GMS GREEN MARINE SOLUTIONS FEATURE SPONSOR OPERATIONS & MAINTENANCE

ULTRA-EFFICIENT O&M

ONE TURBINE, ONE TEAM, ONE PRICE – AND AN END TO SPIRALLING DAY RATES

Green Marine Solutions (GMS) is taking a radically new look at the efficiency, costs and logistics of delivering O&M offshore – in all weathers around the 12-month calendar.
In recent articles, we examined key business-drivers behind good O&M and the benefits for HSEQ, marine co-ordination and even marine assurance. Now it is time to look at delivery.

O&M quality is as good as the teams that provide day-to-day services in a tough environment. In their review, they considered not only the team, but also the flexible scheduling of team tasks and transport around busy windfarms in all seasons and sea conditions.

The result is an innovative package that integrates all key O&M services into one guaranteed lump-sum bundle. Operators no longer have to worry about boats, downtime, delays and complex contractual negotiations. GMS takes care of everything – and adds peace of mind as a bonus.

COMPREHENSIVE SYSTEM

"Our Asset Maintenance service is a comprehensive system that we have pioneered on C-Power's Thornton Bank windfarm 30kms off the Belgian coast, with extremely positive feedback. It becomes particularly important as assets begin to age, which can happen quickly once farms move out of their warrantee periods." explains GMS Director, Crispian Jones.

"Until recently, operators have often had to hire at least four different contractors to take care of fall-arrest equipment, plant, cranes and lifting gear, temporary power management, fire-fighting equipment, CCTV systems, plus essential guano and marine growth cleaning, maintaining sophisticated painting and coating systems and general fabric maintenance.

"Now, we look after all statutory and routine inspections and maintenance with one dedicated and highly-trained, multi-disciplinary team that can also double-up at a point to form an experienced in-field search and rescue resource already tried and tested in traumatic situations.

"The benefit for operators is increased profitability and greater efficiency. We absorb and make productive use of lost weather time. Because our skilled crews cover so many areas, more seats are available on expensive boats for transporting other personnel. Fewer risk assessments are needed. The list of benefits goes on." he adds.

CO-OPERATIVE NEIGHBOURS

The North Sea offers near ideal conditions for co-operative O&M of the type that makes GMS' packages so effective. Windfarms are close enough for well-scheduled work boats to move efficiently between them at short notice, but far enough apart to experience very different local weather day-by-day and often hour-by-hour. Modern software systems also make it possible to track, optimise and re-schedule essential O&M inspection, service and certification tasks continuously as new circumstances arise. This is so important that GMS now provides software at zero-cost in all its projects.

The result is highly-concentrated expertise with tremendous flexibility and the ability to anticipate and respond to changing conditions and make intelligent use of downtime. There is almost always important inspections and certification work to be done.

"Fuel bills are lower, carbon footprints are smaller. There is more time for simplified contract negotiations. Pre-qualification is easier. Because we schedule guano cleaning for stormy winter months, boat time is utilised all year round. We are able to streamline everything in one carefully-controlled envelope." Jones adds.

IN PRACTICE

This is more than just a theory. GMS' turbine service package has proved popular off the Belgian coast where the maintenance of CCTV, davits, fall-arrest equipment (OSCAR – the offshore climbing retractable unit) and guano control are particularly important.

So much so that GMS is now actively tendering to provide the same high level of services to other major North Sea energy utilities.

Jones, who serves with the RNLI in Cornwall and is a highly trained technician, knows what is needed in a challenging environment. He is leading the hands-on project.

"HSEQ is now sophisticated and demanding. Modern marine co-ordination systems are a vital part of the answer in juggling boats, teams and equipment. But in rough seas there is no substitute for the highly-experienced O&M team who know how to make responsible decisions that balance commercial goals and safe seamanship." he explains.

"This is exactly what we are now doing at Thornton Bank with our package service that takes advantage of every spare moment of personnel time and boat time. Without regular inspections, turbines can soon break safety regulations. They lose efficiency and become prone to early corrosion and decay that leads to expensive problems later.

"We now have the means to put a cost-effective stop to all this." he adds.

ALL IN A DAY'S WORK

O&M requirements on working windfarms are rigorous but easily overlooked as the operational emphasis swings from construction - with plentiful resources on site - to power production, lean budgets and demanding financial targets. A brief overview highlights some of the priorities.

Falls are a major cause of incidents, 29% of which are fatal. In response, EN365:2004 stipulates that fall protection, support and evacuation equipment must be inspected at a minimum of at least once every 12 months – and more often when subjected to extra wear and tear. Our teams take this very seriously.

CONTINUED

"Falls are a major cause of incidents, 29% of which are fatal."

As part of the package, GMS installs and maintains line retention systems for easy access to fall arrest equipment from workboats, with careful attention to anchorages, the integrity of full-body harnesses and the connecting fall-stop line and fall arrester.

LOLER also requires all appropriate lifting equipment to be marked suitably and in most cases examined regularly, both before first use at each location, through their lifetime and in exceptional circumstances. This is on their electronically-scheduled checklist. Digital records of all examinations and inspections (plus EC Declarations of Conformity) must be kept. Defects must be reported in writing.

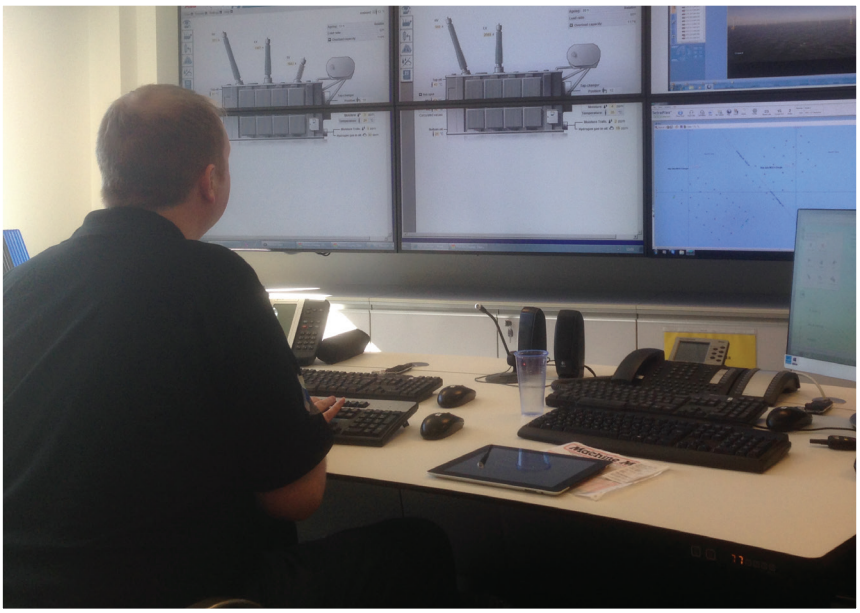
UNWANTED BIOLOGY

However, there are other less obvious hazards that have long-term consequences. The effects of bacteria and fungi carried in bird-droppings (guano) and unchecked marine growth are often forgotten and neglected. These form a major part of our service. It is estimated that 95% of bird faeces carry strains of enterococcus, 10% of which are resistant to drug treatment in humans. Fungi spores cause infection when inhaled – often unknowingly.

In addition, the corrosive effect of pH 3.0 – 4.5 uric acid formed from bird excrement accelerates the breakdown of coatings. Steelwork integrity can be compromised. Helicopter operations can also be put at risk.

These threats are avoidable – as are the negative impacts of marine growth. The rapid blooming of marine growth on areas regularly subjected to sea water can cause stress problems in several ways if not treated, which is why they pay it so much attention.

Tube diameters grow rapidly, increasing hydrodynamic loading – they occupy a larger space. An increased drag coefficient also adds to hydrodynamic loading. It can get worse. The combination of more mass, plus hydrodynamic added mass, reduces the natural frequency of structures, leading to an increased dynamic amplification factor. Meanwhile, the increased structural weight creates additional stress.



There are also detrimental effects from hydrodynamic instability such as vortex shedding.

Safety is quickly compromised too. At a purely practical level, uncontrolled marine growth can jeopardise hand and foot contact on ladders and J-tubes, leading to more incidents. Marine growth on vessel bows decreases the area of stiction and gripping. Fortunately, GMS has an armoury of solutions.

COATINGS

One of their highest priorities is paint and coating systems. These must be inspected once every 12-months at a minimum. In case this seems strange, they know that unobserved damage can cause a rapid deterioration in the competency of core structures.

Modern coating systems are highly-resilient but do require application conditions to be near-perfect. Both are major maintenance items that cannot be ignored. To ensure high quality, inspections must be carried out by trained NACE 2 or 3 skilled operatives and yield vital baseline information for planned maintenance.

This again reduces accidents caused by corrosion and leads to very welcome safety improvements.

Green Marine Solutions (GMS)