

## A Solution to Meet the Changing Demands of Oil & Gas Measurement

**M**ultiphase flowmeters are used in oil & gas production to determine the mixture and amount of oil, gas and water coming out of the well. This measurement used to only be possible after the fluids were physically separated. Multiphase flow measurement gained significance when the prospective decline in production of the North Sea oil fields made it necessary to find a way to analyze the increasing amounts of gas and water that were becoming a greater part of the fluid from the wells. Several research projects were undertaken at that time to develop multiphase technology that could provide this analysis on fluids as they came out of the wells. Much of the research still centers in areas near the North Sea, and many companies offering multiphase flowmeters are international.

Norway has become a center of product and development for multiphase and ultrasonic flowmeters because of the presence of Christian Michelsen Research (CMR, [www.cmr.no](http://www.cmr.no)), located in Bergen. The Christian Michelsen Institute did the research from 1982 to 1985 to create the Fluenta flare gas meter, and in 1985 founded Fluenta ([www.fluenta.com](http://www.fluenta.com)), which is still a supplier of ultrasonic flare gas meters.

Today a number of multiphase companies call Norway home, including Roxar (Stavenger, [www.roxar.com](http://www.roxar.com)), Multi Phase Meter (MPM) (Stavenger, [www.mpm-no.com](http://www.mpm-no.com)), Framo Engineering (Bergen, [www.slb.com/services/subsea.aspx](http://www.slb.com/services/subsea.aspx)), and Abbon (Rud, [www.abbon.com](http://www.abbon.com)).

Multiphase technology promises significant benefits to well operators. However, these complex instruments combine multiple technologies and therefore demand that the operator be well-versed in the physics of the instrument in addition to its construction, installation, and use. The reduced number of trained engineers familiar with flow and flow technologies is a serious concern to multiphase flowmeter suppliers, as the field performance of multiphase devices is so

dependent on the operators' adaptability and their ability to configure the instrument within a dynamic application.

Multiphase flowmeters offer multiple advantages:

- ✓ They reduce the need for hardware installed on topside (onshore), offshore, and subsea applications. Because they reduce or eliminate the need for dedicated test separators by measuring flow at the wellhead, multiphase meters save on platform space and make it possible to drill with a smaller equipment footprint.

- ✓ Multiphase flowmeters make it unnecessary to individually test the performance of each individual well, since the data from a multiphase meter can provide similar data. This is especially important for subsea applications where the well testing flowlines can be especially long. Multiphase meters can reduce or eliminate the need for separate well-testing lines.

- ✓ Multiphase meters provide important data about the well itself. Changes in the gas/oil ratio can be detected more quickly in a real-time basis, while test separators provide slower response with fewer data points.

- ✓ Multiphase meters are useful for allocation metering situations, where the produced fluids must be commingled and sent to a processing facility. Without multiphase meters, the fluid from each well has to be sent through a test separator before being sent to the processing facility.

Multiphase flowmeter technology is only about 30 years old. It has received mixed reviews from end-users, mainly because it is a difficult and complex technology that has yet to be perfected. Look for suppliers to continue to work to improve their multiphase flowmeters, which are very much in demand by oil and gas producers. Their adoption rate will increase along with improvements in the technology. **FC**

**FlowMultiphase.com**

Multivariable

### Flowmeter Suppliers

**Ernst Flow Industries**  
116 Main St, PO Box 925  
Farmingdale, NJ 07727-0925  
800 992-2843  
[www.ernstflow.com](http://www.ernstflow.com)  
[info@ernstflow.com](mailto:info@ernstflow.com)

**Ferro Neumatica LTDA**  
Colombia  
[www.ferroneumatica.com.co](http://www.ferroneumatica.com.co)  
[jorgeospina@ferroneumatica.net](mailto:jorgeospina@ferroneumatica.net)

**GE Measurement & Control Solutions**  
1100 Technology Park Dr  
Billerica, MA 01821  
978 437-1000  
[www.ge-mcs.com](http://www.ge-mcs.com)  
[sensing@ge.com](mailto:sensing@ge.com)

**Instrumetrics Engineering**  
Kfar-Saba, Israel  
[www.instrumetrics.com](http://www.instrumetrics.com)  
[kobi@instrumetrics.com](mailto:kobi@instrumetrics.com)

**Invensys Operations Management**

5601 Granite Parkway III  
Suite 1000  
Plano, TX 75024  
469 365-6400  
[www.iom.invensys.com](http://www.iom.invensys.com)

**Kadeberg CV**  
Sidoarjo, Jawa Timur  
Indonesia  
[www.kadeberg.com](http://www.kadeberg.com)  
[kadeberg@gmail.com](mailto:kadeberg@gmail.com)

**Kytola Instruments**  
320 Maxwell Dr, Suite 610A  
Alpharetta, GA 30009  
[www.kytola.ca](http://www.kytola.ca)  
[flow@kytola.com](mailto:flow@kytola.com)

**Liquid Controls**  
105 Albrecht Dr  
Lake Bluff, IL 60044  
847 295-1050  
[www.lcmeter.com](http://www.lcmeter.com)  
[LC-Info.lcmeter@idexcorp.com](mailto:LC-Info.lcmeter@idexcorp.com)

**Malema Sensors**  
1060 S Rogers Cir

Boca Raton, FL 33487  
561 995-0595  
[www.malema.com](http://www.malema.com)  
[industrialsales@malema.com](mailto:industrialsales@malema.com)

**Peacock Inc**  
100 Wright Ave Suite 7  
Dartmouth, NS B3B 1L2  
Canada  
902 468-5599  
[www.peacock.ca](http://www.peacock.ca)  
[rmcquestion@peacock.ca](mailto:rmcquestion@peacock.ca)

**Seltech Inc**  
5921 H St  
Little Rock, AR 72205  
501 614-9699  
[www.seltechinc.com](http://www.seltechinc.com)  
[seltocar@aol.com](mailto:seltocar@aol.com)

**Siemens Flow Instruments A/S**  
Nordborg, Denmark  
[www.siemens.com/flow](http://www.siemens.com/flow)  
[ps3.promotion.sfi@siemens.com](mailto:ps3.promotion.sfi@siemens.com)

**Sierra Instruments Inc**  
5 Harris Crt, Bldg L

Monterey, CA 93940  
831 373-0200  
[www.sierrainstruments.com](http://www.sierrainstruments.com)  
[info@sierrainstruments.com](mailto:info@sierrainstruments.com)

**Spirax Sarco - EMCO Flowmeters**  
2150 Miller Drive Suite H  
Longmont, CO 80501  
800 356-9362  
[www.emcoflow.com](http://www.emcoflow.com)  
[sales@emcoflow.com](mailto:sales@emcoflow.com)

**Spirax Sarco Inc**  
1150 Northpoint Blvd  
Blythewood, SC 29016  
803 714-2000  
[www.spiraxsarco.com/us](http://www.spiraxsarco.com/us)  
[ssisales@spirax.com](mailto:ssisales@spirax.com)

**Take 5 Inc**  
405 Monterey Ave  
Pacific Grove, CA 93950  
831 455-0418  
[www.massflowmetersandcontrollers.com](http://www.massflowmetersandcontrollers.com)

► **Universal Flow Monitors Inc**  
1755 E Nine Mile Rd  
PO Box 249  
Hazel Park, MI 48030  
248 542-9635  
[www.flowmeters.com](http://www.flowmeters.com)  
[erosaen@flowmeters.com](mailto:erosaen@flowmeters.com)

SEE OUR AD ON PG 13

► **Veris Inc**  
6315 Monarch Park Pl  
Niwot, CO 80503  
303 652-8550  
877 837-4700  
[www.veris-inc.com](http://www.veris-inc.com)  
[contact@veris-inc.com](mailto:contact@veris-inc.com)

SEE OUR AD ON PG 15

**Yokogawa Corp of America**  
2 Dart Rd  
Newnan, GA 30265  
800 888-6400  
[www.yokogawa.com/us](http://www.yokogawa.com/us)  
[info@us.yokogawa.com](mailto:info@us.yokogawa.com)