

**Get accurate flow measurement
in all conditions**



Advanced Phase Measurement

Unparalleled multiphase measurement and diagnostic capabilities.



Your bottom line could be affected due to undetected two-phase flow.

Two-phase flow – or entrained gas – can cause uncertainties and variations that reduce profitability due to inaccurate accounting of received or dispensed fluids, measurement of feeds or blends and additives, and can even damage equipment. Though installation best practices can eliminate or reduce entrained gas, being able to detect it in real-time can save time and money.

Poor batch quality costs manufacturers time and money. 16% of manufacturers report scrap and re-work impact of 4% of sales or greater.¹



Grocery stores carry 40,000 more SKUs than they did in the 1990s.² With this dramatic increase in SKUs, manufacturers need to be able to maximize and optimize production capacity to meet demands.



Multiphase conditions affect readings and make stable control very difficult.



Machine learning and artificial intelligence are the most popular investment targets for 2019.³ AI-like capabilities adapt to your process and can minimize manual intervention.



¹ Tooling U-SME

² MarketWatch

³ SSON Annual Survey 2018





In order to meet growing customer demands, operators are seeking solutions that help optimize production processes, while maintaining batch quality.

Advanced Phase Measurement provides the means to better understand your process.



Across a variety of industries – from oil and gas, to food and beverage, to chemical – the need for real-time insight into multiphase flow is imperative to create and maintain efficient production processes.

Advanced Phase Measurement offers the assurance operators seek in multiphase flow applications. Most two-phase flow applications are difficult to measure and create operational challenges. Continuous, real-time data offers ongoing visibility into your process so you can see changes as soon as they happen and you can respond quickly.





Data is available at a glance, which means you can make process corrections quickly.

Maintain accuracy and repeatability for fluids with gas entrainment.

Advanced Phase Measurement allows you to perform consistent, repeatable and accurate two-phase flow measurements on fluids while reporting real-time gas void fraction.

Avoid over and underfilling of vessels or tanks.

Accurately measure the mass flow of fluids during filling processes. As gas occupies a large volume with very low weight, it can cause measurement inaccuracies in two-phase mixtures.

Deliver on-specification products with confidence.

Confidence that measured feeds, blends and additives used in production are correct every time, even with entrained gas present.

Gain immediate, real-time access to quality data.

Continuous visibility into your process enables you to see changes and respond quickly. Receive actionable alerts when your process changes.



You don't have time for process interruptions to go undetected.

Regardless of the industry you operate in, unintentional two-phase flow not only interrupts traditional flow measurement but can cause equipment damage and make it harder to control your process. Meters equipped with Advanced Phase Measurement give real-time diagnostic information to help you detect two-phase flow and take necessary corrective actions. When it's impractical or unnecessary to change the process, Advanced Phase Measurement provides remediated flow values to minimize flow and density measurement uncertainties.



What's your challenge?

With busy production schedules and plants running at nearly full capacity, you don't have time for unexpected or uncorrectable process upsets.



What's your opportunity?

Advanced Phase Measurement immediately detects process upsets due to two-phase flow and quantifies gas void fraction. Throughout the upset condition, this software option provides remediated flow and density/concentration measurement.

Ensure consistent high quality batches

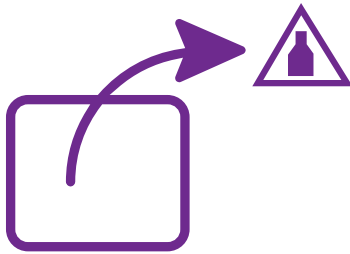


Improve batch repeatability and increase throughput and reliability with Advanced Phase Measurement early warnings on process issues.



Advanced Phase Measurement provides proper density/concentration measurement accuracy even when bubbles are present and reduces off-specification product.

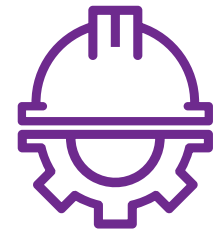
A window into your process



Advanced Phase Measurement brings clarity to your process and allows you to take immediate action in case of process upsets.

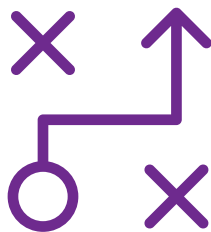


Both unremediated and remediated data along with gas void fractions are available to you with Advanced Phase Measurement to help assess the impact of process upsets.



Advanced Phase Measurement facilitates safe operations of your plant even when process conditions are less than ideal for other flow measurement devices.

Gain confidence in custody transfer applications



Gain confidence in fiscal measurement in empty-full-empty loading and unloading applications to ensure the delivery ticket matches the delivered quantity.



Onboard diagnostics provide early alerts to process-related issues such as flashing, allowing you to take immediate corrective action.



For more information, visit www.Emerson.com/AdvancedPhaseMeasurement



A better understanding of your multiphase processes.

Oil and Gas producers are accustomed to the challenges of multiphase flow. With Advanced Phase Measurement, you will be able to reduce time spent identifying problems and gain insight into crucial points at the wellhead or in surface equipment.

You will gain confidence that your operations are performing as planned. And you will be able to reduce the footprint, complexity and cost of current equipment and processes.

In short, you are optimizing systems and increasing productivity.



What's your challenge?

It is difficult to identify and cope with separator control problems.



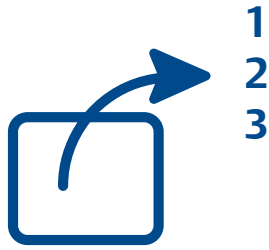
What's your opportunity?

Being able to identify water carryover in oil even when gas is present helps reduce level and pressure control problems, which leads to increased revenue.

Improve operational efficiency



Gain greater operational efficiency. Keep your operations nimble and proactive with real-time data and process insight.



Actionable information facilitates condition-based maintenance allowing you to better prioritize your resources.

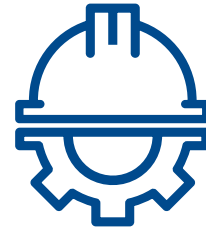


Easily store and manage up to three well tests per well for up to 48 wells using Advanced Phase Measurement with the multi-well option.

Reduce lost revenue



Reduce revenue loss due to inaccurate measurements. Increase top line and reduce capital expense and operating costs.



Use Advanced Phase Measurement to get net oil flow on the direct wellhead with a low gas to liquid ratio without the need for a separator.

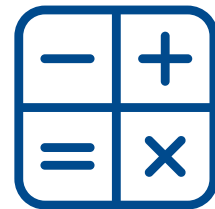
Increase confidence in data



Using Advanced Phase Measurement at separator outlets allows you to better manage fields and optimize well production.



Measure gas with condensate or water liquid contamination with confidence.



Advanced Phase Measurement offers registers that account for shrinkage, offering more clarity between processing and accounting totals.



For more information, visit www.Emerson.com/AdvancedPhaseMeasurement



High quality automation relies on high quality measurement.

Food and Beverage companies are seeing a dramatic increase in the number of SKUs which means they need to be able to adapt quickly to product changeovers due to more variables, different recipes and different ingredients which can create process uncertainties. Real-time insight into multiphase flow is imperative to efficient production processes. Entrained gas, whether part of the mix or unplanned, needs to be monitored to avoid unscheduled shutdowns or batch failures. Advanced Phase Measurement monitors your flow and alerts you to changes.



What's your challenge?

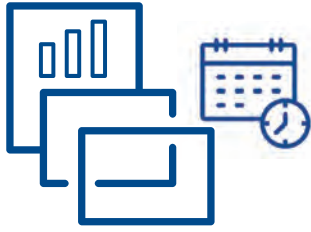
Food and Beverage companies are seeing a dramatic increase in SKUs. You are constantly being asked to make more flavors and variants of products which means product changeovers need to be seamless and ingredient control is more important than ever.



What's your opportunity?

Obtain accurate, real-time data with Advanced Phase Measurement enabling you to minimize product loss on product cutovers to maximize output.

Maximize production capacity



Improve batch repeatability and increase throughput and reliability with the Advanced Phase Measurement early warnings on process issues.



Quickly adapt to changes in recipes where gas is introduced.

Reduce production costs



Reduce or eliminate time-consuming manual sampling.



Improve confidence in delivery quantities, accounting, material balance and efficiency monitoring.

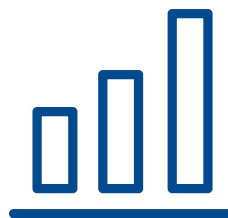


Built-in AI-like abilities give enhanced mass, volume and concentration measurement to reduce product loss while also minimizing manual intervention.

Consistently produce quality product



Reduce rework by getting accurate, real-time density and concentration data to immediately detect process upsets.



Advanced Phase Measurement adapts to your process and helps you achieve consistent product quality, every time.



Obtain reliable real-time insight regardless of aeration or inhomogeneous situations.



For more information, visit www.Emerson.com/AdvancedPhaseMeasurement

Advanced Phase Measurement gives you clear insight into your multiphase flow.



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