

Diligens Spectra

Mobile multiphase production testing unit

APPLICATIONS

- Production well testing
- Appraisal and development reservoir testing
- Cleanout and flowback operations
- Artificial lift system optimization
- Measurement-focused operations

BENEFITS

- Improves fluid characterization services
- Provides inline metering without need of separation
- Enhances response time
- Delivers accurate flow measurement under challenging conditions, such as foam and heavy oil
- Improves well diagnostics and early detection of water and gas coning
- Reduces total cost of operations, eliminating the need for a separator and a crane on site
- Improves operational efficiency with rapid rig-up and rig-down

FEATURES

- Repeatable, highly accurate measurements
- Full-gamma spectroscopy
- High-frequency, single-point measurement
- Dual-leg configuration for increased turndown ratio
- No moving parts
- Compact design with built-in bypass manifold
- Modular setup with agile configuration
- No need for separation and flow calibration

The Diligens Spectra unit expands your operating envelope with superior metrology and efficiency. Two Vx Spectra* surface multiphase flowmeters on the same trailer—19-mm and 40-mm venturi throat sizes—provide repeatable flow rate measurements in any multiphase flow regime and in production fluids ranging from heavy oil to wet gas.

The dual-leg configuration enables the optimal venturi size to be applied based on the flow rate of the specific well. This improves the turndown ratio from 10:1 to 50:1 without compromising operational efficiency, enabling multiple wells to be tested per day. The unit is also available in a single-leg configuration.

Real-time data and support are available through the InterACT* global connectivity, collaboration, and information service.

High-frequency, single-point measurement

The Vx Spectra flowmeter is the only multiphase flowmeter that measures in high frequency at a single point across the venturi throat, thereby avoiding the conventional combination of measurements from multiple locations and flow rate conditions throughout the system. This produces unmatched metrological performance that is independent of flow regime and fluid type.



The Diligens Spectra mobile multiphase production testing unit.

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Specifications

Venturi size, mm	19	40
Service	Sour per NACE MR0175/ISO 15156	Sour per NACE MR0175/ISO 15156
Flowmeter piping size, in	2	4
Max. working pressure, psi [MPa]	1,440 [9.93]	1,440 [9.93]
Process temperature rating, degF [degC]	-20 to 250 [-29 to 121]	-20 to 250 [-29 to 121]
Ambient working temperature, degF [degC]	-4 to 131 [-20 to 55]	-4 to 131 [-20 to 55]
Ambient storage temperature, degF [degC]	-4 to 131 [-20 to 55]	-4 to 131 [-20 to 55]
Connections		
Effluent inlet	3-in Fig 602 female	3-in Fig 602 female
Effluent outlet	3-in Fig 602 male	3-in Fig 602 male
Water/liquid ratio, %	0 to 100	0 to 100
Gas volume fraction, %	0 to 100	0 to 100
Liquid viscosity at line conditions, cP [Pa.s]	0.1 to 2,000 [0.0001 to 2]	0.1 to 2,000 [0.0001 to 2]
Max. flow capacity [†]		
Liquid flow rate, bbl/d [m ³ /d]	4,000 [635]	21,000 [3,340]
Gas flow rate at 10 MPa, MMcf/d [MMm ³ /d]	11 [0.31]	50 [1.42]
Repeatability (total mass rate at line condition)	Better than ±1%	Better than ±1%
Resolution (total mass rate at line conditions)	Better than ±0.1%	Better than ±0.1%
Built-in bypass manifold	Yes	Yes
Flow isolation valves	3-in ANSI class 600 ball valves	3-in ANSI class 600 ball valves
Dimensions		
Single throat (L × H × W), ft [m]	6.56 × 6.56 × 3.44 [2 × 2 × 1.05]	6.56 × 6.56 × 3.44 [2 × 2 × 1.05]
Dual throat (L × H × W), ft [m]	6.56 × 6.56 × 6.89 [2 × 2 × 2.1]	6.56 × 6.56 × 6.89 [2 × 2 × 2.1]
Weight		
Single throat, lbm [kg]	2,976 [1,350]	2,976 [1,350]
Dual throat, lbm [kg]	6,063 [2,750]	6,063 [2,750]
Hazardous classification	Ex d IIB T4 (IECEX/ATEX)	Ex d IIB T4 (IECEX/ATEX)
Ingress protection	IP 66	IP 66
Applied codes	Piping: ASME B31.3 Venturi: ASME VIII-2 H ₂ S: NACE MR0175	Piping: ASME B31.3 Venturi: ASME VIII-2 H ₂ S: NACE MR0175

[†] Under single-phase conditions.

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