

We create change in flow

**energy monitor**  
Q1 2018



**equinor**

*Statoil rebrands as Equinor*

## Oil & Gas and Refining Power & Renewables

### Focus this issue

**Issues and Perspectives:**

3<sup>rd</sup> meeting of Flow Recalibration  
Working Group

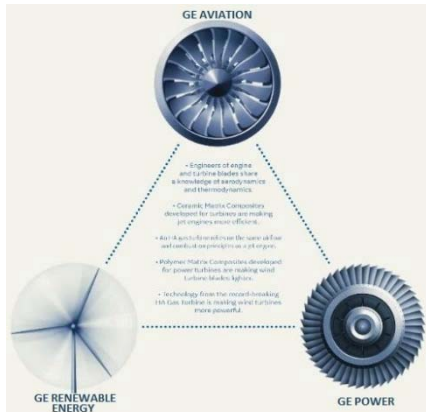
Comments from enduser survey

**Global Spotlight:**

OPEC

**Company Korner:**

GE refocuses



*GE refocuses*



**Flow Research, Inc.**



*Flowtime Wall Clock*



# EZ Faxback Response Form

Please use this form to request more information about any of the studies below. Return by mail, email or fax.

√ Put a checkmark next to the studies you would like more information about.

## New-Technology Flowmeter Studies

- The World Market for Coriolis Flowmeters, 5<sup>th</sup> Edition
- The World Market for Magnetic Flowmeters, 6<sup>th</sup> Edition
- The World Market for Ultrasonic Flowmeters, 5<sup>th</sup> Edition
- The World Market for Vortex Flowmeters, 6<sup>th</sup> Edition
- The World Market for Thermal Flowmeters, 2<sup>nd</sup> Edition
- The World Market for Mass Flow Controllers, 3<sup>rd</sup> Edition
- The World Market for Multiphase Flowmeters, 2<sup>nd</sup> Edition
- Multiphase: Module A: The World Market for Watercut Meters

## Website

- [www.flowcoriolis.com](http://www.flowcoriolis.com)
- [www.flowmags.com](http://www.flowmags.com)
- [www.flowultrasonic.com](http://www.flowultrasonic.com)
- [www.flowvortex.com](http://www.flowvortex.com)
- [www.flowthermal.com](http://www.flowthermal.com)
- [www.flowmfc.com](http://www.flowmfc.com)
- [www.flowmultiphase.com](http://www.flowmultiphase.com)
- [www.watercutmeters.com](http://www.watercutmeters.com)

## Traditional Technology Flowmeter Studies

- The World Market for Pressure Transmitters, 5<sup>th</sup> Edition
- The World Market for Pressure Transducers
- The World Market for Positive Displacement Flowmeters, 2<sup>nd</sup> Edition
- The World Market for Turbine Flowmeters, 2<sup>nd</sup> Edition

- [www.pressureresearch.com](http://www.pressureresearch.com)
- [www.pressureresearch.com](http://www.pressureresearch.com)
- [www.flowpd.com](http://www.flowpd.com)
- [www.flowturbine.com](http://www.flowturbine.com)

## Cross-Technology Flowmeter Studies

- Volume X: The World Market for Flowmeters, 7<sup>th</sup> Edition
- Volume X: Module A: Strategies, Industries, and Applications
- The World Market for Natural Gas and Gas Flow Measurement, 3<sup>rd</sup> Ed.
- The World Market for Oil and Oil Flow Measurement

- [www.flowvolumex.com](http://www.flowvolumex.com)
- [www.flowvolumex.com](http://www.flowvolumex.com)
- [www.gasflows.com](http://www.gasflows.com)
- [www.oilflows.com](http://www.oilflows.com)

## Flow Calibration

- Core Study: The World Market for Gas Flow Calibration Facilities
- Module A: The World Market for Liquid Flow Calibration Facilities

- [www.flowcalibration.org](http://www.flowcalibration.org)

## Temperature

- The Market for Temperature Sensors in the Americas, 3<sup>rd</sup> Edition

- [www.tempresearch.com](http://www.tempresearch.com)

## Worldflow Monitoring Service

- [www.worldflow.com](http://www.worldflow.com)

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# Energy Monitor Q1 2018

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*Bergen, Norway*

*Photo by Flow Research*

The **Energy Monitor** is part of the Worldflow Monitoring Service. Other publications include the **Market Barometer** and **Flash Reports**. **Worldflow Online** provides more in-depth information and analysis about the instrumentation business.

Here is our upcoming **Worldflow** schedule:

*Q2 2018*

**Market Barometer** — August 2018

**Energy Monitor** — September 2018

*Q3 2018*

**Market Barometer** — October 2018

**Energy Monitor** — November 2018

*Q4 2018*

**Market Barometer** — December 2018

**Energy Monitor** — January 2019



## **Issues and Perspectives: FRWG**

### **Summary of the Third Meeting of the FRWG on June 21, 2018**

*By Jesse Yoder, PhD, Flow Research*

On June 21, 2018, the Flow Recalibration Working Group (FRWG) held its third meeting. The Working Group has been meeting for the past several years at the CEESI Custody Transfer Conference, held annually in June.

The group began by reviewing the activities of the past year. In our 2017 meeting, we had agreed to finalize the enduser questionnaire that was circulated to members prior to the 2017 meeting. Flow Research received comments on this survey during the second half of 2017. On March 18, 2018, an email was sent to FRWG members announcing that the user survey questionnaire was complete.



On April 1, 2018, Flow Research began sending the questionnaires to endusers. By July 15, 2018, we had received a sufficient number of responses to create a meaningful summary of the results. We are currently summarizing the totals, including additional comments relating to specific aspects of flow calibration.

#### **White Papers Discussed**

One idea proposed in the meeting was to do a whitepaper on recalibration of each flowmeter type. While these whitepapers may not be the final word on recalibration criteria, they would enable us to incorporate the results of our enduser survey. It would also give us a chance to discuss the relative importance of verification and diagnostics in relation to recalibration. We can also include some important definitions that will help clarify the subject.

The Working Group decided that we would aim to have our first whitepaper done by January 2019. Our initial plan is to do whitepapers on ultrasonic, Coriolis, and turbine flowmeters.

#### **Finding Out Which Countries Have Regulations About Recalibration**

One group member has volunteered to look into what countries in Europe have specific regulations about recalibration and what they are. This is very helpful. We also need someone to look at countries in Asia, Africa, and the Americas. If anyone would like to volunteer to work with Didier on this project, or would be willing to take a group of countries to look into, please let me know. I'm not sure how to proceed except to try to find a relevant agency within the country to contact. Alternatively, some of this information may be available on the Internet.

#### **Next Meeting**

We are planning to meet again at the CEESI Custody Transfer Conference in June 2019.

#### **Summary**

I think we have accomplished a lot in three years. Certainly having the recalibration enduser survey done is a major achievement. We are also building awareness of the importance of this issue within the industry. I am also grateful to the companies that have supported the FRWG by

supporting the presence of their members on our Working Group. We plan to use the success of our enduser survey as the feedstock for the whitepapers we plan to write.

For more information on the FRWG, go to [www.frwg.org](http://www.frwg.org). If you are a flowmeter user who is concerned with flowmeter recalibration, we invite you to download the user survey form from this website and send it in. We plan to continue to collect data on this topic that is vitally important to the flowmeter community.

## **Comments from the Flow Recalibration Working Group (FRWG) Enduser Survey Questionnaire**

The enduser survey included a number of write-in spaces and ended with one especially asking for comments. This got quite a broad and varied response. Here is a collection of comments. *(Each respondent's set is separated from others by a line of asterisks.)*

### **Q. Do you have any other comments that you believe would help us understand how to determine when a flowmeter should be recalibrated and how often?**

I would be interested in the results of your investigation. As a flowmeter equipment provider, I would be curious what others have to say on this topic. I believe the criteria for calibration intervals are complex because of varying needs, situations and criteria.

\*\*\*\*\*

I feel flowmeters should be calibrated based on the diagnostic information and deviation from baseline data /trend. Generally, I feel people tend to weigh the option of calibrating the meter or not calibrating the meter based on the commercial cost involved in the calibration and on downtime, unless forced by contractual obligations or regulatory requirement.

\*\*\*\*\*

We have put in place a procedure for calibration. We have taken the manufacturer's suggested PM, our in house failure data, API regulations and material specs to calculate the time between recalibration.

\*\*\*\*\*

As a college and using flowmeters in our research requires that these get calibrated at the start of each project. We also use flowmeters in all our in house experiments for teaching our students. These are done yearly by students to understand accuracy.

\*\*\*\*\*

Use diagnostics

\*\*\*\*\*

Our strategic flowmeters are, in order of importance, Coriolis, magnetic, and vortex. Vortex is a distant third. As ultrasonic has improved in the last few years we are going to take a look at it for some specific applications, but we generally need smaller line sizes than the technology has been developed for so far. A 3" Coriolis meter is a large meter for us and we have very few