

FLOW ASSURANCE PRODUCTS



Sand Erosion Particle Detector (SEPD™)

Hybrid sensor combining intrusive passive acoustic piezoelectric sensing with field-proven CEION® electrical resistance technology.

The Sand Erosion Particle Detector is a novel intrusive sensor for use in deepwater HPHT subsea wellheads and manifolds that uniquely combines embedded DSP passive acoustic 1MHz sampling piezoelectric technology with nano-ohmic resistance sensing used to instantaneously detect and characterise solids entrained within hydrocarbon process streams.

The combination and direct correlation of nanometer metal loss detection with full real-time spectral acoustic signatures generated on a single defined target area on the sensor allows both instantaneous sand event detection and the actual solids erosivity response. This unique configuration enables the characterization and trending of the reservoir produced solids such as quantity, particle sizing (including fines) and

the actual erosive response together with the detection of non-abrasive solids such as hydrates.

The acoustic sensor coupled to the thick (4mm) erosion sensor face but de-coupled from the pipe also facilitates a high signal-to-noise ratio.

The SEPD™ can also provide pressure and temperature measurement from integrated, high accuracy sensing elements.

The SEPD™ offers a unique solution, providing both instantaneous sand detection and high resolution measurement of cumulative erosion and can be further configured for synergistic erosion-corrosion mechanisms caused by the entrained solids within the electrochemical environment.

COMPREHENSIVE RANGE OF SENSORS:

- Erosion
- Corrosion
- Sand
- Pressure
- Temperature

PRODUCT DATA SHEETS:

To access the electronic version of this document, go to:

www.cormon.com

Sand Erosion Particle Detector (SEPD™)

OPERATING CONDITIONS

Operational Temperature:	-70°C to 180°C
Operational Pressure:	Up to 15 kpsi
Design Life:	> 30 years

METAL LOSS

Sensing Element:	CEION® ER Spiral
Element Material:	To Customer Spec (Typically Inconel 625)
Element Thickness:	4 mm
Resolution:	45 nm
Sensor Output:	Cumulative Metal Loss (nm) Temperature (°C)

ACOUSTIC SENSOR

Sensing Element:	Intrusive Piezoelectric
Minimum Sand Rate:	0.01 g/s
Minimum Velocity:	1 m/s
Minimum Grain Size:	25 µm
Sensor Output:	Acoustic Energy (4 Configurable Bands)

ELECTRICAL

Supply Voltage:	24 VDC (14 V min, 30 V max)
Current Consumption:	<100 mA @ 24 VDC per node
Output Signal:	CANbus, Modbus, RS485, Profibus, 4-20 mA
Insulation Resistance:	> 1 GΩ (50 V pins to body)
Storage Temperature:	-40°C to 70°C

MECHANICAL

Process Interface:	API 6A / 17D
Flange / Housing Material:	NACE MR-0175
EB Welding:	ASME IX
Probe Diameter:	51.5 mm
Hyperbaric Pressure:	3,000 m water depth

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