

# PhaseSampler Multiphase Fluid Sampling and Analysis System

Immediate, complete, and accurate multiphase fluid analysis solution at the wellsite

## BENEFITS

- Improves multiphase flow rate measurements
- Provides samples for recombination PVT study

## APPLICATIONS

- Measures fluid properties at the wellsite
- Captures representative PVT samples

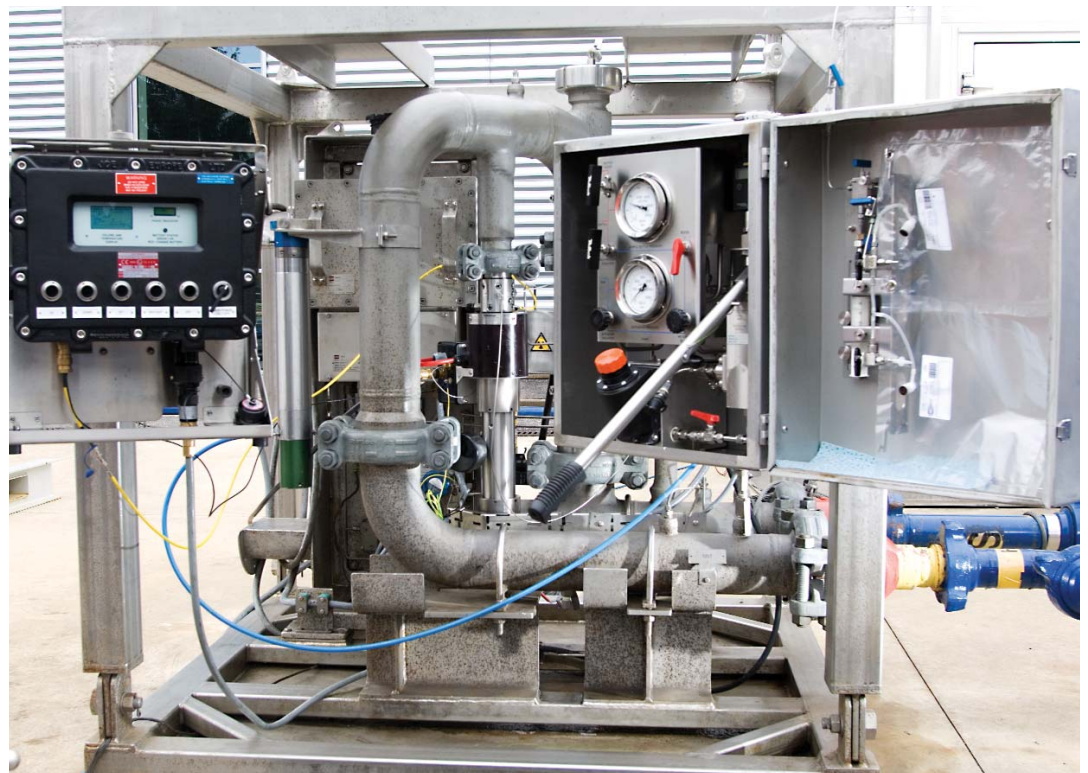
## FEATURES

- Samples each phase separately
- Optical detector distinguishes oil, gas, and water
- Operates at line pressure and temperature
- Compact and reliable
- Requires no additional external power
- Flash apparatus measures fluid properties

By reducing uncertainties associated with variations in pressure, temperature, and effluent composition over time, the PhaseSampler\* multiphase fluid sampling and analysis system provides a powerful solution for improving the overall accuracy of flow rate measurements. This seamless service can be run with the PhaseTester\* portable multiphase well testing equipment or the PhaseWatcher† fixed multiphase flowmeter.

For efficiency and reduction of time between sampling and analysis, the PhaseSampler service is provided at the wellsite for an immediate understanding of the fluid properties. The multiphase sampling system can also provide phase-representative samples for a recombination PVT study using the improved gas/oil ratio measurements. This study is particularly useful when well test separator samples are not available or when poor separation conditions (e.g., foaming oil) make representative separator sampling difficult.

The PhaseSampler system hardware consists of three basic elements: probes that are positioned in the main pipe of the PhaseTester flowmeter, a phase-segregating sample chamber, and a fluid properties measurement apparatus. These components fit on the PhaseTester unit without increasing its footprint.



*PhaseSampler system installed with the PhaseTester unit.*

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The probes are positioned in a special configuration across the flow path to allow collection of multiphase samples with a dominant phase, which is subsequently isolated. The phase-representative samples are obtained by displacing the unwanted phases from the PhaseSampler sampling chamber with a hydraulically activated piston and monitoring the displacement with phase-discriminating optical probes in the sample path.

This sampling cycle can be repeated until the required sample volume is isolated in the sampling chamber. The entire process is performed under temperature and pressure control to keep the sample at thermodynamic equilibrium. The sample is then placed in a flash apparatus where the fluid properties can be measured by the phase-testing hardware or, if preferred, transferred into a conventional sample bottle and shipped to a PVT laboratory for analysis.

The versatile PhaseSampler service measures water/liquid ratios in fluids with high gas volume fractions, and it has demonstrated its reliability in fluids ranging from heavy oils to gas condensates.

PhaseSampler fluid property measurements, particularly those of more volatile reservoir fluids, have generated more accurate data than can be obtained from correlations using a limited set of fluid-property data or by equation-of-state modeling using data from a PVT report.

## Specifications

Sample volume, cm <sup>3</sup> [in <sup>3</sup> ]	100 [6.1]
Working pressure	
Min., MPa [psi]	Atmospheric
Max., MPa [psi]	69 [10,000]
Working temperature <sup>†</sup>	
Min., degC [degF]	-20 [-4]
Max., degC [degF]	150 [300]
Operating service	H <sub>2</sub> S
Water/liquid ratio measurement	At any gas volume fraction obtained by optical probe
Viscosity measurement	ASTM <sup>§</sup> D341
Certifications	NACE <sup>††</sup> MR0175, ATEX, <sup>††</sup> 94/9/CE, <sup>§§</sup> API-6A

<sup>†</sup> Operations limited to 110 degC [230 degF] due to heating jacket

<sup>§</sup> American Society of Testing and Materials

<sup>††</sup> NACE International (formerly National Association of Corrosion Engineers International–NACE)

<sup>††</sup> ATmosphere EXplosibles

<sup>§§</sup> Conformité Européenne

[www.slb.com/welltesting](http://www.slb.com/welltesting)

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