The Challenge

LyondellBasell’s Pôle Pétrochimique de Berre includes world-class polypropylene and polyethylene plants. It is home to third party chemical operators and logistical assets such as harbour facilities, pipelines and storage and distribution terminals. The site is one of the largest petrochemical complexes in the south of France and employs around 1,300 staff and contractors.

Currently, corrosion rates and wall loss of critical pieces of equipment and stretches of piping are measured at regular intervals by UT inspectors during planned plant shutdowns, and estimated on a continuous basis using standard intrusive electrical resistance corrosion probes.

The plant’s owner was interested in confirming corrosion rates estimates provided by the probes using BHGE’s PCM solution on one separator unit and two critical stretches of pipe.

The Solution

In June 2018 SGS and BHGE installed a Predictive Corrosion Management (PCM) solution at LyondellBasell Berre. The system comprised 32 permanently installed ultrasonic sensors which automatically collected wall thickness measurements on a daily basis, and provided corrosion rate data that could then be correlated with other process variables. SGS used the wall thickness data to produce monthly reports on three pieces of equipment over a six month period (Photo 1).

Predictive Corrosion Management (PCM) is a permanent, sensor-based monitoring system, which combines BHGE’s Rightrax PM ultrasonic sensors, advanced cloud-based software, and advisory services to continuously monitor corrosion-related risk, proactively make maintenance decisions and minimize total cost of operations.

The sensors on the asset are controlled and are pulsed by a “mote”. The mote forms a wireless mesh network with other motes and a “mote manager” (Figure 1). The mote manager communicates with the cloud through a cellular device, called the mini field agent (MFA), which provides data being processed from the gateway to the cloud. The MFA enables SGS to remotely access the PCM equipment without having to use the customer’s network infrastructure and go through a lengthy approval process.

Cloud-based Software

Wireless Mesh Network
(up to 400m clear line of sight)

Power-over-Ethernet Injector or Switch

Sensors on Asset
(up to 64 per mote)

Mote (up to 100 per mote manager)

Mote Manager

Non-ATEX area

ATEX area (up to zone 0)

Office or Control Room

Mini Field Agent
(comm gate)

Figure 1 – Predictive Corrosion Management (PCM) elements
What Are the Benefits
of the Solution?

The solution and its results enabled the corrosion engineers and plant managers at LyondellBasell Berre to confirm that corrosion rates on the three pieces of equipment had stabilized and no longer posed a threat to the integrity of the plant.

More generally, the solution confirmed that it has the potential to:

• Decrease inspection costs for critical points with high cost-of-collection (scaffolding, insulated pipes, hazardous areas)
• Improve asset performance by optimizing maintenance planning
• Optimize operational processes, e.g. use of corrosion inhibitors or quality of processed inputs

The solution is particularly adapted to provide permanent wall-loss information to facilities where chemical or refining processes change frequently due to varying inputs.

About SGS

SGS is the world’s leading inspection, verification, testing, and certification company. SGS is recognized as the global benchmark for quality and integrity. With more than 97,000 employees, SGS operates a network of over 2,600 offices and laboratories around the world. We provide the competitive advantage, drive sustainability and deliver trust. At SGS, we continue to innovate our services and solutions so that our clients can move their businesses forward.

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