowstudy.com.

Recent and Currently Scheduled Flow Research Studies

Websites

The World Market for Coriolis Flowmeters, 6 th Edition	www.flowcoriolis.com
The World Market for Magnetic Flowmeters, 7 th Edition	www.flowmags.com
The World Market for Ultrasonic Flowmeters, 6 th Edition	www.flowultrasonic.com
The World Market for Vortex Flowmeters, 6 th Edition	www.flowvortex.com
The World Market for Thermal Flowmeters, 2 nd Edition	www.flowthermal.com
The World Market for Multiphase Flowmeters, 2 nd Edition	www.flowmultiphase.com
Multiphase: Module A: The World Market for Watercut Meters	www.watercutmeters.com
The World Market for Pressure Transmitters, 5 th Edition	www.pressureresearch.com
The World Market for Pressure Transducers	www.worldpressure.com
The World Market for Primary Elements, 2 nd Edition	www.flowplate.com
The World Market for Mass Flow Controllers, 3 rd Edition	www.flowmfc.com
<i>Covering a worldwide market view of all and each of the major flow measurement technologies:</i>	
Volume X: The World Market for Flowmeters, 7 th Edition	www.flowvolumex.com
Volume X: Module A: Strategies, Industries, and Applications	www.flowvolumex.com

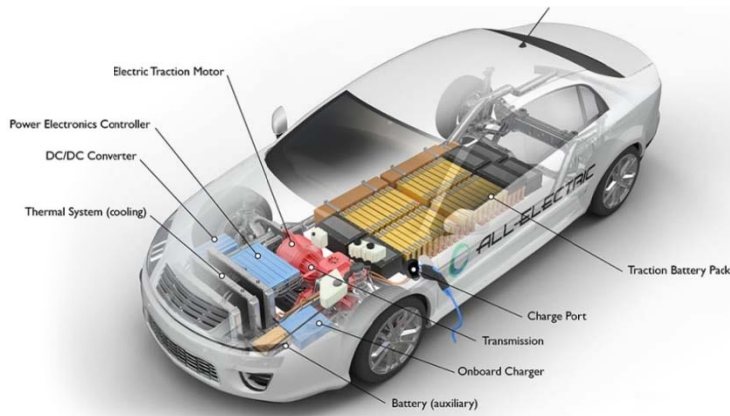
We offer the opportunity for companies to become Founding Sponsors of our studies. Benefits of being a Founding Sponsor include being able to participate in determining study scope and direction, receiving updates on study progress, and a favorable discount pricing package.

Flow Research is the only market research company whose primary mission is to research flowmeter, calibration, level device, and other process control instrumentation markets.

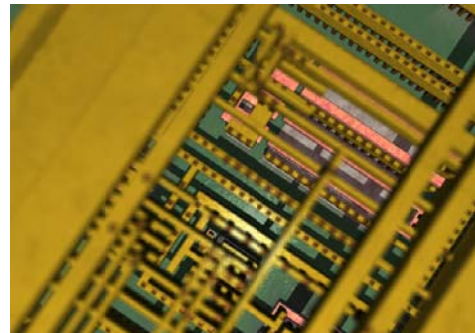
In addition to off-the-shelf studies, Flow Research specializes in **custom projects** for companies or others who want more detailed information on a specific subject. We can work with companies individually to **formulate strategies** to help them succeed in an increasingly complex world. We conduct **user surveys** that include a detailed analysis of customer perceptions.

Flow Research also offers the **Worldflow Monitoring Service** (www.worldflow.com) that provides subscribers with quarterly updates on the flow and energy industries in the *Market Barometer* and the *Energy Monitor*, plus Flash Reports and access to other information. The *Market Barometer* covers news and analysis for flowmeters, level measurement devices and some other process industries instrumentation, plus calibration. The *Energy Monitor* covers news and analysis for the oil & gas, refining, power, and renewables industries.

For more information on Flow Research, please visit our website at www.flowresearch.com.



A typical design for an all-electric fuel cell powered automobile



*An image of a silicon chip
(Author: David Carron)*



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Christian Doppler

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 +1 781 245-3200, or norm@flowresearch.com.

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