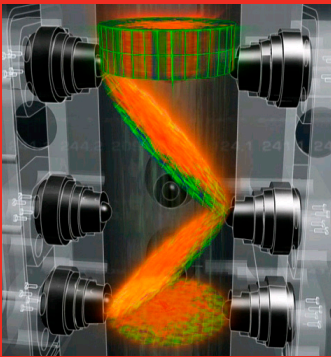


Tomography - 3D Broadband™



High-speed electromagnetic (EM)
wave based technique,
used to determine:

- Composition (% oil, water and gas)
- Watercut (WLR)
- Water salinity
- Liquid / gas distribution within
the pipe cross section
- Slug information – flow changes
in longitudinal direction
- Droplet flow (ultra high GVF)

HighPerformanceFlowmeters®

SUBSEA
Multiphase & Wetgas meter

mpm

Self-configuration - no sampling

The MPM meter is able to auto-configure for changing water salinity and hydrocarbon composition.

Dual Mode™ - multiphase & wetgas

The MPM meter works equally well over full GVF range and for different flow conditions. It switches automatically between modes as required.

Unparalleled accuracy and sensitivity

The accuracy demonstrated during blind qualification testing approached the level of single phase metering, on accumulated (allocation) basis.

Remote access and operation

Remote access to Graphical User Interface and full functionality via web-interface to MPM flow computer at site.

Factory calibrated

The MPM meter is factory calibrated. With the robustness to fluid property variations and the self-configuration, even the field configuration can be fully completed at factory prior to delivery.

Diagnostics functionality

The MPM meter includes a large series of self diagnostics features. These are based on raw data analysis, redundancy and statistical analysis.

Formation water detection - wetgas

Immediate warning if and when formation water starts breaking through in wet gas wells.

In-Situ verification

In response to the question of "Are the MPM meter readings correct?", in-situ verification provides assurance: it covers sensor parts as well as configuration data.

Water salinity measurement

Eliminates the need for sampling. Automatic update of water configuration data eliminates potential errors caused by incorrect input data.

Fits all applications

The MPM meter covers the full range of gas void fraction (GVF) and water liquid ratio (WLR) for all types of multiphase and wetgas conditions, and is unaffected by the flow regime encountered.

HP/HT qualified

Mechanical integrity of sensor verified for pressures up to 1000 bar (15,000 psi) and temperatures up to 250 °C (480° F). Statement of Compliance issued by DNV.

3D Broadband™

The MPM meter combines the input from a gamma detector, dP, pressure and temperature transmitters and radio frequency dielectric measurements to form a multi modal tomographic system. The high-end electronics enable hundreds of real time measurements per second, providing operators with details of the most minute flow event.

Flow test at FAT

MPM has included flow tests as part of the standard Factory Acceptance Test, and offers training of field operators at the unique MPM Flow Laboratory. It is made to enable testing of flow meters at field like conditions, and has highly accurate reference instrumentation.



Deep water

The MPM meter is qualified for installation at water depths up to 3000m (10,000 feet).

The new technology represents a major advance in multiphase metering - measuring every droplet

MPM takes multiphase and wetgas metering to new levels, providing advanced solutions to the flow measurement requirements of our clients. The MPM meter delivers the highest level of operational performance, with a wealth of field experience demonstrating its accuracy, repeatability and reliability. Using its patented 3D Broadband™ technology, the MPM meter is suited for both multiphase and wetgas applications. The MPM meter is unparalleled in terms of performance monitoring, with in-situ verification methods to ensure continued high performance.

An extensive operator-driven test and qualification program was completed, qualifying the MPM meters for use in topside and subsea field applications. The product development and field qualification programs have been supported by:

