

## Metris Eclipse B-annulus PT monitoring system

Monitoring subsea well integrity behind production casing

**Pressure:**  
Rated to 15,000 psi [103 MPa]

**Temperature:**  
Rated to 302 degF [150 degC]

Compatible with Agiliti\*  
modular digital completions

### Where it is used

Metris Eclipse\* B-annulus PT monitoring system enables continuous well integrity monitoring behind the production casing (in the B-annulus) in subsea wells.

### How it improves wells

The system saves costs through early detection of leaks or pressure buildup behind the production casing. Installation is fast, via simple space-out below casing and tubing hangers.

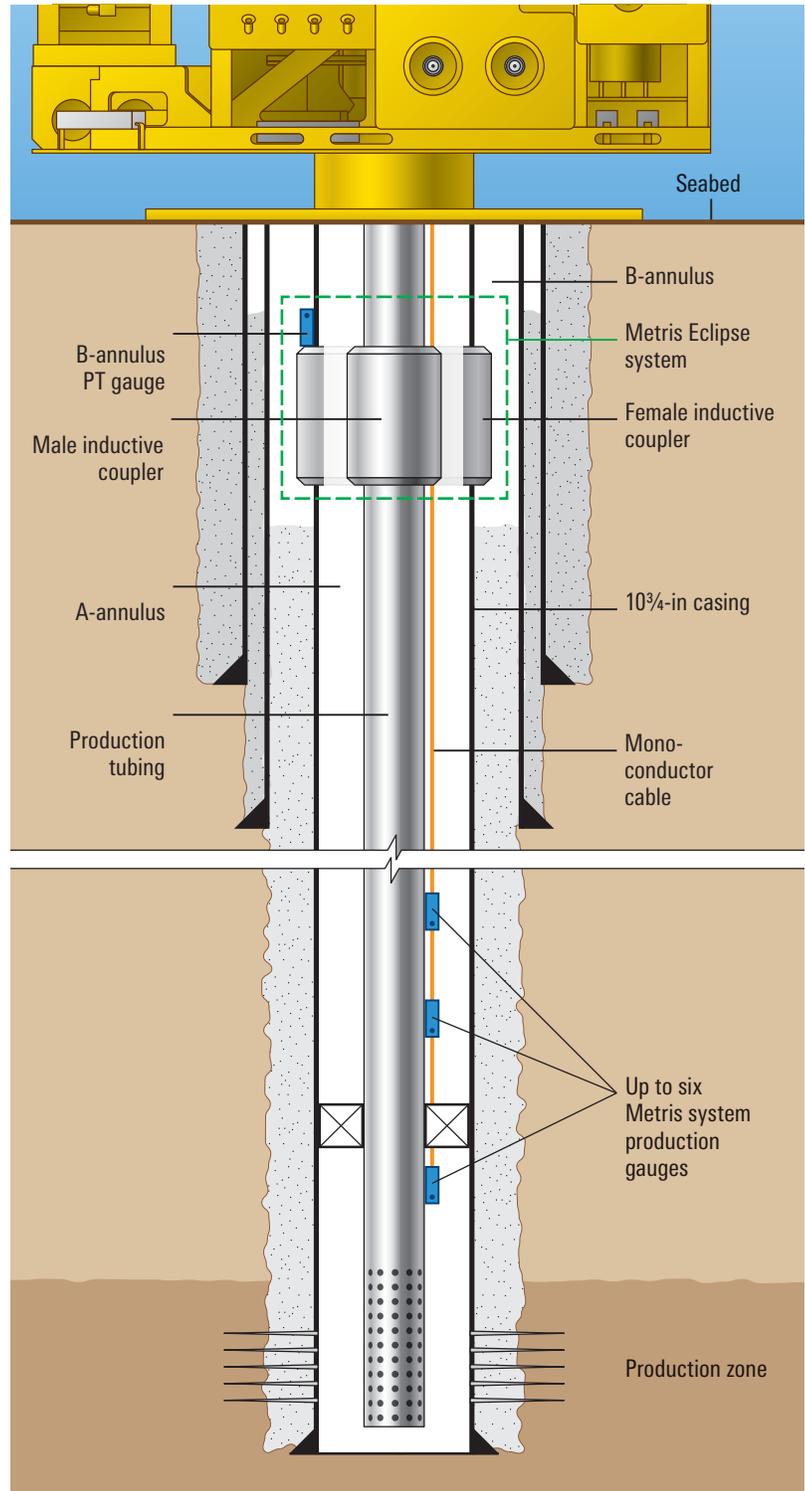
### How it works

Installed at shallow depths, near the subsea tree, the Metris Eclipse system combines a robust and reliable Metris Evolve\* permanent PT gauge with inductive coupler technology that enables wireless power and data transmission. The slip-on design of the inductive couplers maintains full tubing and casing integrity. The system is compatible with up to 7-in tubing. The slim annulus gauge is suitable for 10<sup>3</sup>/<sub>4</sub>-in casing inside 13<sup>3</sup>/<sub>8</sub>-in or 13<sup>5</sup>/<sub>8</sub>-in casing.

Mounted on the exterior of the production casing, the gauge is connected to a female inductive coupler that is slipped over the casing OD and accurately spaced out below the casing hanger. A male inductive coupler is slipped over the production tubing and spaced out to the tubing hanger. The predetermined space-out enables direct landing of the tubing and casing hangers without need for rotation or additional space-out operations. A bypass channel enables multiple hydraulic and electric lines to pass through the tubing-mounted inductive coupler.

The system works with low-power frequency division multiple access (FDMA) telemetry. Power and telemetry are provided by the surface acquisition card, which is mounted in the subsea tree or canister and complies with API Standard 17F, previously Intelligent Well Interface Standardisation (IWIS) and ISO 13628-6 standard.

The Metris Eclipse system shares a single monoconductor cable, single-pin tubing hanger penetrator, and surface acquisition card with other production gauges belonging to the family of Metris\* permanent monitoring systems that are located deeper, near the reservoir.



Well schematic with Metris Eclipse B-annulus PT monitoring system (inside the dotted green rectangle), comprising a Metris Evolve permanent PT gauge in the B-annulus, male inductive coupler on the tubing, and female coupler on the casing (image not to scale).

# Metris Eclipse

## What else I should know

The Metris Eclipse system is compatible with all Metris system production gauges. Up to six of these dual-sensor gauges (12 sensors) can be multidropped together with the annulus gauge on one monoconductor cable. All the gauges use industry-proven redundant-seal dry-mate connectors.

Accelerated life cycle tests at various high temperatures, thermal cycling, and repeated shock and vibration testing at rigorous levels qualify the gauges for real-life operating conditions. Industry-leading accuracy, stability, and resolution ensure superior metrological performance throughout the life of the well. Gauge qualification procedures, verification and validation tests, and accelerated life cycle tests comply with Advanced Well Equipment Standards Recommended Practice (AWES RP).

## Track record of more than 45 years

Having installed permanent gauges since 1972, Schlumberger is the recognized industry leader in permanent downhole monitoring, with an established program for continuous product development and performance improvement. Engineering, manufacturing, calibration, and qualification of our permanent monitoring systems are performed at an in-house facility in France, where Schlumberger has been developing downhole electronics since 1959.

## Metris Eclipse B-Annulus PT Monitoring System Specifications

### General

Operating temperature range, degF [degC]	37 to 302 [3 to 150]
Storage temperature range, degF [degC]	-40 to 122 [-40 to 50]
Operating pressure rating, psi [kPa]	15,000 [103,421]
Gauge OD, in [mm]	0.75 [19.1]
Production casing OD, in [mm]	10 $\frac{3}{4}$ [273.1]
Production casing weight, lbm/ft [kg/m]	Up to 60.7 [up to 90.3]
Tubing OD, in [mm]	Up to 7 [up to 177.8]
Casing and tubing material	Nonmagnetic section for inductive coupler
Coupler flow-wetted materials	INCONEL® 625, INCONEL 718, and MP35N®
Cable	¼-in [6.4-mm] OD monoconductor
Multidrop capability	One B-annulus gauge and up to 12 sensors on production tubing

### Female inductive coupler

Nominal OD, in [mm]	12 [304.8]
Max. OD, in [mm]	12.2 [309.9]
ID, in [mm]	10.8 [274.3]
Tensile rating	Same as casing
Compression rating	Same as casing
Min. torque rating	Same as casing
Burst pressure rating	Same as casing
Collapse pressure rating	Same as casing

### Male inductive coupler

Nominal OD, in [mm]	Up to 8.55 [217.2]
Max. OD, in [mm]	Up to 9.41 [239.0]
ID, in [mm]	Up to 7.09 [180.1]
Tensile rating	Same as tubing
Compression rating	Same as tubing
Min. torque rating	Same as tubing
Burst pressure rating	Same as tubing
Collapse pressure rating	Same as tubing

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