

# The World Market for Coriolis Flowmeters, 8<sup>th</sup> Edition

— OVERVIEW —



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# The World Market for Coriolis Flowmeters, 8<sup>th</sup> Edition

Flow Research is publishing a new study on the worldwide Coriolis flowmeter market, one of the fastest growing flowmeter markets. The study, *The World Market for Coriolis Flowmeters, 8<sup>th</sup> Edition*, will reveal the size of the worldwide Coriolis market in 2024, including the 2024 market shares of all major suppliers, and forecasts the market through 2029.

## Study goals:

- Determine worldwide market size for the Coriolis flowmeter market in 2024
- Determine worldwide market shares for the Coriolis flowmeter market in 2024
- Forecast market growth for all types of Coriolis flowmeters through 2029
- Segment data both on a worldwide basis and for each of the nine global regions
- Identify the industries and applications where Coriolis flowmeters are used, and market growth sectors
- Analyze products for the main companies selling into the Coriolis flowmeter market
- Provide company profiles of the main suppliers of Coriolis flowmeters
- Provide strategies to manufacturers that sell into the Coriolis flowmeter market



## Rationale for Study

Our interactions with end users and suppliers indicate that the interest in Coriolis flowmeters remains very high, especially as customer needs grow more complex and demanding.

Coriolis flowmeters are the most accurate flowmeter made, and this high accuracy – up to 0.05 percent – is one of the major reasons for their continued growth. Companies that need flowmeters for custody transfer, or want highly accurate measurements in terms of mass, have good reasons to select Coriolis flowmeters. They find that despite a relatively high price tag, Coriolis flowmeters can provide a good return on investment.

Even though Coriolis meters have a higher purchase price than many other flowmeters, they may cost less over the lifetime of the meter due to reduced maintenance costs – and most users today distinguish between purchase cost and cost of ownership. Aside from the vibrating tube, Coriolis meters do not have any moving parts subject to wear. With many companies reducing their engineering and maintenance staff, having a meter that does not require a great deal of maintenance can be a major advantage.

We believe that significant growth in the Coriolis market is due to growth in the oil & gas and other energy markets. When oil prices began dropping during the pandemic and many oil and gas exploration projects were postponed or cancelled, associated instrumentation industries experienced a ripple effect. This downturn especially impacted the Coriolis, ultrasonic, differential pressure, positive displacement, and turbine flowmeter markets. Fortunately, when oil prices began recovering in early 2021, the worldwide flowmeter market got back on a healthy upward track. More recently, Coriolis meters rebounded in 2022 and 2023 after the coronavirus pandemic slowdown. This study will reveal just how rapidly the Coriolis market is increasing. We expect that Coriolis flowmeters, which are industry-approved for custody transfer of both gas and liquids, will continue to experience strong market growth rates over the next five years.

### Key issues we address

- Frontiers of research
- Growth in the popularity of low-cost Coriolis flowmeters to reduce sticker shock
- Relative merits of single straight tube vs. dual bent tube meters
- Specific uses for single and dual straight tube meters
- Growing use for gas flow, including custody transfer
- Why large line size Coriolis meters are becoming more feasible
- Technological improvements in Coriolis flowmeters

We will also explore improvements in Coriolis technology contributing to growth. Coriolis meters now come in larger line sizes that are much better able to measure gases. Straight tube meters – which reduce fluid build-up and pressure drop – have become more accurate and reliable, thereby addressing some of the drawbacks of bent tube meters. Some suppliers also offer two-wire, loop-powered meters for cost and energy savings and use in hazardous environments.

To make Coriolis meters more attractive, some suppliers have broken price barriers by offering Coriolis meters at considerably lower price points. Although the lower-cost flowmeters do not offer the same level of performance, they do provide many of the same technological benefits.

Flow Research published the seventh edition of our worldwide Coriolis flowmeter study in August 2023. We have continued to follow the Coriolis flowmeter market regularly since then.

*The World Market for Coriolis Flowmeters, 8<sup>th</sup> Edition* analyzes overall market size and market growth forecasts in depth from 2024 to 2029, worldwide and regionally. We explore a range of growth factors as we research the market.

### Background of the Study

Flow Research has been following the Coriolis flowmeter market since we published the first edition of our worldwide Coriolis flowmeter study in 2001. We published subsequent editions in 2003, 2008, 2013, 2016, 2020, and 2023. We also include the Coriolis market in every edition of *Volume X: The World Market for Flowmeters*, our market study that includes all types of flowmeters.

In conducting our studies, we contact all known manufacturers of Coriolis flowmeters worldwide to assemble a picture of the total Coriolis flowmeter market. We ask suppliers to provide detailed

information about geographic segmentation, industries sold into, types of Coriolis flowmeters sold, and many other product segments. As a result, the study identifies where growth is occurring in the market, and the underlying factors driving that growth.

When analyzing target markets, Flow Research uses the perspective of all three segments – manufacturer, distributor/representative, and end user. We maintain regular communication with all three of these groups in order to be best positioned to note both subtle and significant shifts in technologies or buying patterns.

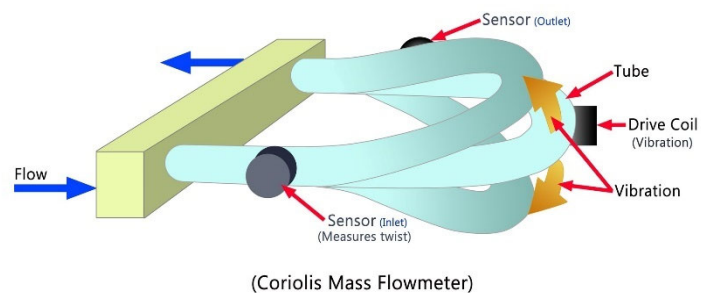
## A Chapter on History and Principles of Operation

Flow Research has expanded coverage of the history and principles of operation of Coriolis flowmeters, giving it its own whole chapter. Learn about important developments, how they came to be, and how they work.

## Segmentation

### Geographic Segmentation

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



### Shipments of Coriolis Flowmeters

Worldwide and by region  
In dollars and units

### Average Selling Prices by Technology

- Worldwide
- By Region

For the first time, we are dividing some of the study segmentation by the following four categories.

### Technology

- Single Bent Tube
- Dual Bent Tube (including four tube)
- Single Straight Tube
- Dual Straight Tube

### 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 and where
- Make more informed decisions

### Fluid Type

- Petroleum Liquids
- Non-petroleum Liquids
- Gas
- Steam

### Mounting Type

- Integral (compact)
- Remote

### Sensor Tube Material

- Stainless Steel
- Hastelloy C<sup>®</sup>
- Titanium
- Duplex/Super Duplex
- Other

### Gas Applications

- Custody Transfer of Natural Gas
- Allocation Metering
- In-plant Process Measurement
- Industrial Gases (not in Process Measurement)
- CNG (Compressed Natural Gas)
- Dispensing
- Utility Metering
- Hydrogen Measurement
- Biogas/Renewable Natural Gas
- CCUS (Carbon Capture Utilization and Storage)
- Other

### Petroleum Liquid Applications:

- Custody Transfer: Upstream/Mid-stream
- Custody Transfer: Downstream
- Allocation Metering
- LNG (Liquefied Natural Gas)
- Batch Filling
- In-Plant Process Measurement
- Other

### Flow Research Partnership Program

We invite you to become a Partner in this study by pre-ordering the study before it is published. As a Study Partner you can:

- Receive early data before publication
- Enjoy a significant discount on the regular price of the study
- Pay over time in several installments

For more details, please contact Jesse Yoder at +1 781 245-3200 or [jesse@flowresearch.com](mailto:jesse@flowresearch.com).



### Non-petroleum Liquid Applications:

- Custody Transfer of Non-petroleum Liquids
- In-plant Process Measurement
- Batch/Filling
- Other

### Communication Protocol

- 4-20mA without HART
- 4-20mA with HART
- Ethernet IP
- Foundation Fieldbus™
- Modbus
- PROFINET®
- Profibus®DP
- Profibus®PA
- APL
- IO-Link
- Proprietary Digital
- Other

### Line Size

- <1/4 inch (<6.35 mm)
- 1/4 inch (6.35 mm)
- 1/2 inch (12.7 mm)
- 3/4 inch (19.05 mm)
- 1 inch (25.4 mm)
- 2 inches (50.8 mm)
- 3 inches (76.2 mm)
- 4 inches (101.6 mm)
- 6 inches (152.4 mm)
- 8 – 10 inches (203.2 – 254 mm)
- >10 – 16 inches (>254 mm – 406.4 mm)

### Temperature

- High Temperature (>200°C)
- Low Temperature (Cryogenic: <-50°C)
- All the rest (-50°C – 200°C)

### Accuracy Level by Fluid Type

<i>Gas</i>	<i>Liquids</i>
• ≤ 0.25%	• ≤ 0.1%
• 0.5%	• 0.25%
• ≥ 1.0%	• 0.5%
	• ≥ 1.0%

### History and Application of Coriolis Flowmeters

Coriolis flowmeters are a relatively recent entrant into the market. In 1977, Micro Motion introduced the first Coriolis flowmeter for laboratory applications. Since that time, a number of other suppliers have entered the market, including KROHNE, Endress+Hauser, Yokogawa, Rheonik, and ABB.

Coriolis suppliers have introduced a wide variety of models and types of Coriolis flowmeters in the past 40 years. Endress+Hauser, KROHNE, and Micro Motion have all introduced large Coriolis meters for oil, gas, and other fluids. The use of Coriolis flowmeters in multiphase flow measurement is another recently developed application.

Coriolis suppliers differentiate themselves in a number of ways. One is by the proprietary design of the bent tubes in their Coriolis flowmeters. Another is by the different types of straight tube Coriolis flowmeters that they offer.

Suppliers also compete by bringing out Coriolis flowmeters for particular industries and applications, such as water, food & beverage, and pharmaceutical. Accuracy and other performance specifications are other areas of supplier differentiation.

## Industry

- Oil & Gas
- Refining
- Chemical
- Food & Beverage
- Life Sciences (Pharmaceutical/Biotechnology)
- Pulp & Paper
- Metals & Mining
- Power
- Water & Wastewater
- Medical
- Other

## Distribution Channel

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



*Beverage processing plant production line*

## Customer Type

- End users
- Original equipment manufacturers (OEMs)
- Systems integrators
- Engineering companies

## Market Shares of Coriolis Flowmeter Manufacturers

- Worldwide and for each geographic region

## Strategies for Success

Based on Flow Research's many years of experience with the market and suppliers, this chapter includes a wealth of ideas to consider, including:

- Competitive points of product emphasis
- Strategies for being competitive in the Coriolis flowmeter market
- Pursuing new applications
- Customer education and other market strategies and tactics
- And more.

## Company Profiles

Business profiles of many suppliers of Coriolis flowmeters, with

- Histories
- Current organization
- Overall product line summaries
- Company strategies

**We are profiling these companies:**

- ABB
- Alicat Scientific
- Badger Meter
- Beijing Sincerity Automatic Equipment Co., Ltd.
- Bopp & Reuther Messtechnik
- Bronkhorst High-Tech B.V.
- Emerson (Micro Motion)
- Endress+Hauser
- ITW: Brooks Instrument
- Jiangsu BCST Group Co. Ltd
- KOBOLD: Heinrichs
- KROHNE
- OVAL Corporation
- Rheonik Messtechnik
- Schneider Electric: Foxboro
- Sensia
- Shanghai Yinuo Instrument
- Siemens
- TASI Group:  
KEM Küppers, AW-Lake
- Tokyo Keiso
- Walsn Limited
- Xi'an Dongfeng Machinery & Electronic
- Yokogawa

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*Gustave Coriolis*



## Flow Research, Inc.

Flow Research is the only market research company that publishes studies on all nine flowmeter types and whose primary mission is to research process control instrumentation markets. In addition to studies on both new and conventional flowmeter types, we have researched pressure transmitters; temperature sensors and transmitters, infrared thermometers and thermal imagers; level devices; analytical instrumentation; and selected API-certified valves. We also publish studies on oil & gas and other major flowmeter markets. In addition, Flow Research started a working group on flowmeter calibration (FRWG.org) and published two studies on flowmeter calibration facilities, one each for liquids and gas.



*Dr. Jesse Yoder, president and founder of Flow Research*

## Partnerships and Alliances

Flow Research helps flowmeter companies form alliances and partnerships to provide specific solutions or broaden their customer base and distribution channels. These partnerships can include manufacturers of valves, hoses, transmitters, or other flow-related products, as well as other flowmeter manufacturers.

## Distributorships

Are you thinking about expanding your presence in the U.S.? We can help you find distributors for your flowmeters and other instrumentation.

## Custom Projects

Companies commission us for custom projects when they want more detailed information on a specific subject than is possible in an off-the-shelf report. They may be evaluating the future or expansion of a product line, determining whether to acquire or merge with another company, or seeking to better understand their customer needs.

## Consulting

We also work with companies individually to formulate strategies that help them succeed in an increasingly complex world. Dr. Yoder and his team have studied hundreds of companies and have advised most of the top flowmeter suppliers on market and product strategies.

## Research Team Background

**Dr. Jesse Yoder**, the lead analyst for this study, is President of Flow Research Inc., which he founded in 1998. He has worked as a writer and analyst in process control and instrumentation since 1987 and has created market research studies since 1990. Since then, he has written over 300 market research studies, most of them on flow and instrumentation, and over 320 articles on flow and instrumentation for trade journals. (See [www.flowarticles.com](http://www.flowarticles.com).)

Dr. Yoder received a PhD in philosophy from the University of Massachusetts Amherst in 1984 and spent 10 years as an adjunct philosophy professor at the University of Massachusetts Lowell and Lafayette College. Dr. Yoder also worked 10 years as a technical writer, including for the

process control division of Siemens, and taught technical writing at Northeastern University and UMass Lowell.

Dr. Yoder has received two U.S. patents for the flowtube meter, a new dual tube/dual sensor method of measuring flow, in 2015 and 2017. This meter's two prototypes have been tested at CEESI in Nunn, Colorado.

CRC Press published Dr. Yoder's two-book set, *Advances in Flowmeter Technology*, on the history, operating principles, growth factors, representative companies, and frontiers of research for all 10 types of flowmeters. The first volume, *New-Technology Flowmeters*, published September 6, 2022, was followed by *Conventional Flowmeters* on December 15, 2022.

In 2015, ISA published Dr. Yoder's book, *The Tao of Measurement*, with Richard E. Morley as co-contributor. Topics included temperature, pressure, flow, time, length, and area.

### Other Flow Research Staff



*Belinda Burum*

**Belinda Burum**, Vice President, joined Flow Research in 2002. Since then, she has served as senior strategic advisor and been involved with most of our projects and publications. She has also worked as a writer and editor in journalism, advertising, and high tech marketing communications and customer references for 40+ years in the U.S. and Switzerland and is a published author and book editor. She has travelled extensively and enjoyed teaching English in Massachusetts, California, and Ecuador.

**Leslie Buchanan**, Research and Publication Production Associate, joined Flow Research in 2010 with skills from work and life experiences here and abroad. She assists with research and writing, and handles many publication aspects of Flow Research studies.

**Dan Sparks**, Research Director, earned a PhD in chemistry from the University of North Carolina, Chapel Hill. He served as director of product management and director of business development for Omega Engineering in Norwalk, Connecticut until February 2023, and before that was marketing director at Watlow; vice president and general manager at MTS Systems; and engineering director at Thermo Nicolet. We are glad to have him on board.



*Dan Sparks*

*For more information on Flow Research, please visit our website at [www.flowresearch.com](http://www.flowresearch.com). Please follow us on Facebook, LinkedIn, Twitter, and Instagram. We also invite you to join our Flow Research LinkedIn group.*

## Recent and Currently Scheduled Flow Research Studies

### New-Technology Flowmeter Studies

The World Market for Coriolis Flowmeters, 8 <sup>th</sup> Edition	<a href="http://www.flowcoriolis.com">www.flowcoriolis.com</a>
The World Market for Magnetic Flowmeters, 8 <sup>th</sup> Edition	<a href="http://www.flowmags.com">www.flowmags.com</a>
The World Market for Ultrasonic Flowmeters, 7 <sup>th</sup> Edition	<a href="http://www.flowultrasonic.com">www.flowultrasonic.com</a>
The World Market for Vortex Flowmeters, 7 <sup>th</sup> Edition	<a href="http://www.flowvortex.com">www.flowvortex.com</a>
The World Market for Thermal Flowmeters, 3 <sup>rd</sup> Edition	<a href="http://www.flowthermal.com">www.flowthermal.com</a>
The World Market for Mass Flow Controllers, 4 <sup>th</sup> Edition	<a href="http://www.flowmfc.com">www.flowmfc.com</a>
The World Market Update for Mass Flow Controllers	<a href="http://www.flowmfc.com">www.flowmfc.com</a>
The World Market for Multiphase Flowmeters, 2 <sup>nd</sup> Edition	<a href="http://www.flowmultiphase.com">www.flowmultiphase.com</a>
Multiphase: Module A: The World Market for Watercut Meters	<a href="http://www.watercutmeters.com">www.watercutmeters.com</a>

### New-Technology Market Updates for 2025

The World Market Update for Magnetic Flowmeters	<a href="http://www.flowmags.com">www.flowmags.com</a>
The World Market Update for Ultrasonic Flowmeters,	<a href="http://www.flowultrasonic.com">www.flowultrasonic.com</a>
The World Market Update for Vortex Flowmeters	<a href="http://www.flowvortex.com">www.flowvortex.com</a>
The World Market Update for Thermal Flowmeters	<a href="http://www.flowthermal.com">www.flowthermal.com</a>

### Conventional Flowmeter Studies

The World Market for Pressure Transmitters, 5 <sup>th</sup> Edition	<a href="http://www.worldpressure.com">www.worldpressure.com</a>
The World Market for Primary Elements, 3 <sup>rd</sup> Edition	<a href="http://www.flowplate.com">www.flowplate.com</a>
The World Market for Positive Displacement Flowmeters, 3 <sup>rd</sup> Edition	<a href="http://www.flowpd.com">www.flowpd.com</a>
The World Market for Turbine Flowmeters, 3 <sup>rd</sup> Edition	<a href="http://www.flowturbine.com">www.flowturbine.com</a>
The World Market for Variable Area Flowmeters	<a href="http://www.flowva.com">www.flowva.com</a>

### Cross-Technology Flowmeter Studies

Volume X: The World Market for Flowmeters, 9 <sup>th</sup> Edition	<a href="http://www.flowvolumex.com">www.flowvolumex.com</a>
Volume X: Module A: Strategies, Industries, and Applications	<a href="http://www.flowvolumex.com">www.flowvolumex.com</a>
The World Market for Gas Flow Measurement, 5 <sup>th</sup> Edition	<a href="http://www.gasflows.com">www.gasflows.com</a>
Gas Module A: Applications and Strategies for Conventional and Renewable Gas Flow Measurement	<a href="http://www.gasflows.com">www.gasflows.com</a>
Flowmeters in the Oil & Gas Industry	<a href="http://www.oilflows.com">www.oilflows.com</a>

### Flow Calibration Studies

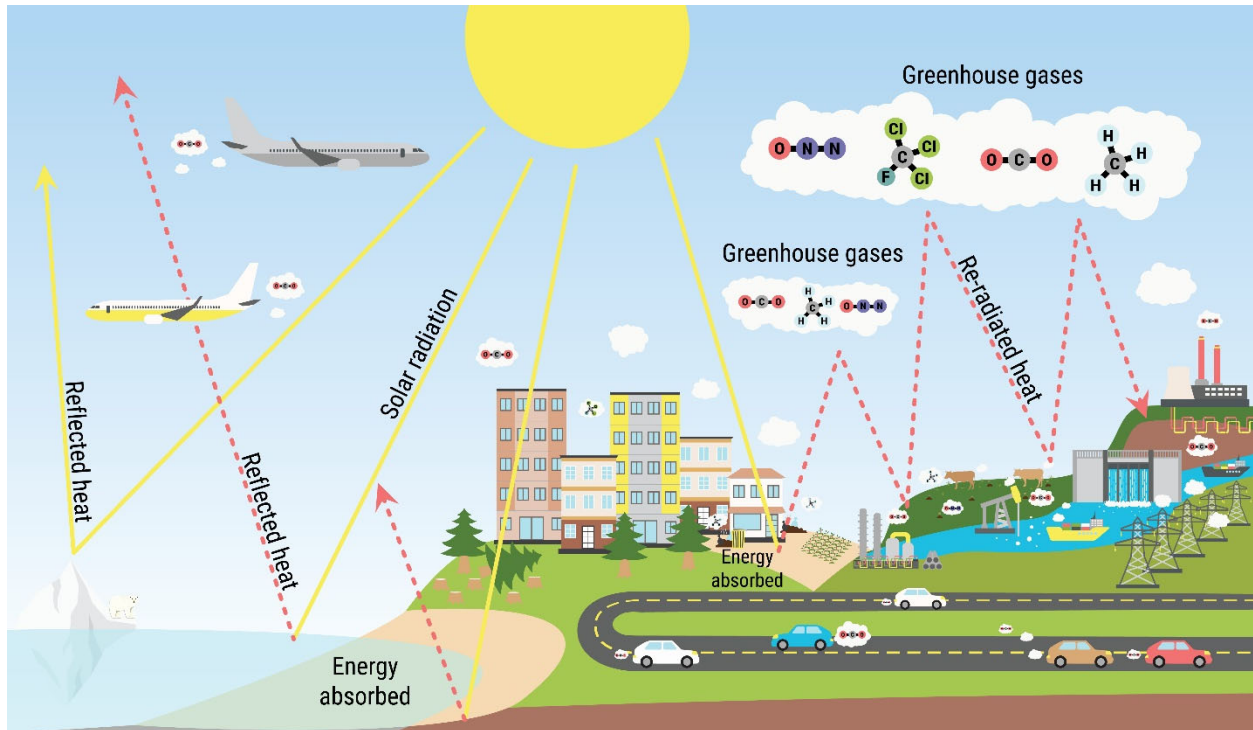
Core Study: Worldwide Gas Flow Calibration Facilities and Markets	<a href="http://www.flowcalibration.org">www.flowcalibration.org</a>
Module A: Worldwide Liquid Flow Calibration Facilities and Markets	<a href="http://www.flowcalibration.org">www.flowcalibration.org</a>

### Temperature

Market for Temperature Sensors in the Americas, 3 <sup>rd</sup> Edition	<a href="http://www.tempresearch.com">www.tempresearch.com</a>
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### Why Flow Research? Because we . . .

- Are the only company whose sole focus is the flowmeter instrumentation market
- Research all new-technology and conventional flowmeters
- Contact every known supplier
- Offer our studies in both electronic and color-printed hardcopy versions
- Draw on flowmeter data dating back to 1992, when we began actively following the market