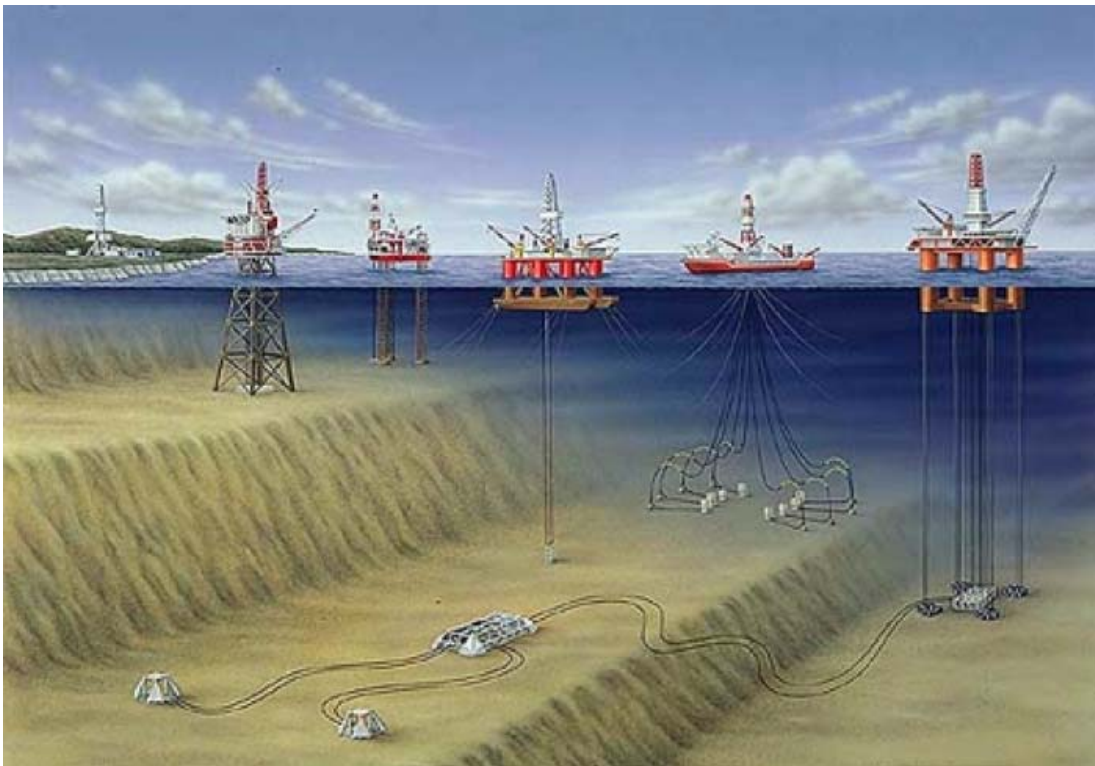


The World Market for Multiphase Flowmeters

-- Proposal --



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Scheduled Publication: Q2 2015

Flow Research will do a new edition of our popular study on the worldwide multiphase flowmeter market. The primary goal is to determine the size of this flowmeter market in 2014. Forecasts through 2019 will be included. This study, *The World Market for Multiphase Flowmeters*, will be available as *Module E* within a suite of studies contained in *The World Market for Natural Gas and Gas Flow Measurement, 3rd Edition*. This study will also be available through separate purchase.

This study has multiple objectives:

- To determine worldwide 2014 market size for multiphase flowmeters
- To determine worldwide 2014 market shares for multiphase flowmeters
- To forecast market growth for all types of multiphase flowmeters through 2019
- To identify the industries and applications where multiphase flowmeters are used, and to identify market growth sectors
- To provide a product analysis for the main companies selling into the multiphase flowmeter market
- To provide strategies to manufacturers for selling into the multiphase flowmeter market
- To provide company profiles of the main suppliers of multiphase flowmeters.

Rationale for Study

Oil and gas well operators are discovering the economic and flow management benefits of technologies that provide reliable real time data on oil and gas flows. Increasingly, the complex demands of managing oil and gas reservoir assets require more sophisticated tools so that producers may improve operating margins in the highly competitive and volatile energy market.

Today's exploration and production environment is filled with potential investment, environmental, and personnel risks as new methods are employed to extract valuable energy resources in areas previously not utilized, and to profitably continue production in wells and fields once considered near depletion. This is particularly true in the offshore and subsea environments where much of today's exploration and production activity is taking place.

At the same time, traditional single- and dual-flow flow measurement ideals such as non-restrictive measurement points, high reliability of accuracy and repeatability, and lengthy lifecycles are still being improved through ongoing research and development. Multiphase metering instrumentation has always promised reservoir managers the confidence to more effectively and more safely operate topside, offshore, and subsea wells – but over the years has often failed to adequately deliver on that promise.

There has been significant R&D investment in multiphase metering as companies compete within this ever-enlarging market. Important technical developments have taken place in the use of radioactive materials and in non-radioactive measurement technologies alike. Much development has focused on the elimination of radioactive materials from integrated design technologies as a way to reduce initial capital costs and ongoing safety concerns.

In the meantime, world economies have essentially recovered from the depths of the recession – but world oil prices have slumped. Multiphase flowmeter manufacturers are faced with introducing a premium product into a market that has demanded the product and its several operational benefits, but is also wary of its high cost and uncertain of its utility in field. And, remarkably, some of the most promising product innovations have resulted from collaborations between well operators and multiphase flowmeter suppliers – a truly rare combination.

For these reasons and more we believe that this is an optimal time to report on multiphase metering.

Background of Study

The accurate measurement of three-phase fluids in the oil and gas industry has never been more important. There are profits to be made in an economically efficient depletion of an existing well as opposed to exploring for new sources of oil and gas. The decisions here have been how and when to ramp up investments in time, personnel, and capital goods to extend production.

Complicating matters is the fact that the acquisition of data to make intelligent assessments of well performance has often been difficult, while secondary recovery methods are costly. Multiphase flowmeters are designed to provide this data in real time, but have traditionally not been reliable enough to fulfill their role as sole data source.

Multiphase flowmeters are also designed to perform measurement functions traditionally provided by multiple equipment types (e.g., separators, water cut meters), and in a smaller footprint – a real value in the expanding offshore market. Furthermore, multiphase flowmeters can also be designed to be deployed on a portable basis or in use with manifolds where they can dynamically measure multiple well heads.



The Safire multiphase flowmeter undergoing extended testing

Increasingly, the complex demands of managing oil and gas reservoir assets require more sophisticated tools so that producers may improve operating margins in the highly competitive energy market.

Today's exploration and production environment is filled with potential investment, environmental, and personnel risks as new methods are employed to extract valuable energy resources in areas previously not utilized. At the same time, traditional flow measurement ideals such as non-restrictive measurement points, high reliability of accuracy and repeatability, and lengthy life cycles are still in play. Multiphase metering instrumentation offers reservoir managers the confidence to more effectively and more safely operate topside, offshore, and subsea wells.

The next few pages provide an outline of the essential issues that will be addressed upon the completion of this study, and how the results of this study may benefit you and your company.

Operating Principle

Multiphase flowmeters are generally found to have highest utility in the oil and gas industry. This value is largely based on their ability to simultaneously measure the proportional content of oil, water, and gas streaming at the wellhead. There are multiple technologies presently employed by manufacturers to satisfy this application, and we have explored all of them. The instrumentation is presently costly on a per unit basis, but much in demand. Suppliers are concentrating their efforts to develop improved multiphase measurement techniques at a lower cost to end-users.

Key issues to be addressed in Module E

This study addresses the following key issues in the multiphase flowmeter market:

- Factors causing the market to grow
- Growth in the use of multiphase flowmeters
- The future of multiphase in custody transfer applications
- The use of multiphase flowmeters in oil and gas applications
- The increased number of suppliers in the multiphase flowmeter market
- The importance of electromagnetic radiation technology and its future in this market
- New product and technology developments
- Growth strategies for multiphase flowmeter suppliers

Module E

Multiphase flowmeters have application in both the gas and oil industries. For this reason, this study is a module titled "Module E" within two distinct study groups. The two study groups are independently focused on gas measurement and on petroleum liquids measurement. These study groups can be reviewed by visiting our web address at www.flowresearch.com and searching the *Gas & Oil Studies* tab. Module E will also be available as a standalone treatment of its subject.

Proposed Segmentation

The segmentation for this study is as follows:

Geographic Segmentation

This study provides market size, market forecasts and company market share data in multiple categories for the following geographic regions:

- North America (United States and Canada)
- Western Europe
- Eastern Europe/FSU (Former Soviet Union)
- Mideast/Africa
- Japan
- China
- Asia/Pacific (without Japan/China)
- Latin America (Mexico, Central America, and South America)



Europe has been a primary source of multiphase flowmeter research and development.

Use by Well Type

- New (initial installation)
- Existing (retrofit installation)

Usage by Application Site

- Topside (land-based)
- Offshore (platform-based)
- Subsea

Use of Radioactive Material

- Gamma
- Other
- None

Measurement Configuration

- Before a separation rig or separator
- After a separation rig or separator
- Without the use of a separator rig or separator

Use by Oil Production Rate

- ≤ 25 barrels per day (bbl/d)
- > 25 and ≤ 100 bbl/d
- > 100 and ≤ 750 bbl/d
- > 750 bbl/d



ABB's Vega Isokinetic Sampling (VIS) multiphase flow meter

Multiphase Flowmeters by Application

- Fiscal monitoring (Custody Transfer)
- Allocation monitoring
- Reservoir monitoring
- Other applications

Strategies for Success

- Discussion of market forces at work
- Technical developments
- Strategic action perspectives
- Acquisitions and product partnerships
- Forming alliances to enhance product offerings



Flowmeters by Sales Channel

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

Flowmeters by Customer Type

This flowmeter market is segmented according to the following customer types, and will include discussion of operators by type (e.g., national oil company, independent oil company):

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

Company Profiles

Complete company profiles on the leading multiphase flowmeter suppliers are included. The following is a partial list of the companies profiled in this study:

- ABB
- Agar Corporation
- Framo Engineering
- Jiskoot (Cameron Measurement Systems)
- Multiphase Meters
- Neftemer
- OneSubsea
- Phase Dynamics
- Roxar (Emerson Process Management)
- Schlumberger
- Solartron ISA

+ **Average pricing data**

+ **Obstacles to growth**

+ **Reasons behind multiphase metering success**

+ **Quantified growth rates worldwide and by region**

+ **Comprehensive technology analyses and supplier profiles**

Publication Date

This study will be published in Q2 2015.

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 180 market research studies, most of them regarding flow and instrumentation. Dr. Yoder has also written more than 240 articles on flow and instrumentation for trade journals. Links to many of these can be found at www.flowarticles.com.

Norm Weeks, Senior Market Analyst, joined Flow Research in 2004 after a 24-year stint with Verizon. Norm's previous experiences include serving as Director of the Urban Fellows Institute in New York, and being a Customer Services manager at Automatic Data Processing. At Verizon, Norm specialized in creating innovative solutions for national and international enterprises, introducing new products and lifecycle management, and product marketing. At Flow Research, his contributions in development, research and writing have been significant to studies, custom projects, White Papers, and Worldflow's *Energy Monitor* and *Market Barometer*.

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.

Nicole Riordan, Director of Marketing, joined Flow Research in 2009. She provides valuable assistance with many functions in the office, and heads our marketing and direct outreach efforts.

Vicki Tuck, Administrative Assistant, joined Flow Research in June, 2012. She has experience in both the fast-paced law firms of Boston, and in various nonprofit organizations. In addition to administrative support, she also collects news for Flow Research publications.

Christina Glaser, a Research Analyst, is a seasoned software programmer, systems architect, and developer with significant website experience. In addition to her technical talent, she brings significant customer savvy, with clients that have ranged from Staples to Microsoft.

Rich West, Research Associate, joined Flow Research in 2014 and has had an immediate impact in customer service relations and media administration. He also provides updates and input to manufacturer databases that are maintained for a variety of research purposes.

Recent and Scheduled Flow Research studies:

- I. The World Market for Coriolis Flowmeters, 4th Edition www.flowcoriolis.com
- II. The World Market for Magnetic Flowmeters, 5th Edition www.flowmags.com
- III. The World Market for Ultrasonic Flowmeters, 4th Edition www.flowultrasonic.com
- IV. The World Market for Vortex Flowmeters, 5th Edition www.flowvortex.com
- V. The World Market for Differential Pressure (DP) Flowmeters & Primary Elements www.flowdp.com
- VI. Worldwide Survey of Flowmeter Users, 2nd Edition
- VII. The World Market for Positive Displacement Flowmeters, 2nd Edition www.flowpd.com
- VIII. The World Market for Turbine Flowmeters, 2nd Edition www.flowturbine.com
- IX. The World Market for Pressure Transmitters, 4th Edition www.pressureresearch.com
- X. The World Market for Flowmeters, 4th Edition www.flowvolumex.com
- XI. The World Market for Natural Gas and Gas Flow Measurement, 3rd Edition www.gasflows.com
- XII. The World Market for Steam Flow Measurement www.steamflows.com
- XIII. The World Market for Oil and Oil Flow Measurement www.oilflows.com
- XIV. The World Market for Thermal Flowmeters www.flowthermal.com
- XV. The World Market Mass for Flow Controllers, 2nd Edition www.flowMFC.com
- XVI. The World Market for Liquid Analytical Instruments www.flowanalytical.com

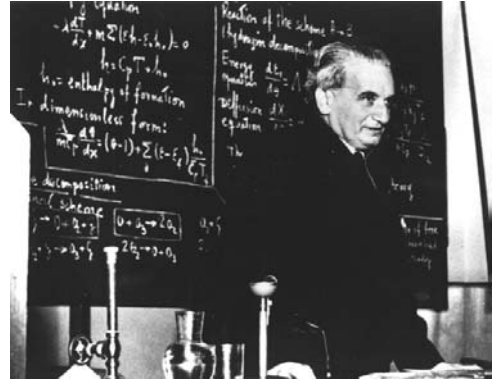
These above flow studies and others are described at www.flowstudies.com

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 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.



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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.

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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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