CYGNUS: SUSTAINING A RENEWABLE WORLD

Even green technology falls victim to corrosion. As we strive to increase our use of renewable technologies, we are yet to free ourselves from the clutches of this issue, particularly at sea. Although the use of scrubber systems and wind turbines is booming, both are susceptible to corrosion.

BEST PROTECTION

Water ingress into a ship's engine room is just one example of the type of catastrophic incident that can occur when corrosion has compromised a scrubber's structural integrity. Aggravated by the high temperatures of exhaust gases, acidic, corrosive washwater causes extremely severe corrosion. As a result, classification societies such as DNV-GL require wall thickness measurements for the SOx scrubber overboard distance piece in annual class surveys.

Early, preventative maintenance provides the best protection against costly repairs, focusing on the overboard pipe and its surrounding area, including the external hull. For this, many companies worldwide choose Cygnus – a recognised brand for 40 years in the marine industry, renowned for its extremely reliable and easy-to-use ultrasonic testing equipment!

Cygnus 1 Intrinsically Safe gauge is the only one of its kind in the world certified to Class 1, Div 1 ("Zone 0") for ATEX, IECEx and CSA-US, offering safe operations in hazardous, potentially explosive atmospheres. It is particularly crucial when working on vessels transporting flammable cargoes. This heavy-duty device is water-resistant to IP65 and uses the Cygnus-pioneered multiple-echo technique.

Cygnus' multiple-echo technique, specified by class societies, reads through coatings, negating the need to remove the expensive protective coatings or epoxy that safeguard

against external scrubber corrosion. For heavily corroded metals with thin or missing coating, Cygnus Plus gauges offer echo-echo and single-echo measuring modes, along with its Measurement Stability Indicator (MSI™) for quick, reliable readings.

Cygnus 4+ thickness gauge is a fantastic little all-rounder. Small but rugged, this wrist-wearable gauge features an A-scan display, data-logging and auto log for hassle-free recording, post-reporting and analysis, making wall-thinning and corrosion easy to monitor over time and helping to address issues early.

"Cygnus gauges work quickly and efficiently with easy-to-use functionality – a critical solution to the vicious cycle of extensive checklists that are essential to the safety of wind turbines, time-constrained, high-pressure schedules, and specialist engineers who are in short supply and high demand"

COASTAL CORROSION

Whether offshore or onshore, corrosion is known as one of the primary mechanisms degrading the structural integrity and shortening the lifespan of wind turbines. It reduces the thickness of the structure, sometimes at an alarming rate, encouraging cracks and buckling that can be irreparable.

Most turbines are situated in coastal areas, where harsh winds, rain, salty air and frost rust and erode the leading-edge blade tip, an imbalance that can undermine the shaft and gearbox.

Those offshore also battle against the sea, different sections of the turbine suffering different challenges.

While UV radiation and humidity above the surface and the growth of micro-organisms below are damaging, the most vulnerable of these sections is the "splash zone" (where the turbine meets the water's surface). Constant abrasive wave action, intensified by the seawater's temperature, chlorinity and salinity, is the perfect recipe for extreme corrosion.

So how significant is the impact on the wind power industry? Soaring demand has increased pressure to minimise turbine downtime, before considering the loss of revenue and productivity, and high emergency repair rates, which result in a severely costly ordeal. The by-products of corrosion are costly to the environment, too.

As always, prevention is key. Ultrasonic thickness gauging is a simple, inexpensive and reliable method for regular maintenance surveys. Cygnus gauges work quickly and efficiently with easy-to-use functionality – a critical solution to the vicious cycle of extensive checklists that are essential to the safety of wind turbines, time-constrained, high-pressure schedules, and specialist engineers who are in short supply and high demand.

Working at great heights and in tight spaces comes with the territory of turbine maintenance. Cygnus MK5 surface range offers lightweight, compact and highly portable equipment that is shatter-proof and water-resistant (IP67) if dropped. The option of twin-crystal and right-angle probes allow more flexibility for tight, awkward spaces.

Cygnus' multiple-echo technique and Measurement Stability Indicator (MSI™) confirm accurate measurements, eliminating hesitancy and precious time between measurements. Although coatings are widely used on turbines to ensure an adequate lifespan, inspection is still recommended considering potential coating failures and defects. Cygnus gauges can measure metal thickness without the need to remove anti-corrosive coatings, saving time and money.

Cygnus 4+ and 6+ Pro Ultrasonic Thickness Gauges are the most advanced models of Cygnus' surface corrosion gauges, both ideal for this application.

The highly intuitive Cygnus 6+ boasts an array of excellent features, including three versatile measuring modes, live A-scan and B-scan displays, and the radial points function for further investigation on heavily corroded areas. The A-Scan display allows users to visually verify the back-wall echo signals and adjust the gain manually where necessary.

What's more, the 6+ has a comprehensive data-logging feature that records your measurements for hassle-free reporting and post-analysis.

CYGNUS INSTRUMENTS

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