

## Remote Corrosion & Erosion Monitoring Systems

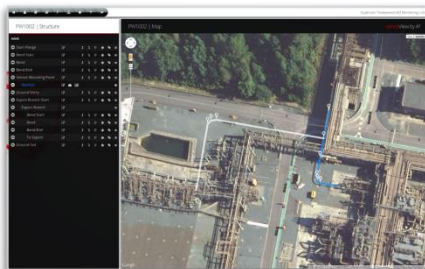
Monitoring the integrity of Oil & Gas infrastructure, even in favourable conditions & environments, can be technically challenging. When the infrastructure to be monitored is in remote and inaccessible locations, the practical and technical aspects of these challenges start to make traditional monitoring methods cost prohibitive.

Whether it be the mountains of the Caucasus, remote desert locations, or the South Atlantic Ocean, the power and communication requirements of many monitoring tools are simply unavailable. The spotOn U range of corrosion & erosion monitoring systems can overcome these problems.

SpotOn technology has already been deployed around the world, with clients often utilising the systems as an alternative to corrosion coupon retrievals or probe monitoring. This is especially true where there are unacceptable safety concerns, where access is logistically challenging or where intrusive monitoring fittings have never been installed.

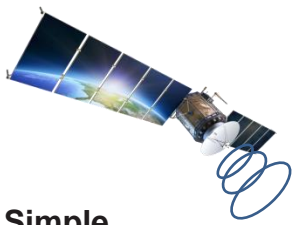
Cost effective, simple to install, and with data seamlessly streamed to users desks via satellite from virtually any location in the world, SpotOn systems are fast becoming a preferred monitoring method for Oil & Gas operators worldwide. The full range of sensors (wall thickness, CP & acoustic emission) can operate completely independently and do not need to be within range of wired or wireless networks. Power is supplied by industrial specification lithium batteries, which are housed within an ATEX certified enclosure, and have a life span of up to 10 years. Once installed, there is no need for return visits to site for maintenance or data retrieval.

The SpotOn U wall thickness sensor is sensitive to small changes caused by corrosion and erosion. The sensors are mounted directly to the pipe wall within a very tough and rugged stainless steel housing. The SpotOn U sensor also benefits from having a low profile once installed, protruding no more than 75mm from the pipe wall. The low profile design makes the sensor far less prone to accidental damage in busy work environments. The multiple connectivity and communication options available for the wall thickness sensors also make them suitable for buried pipelines



Data can be sent in real-time to a client designated server or to the ShieldCube portal utilising encrypted GSM, Iridium and wireless HART. ShieldCube provides advanced analysis tools with customisable alarm thresholds, as well as localisation capabilities enabling precise identification of where the corrosion or erosion threat is occurring.

*ShieldCube Software seamlessly integrates with Google Earth to pinpoint sensor location*



# spotOn<sup>®</sup> U

## Simple

- Installs in 30 minutes — timed!
- Fully automatic software configuration and network connection.
- Works with existing IT systems.

## Cost-Effective

- One time access to difficult and challenging locations.
- No need for additional IT investments.

## Safe

- Ex II 3G, Ex ic IIA T4 Gc intrinsic safety rating.
- Non-Intrusive operation.
- Minimum access risk

## Reliable

- Automated sensing for minimal measurement error.
- Continuously self-checking.
- Remotely configurable to maximise battery life.

## Robust

- Withstands harsh environments, and can be buried or submerged.



## Accurate

- Wall thicknesses and corrosion trends can be carefully measured.
- Remotely configurable data collection rate to track fast-evolving events and test corrosion inhibitors

## Works Everywhere

- -10°C to 350°C (14°F to 662°F)
- Ex Zone 0, IP67 to IP69K
- Cellular, WirelessHART, or satellite link
- Submersible up to 300 metres.
- Intrinsically safe tablet datalogger.

## Real Time

- Data is available in real-time.
- Custom thresholds can be defined, and warnings are dispatched automatically.
- Remotely configurable to track fast-evolving events and test corrosion inhibitors

Probe type:	3-5MHz frequency longitudinal wave, dry coupled dual-crystal UT probe
Pipe diameter:	2" (DN50) and above
Pipe nominal wall thickness:	1/8" (3.175mm) to 1" (25.4mm)
Pipe temperature:	Low temp. -10°C to 120°C (14°F to 248°F)   High temp. -10°C to 350°C (14°F to 662°F)
Ambient temperature:	-40°C to 85°C (-40°F to 185°F)
Ingress protection:	IP68 — IP69K optional, submersible up to 300 m
Intrinsic safety Ex:	Ex II 3G, Ex ic IIA T4 Gc
Battery type:	Lithium metal, located on pipe or away from pipe for easy replacement
Battery life:	In excess of 10 years, with remotely-controlled active management system
Data link:	Cellular, WirelessHART, Iridium or Inmarsat, internal or external antenna with optional intrinsically safe tablet datalogger for manual data collection
Device management:	Custom scheduling via shieldCube to maximise battery life or data collection frequency
Data management:	Data delivered to shieldCube platform, or to designated private server
Data analysis:	State-of-the-art shieldCube statistics, with custom-defined fixed and intelligent threshold and automatic notifications via email and mobile phone
Installation:	Minimum surface preparation, no metal-to-metal contact on low temperature system