# Protection as the best line of defence

As wind farms move further offshore, how can they be protected from corrosion while keeping costs down and maintenance time to a minimum? To find out what solutions might be available to help solve this conundrum and get an overview of where the market may be heading next, we spent time talking to Laura Hall, Senior Marketing & Communications Manager and Dinko Cudic, Business Line Director, Renewables at Seal For Life.

Laura Hall

Dinko Cudic

**PES: A warm welcome back to PES Laura and Dinko. I'm looking forward to catching up and hearing about your plans for 2022. Seal For Life has featured with us before of course, but to refresh memories, could you just give some brief background to the company and your involvement in the wind industry?**

**Laura Hall:** Thank you for having us. Seal For Life as a group is home to 15 different brands, offering critical infrastructure protection across multiple industry sectors. We have a number of brands operating in the renewable energy sector, from solar to wave and tidal, district heating to on/offshore wind. It is an exciting time for us with our growing business.

Within the wind industry two of our brands have been active in providing vital protection to on and offshore wind turbines, Easy-Qote and Oxifree.

**PES: We've spoken previously about the need for protecting turbines and other wind farm equipment from the risk of corrosion. This becomes an even bigger challenge as the wind farms move further offshore and therefore are fewer shallow waters, is that right?**

**LH:** That's correct. The move to offshore has been accelerating for two reasons; space close to shore and capitalising on the power of the wind.

Many offshore installations are currently situated near the shore, in predominantly shallow waters. This allows for easier access to install and maintain. However, with that space becoming an issue, the next few years will see a move to deep water installations, further away from the coast. Whilst these developments will benefit from the stronger winds, they will also be subject to harsher conditions. Strong winds and bigger waves will add pressure, not just to the installation phase, but ongoing operation and maintenance too.

**PES: Is helping to solve this problem a big focus for Seal for Life now?**

**LH:** Absolutely. Across the group we are focused on the growing renewable energy sector as a whole. With such strong targets set by various countries in the past 12 months alone, you can clearly see the shift to using greener energy. The UK has just seen the launch of a world-leading National Floating Wind Innovation Centre in Aberdeen at a cost of £9m, dedicated to accelerating the commercialization of floating offshore wind throughout the UK.

The US has just held a major lease sale, offering six lease areas totalling over 488,000 acres off of New York, fetching more than $4bn. And a new study has revealed that the Asia-Pacific region's wind energy sector could soon account for nearly a quarter of their power this decade, with China set to be the largest market by 2030.

These enormous growth targets will make for more and more installations, and with that growth comes the need for corrosion prevention and maintenance.

**PES: Thinking particularly about your Easy-Qote product, could you explain a little more about that?**

**Dinko Cudic:** Easy-Qote is a polymeric coating that was developed based on the idea of a corrosion solution that could be applied simply as a patch, rather than painting or spraying. It is a self-cleaning corrosion preventive patch designed for single-layer application, touch-up and spot-repair of existing coating systems.

As well as being an environmentally sound and safe alternative to traditional coating systems, with no VOCs, it can be applied at a wide range of temperatures from -10 to 48°C.

**PES: With other corrosion resistant treatments available, what makes this one so different?**

**DC:** Imagine a situation: a corrosion spot is identified on the rotor shaft or blade of an offshore wind turbine.

In traditional approaches we would see a variety of materials and equipment brought to site; surface preparation tools, coating and application tools, rope access equipment. If the surface was in need of extensive preparation this can require heavier and larger equipment. Then consider the use of paints. Spray equipment, brushes and PPE all come into play.

All of this equipment then needs transporting back down and disposing of according to regulations.

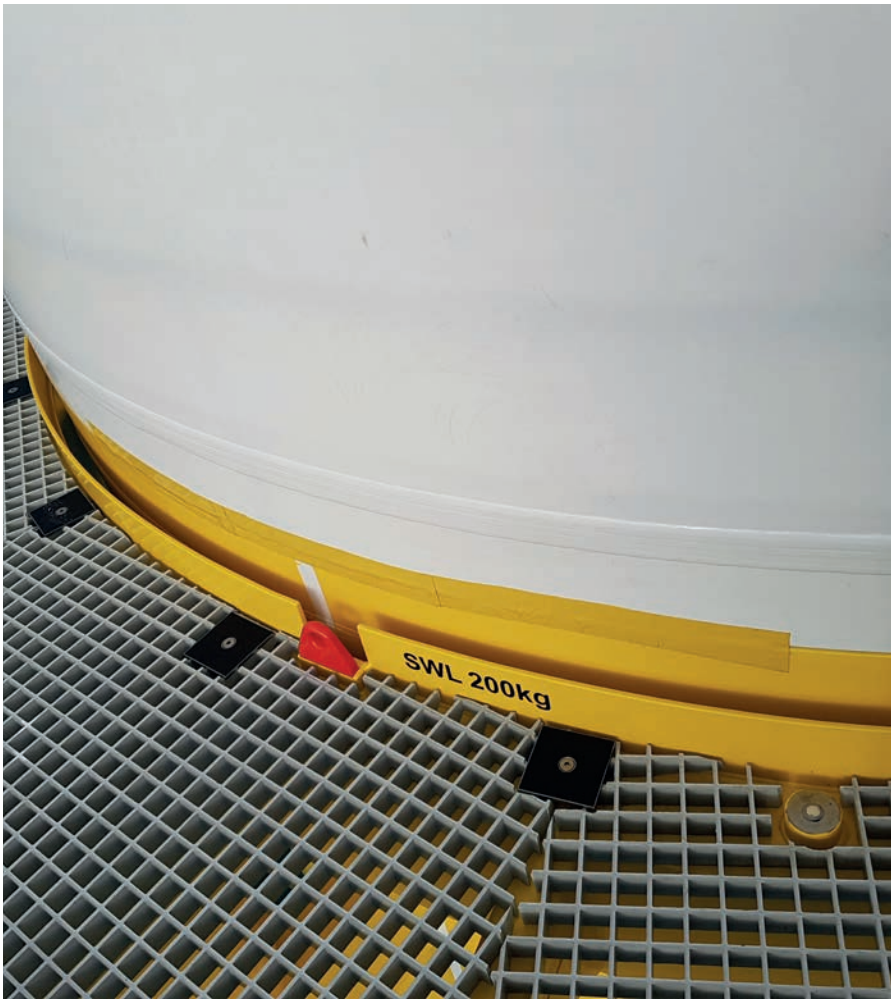

Now consider this: one individual, or a small team, is armed with a wire brush and a roll of patches. They simply brush the loose corrosion away, apply the patch and are done. The applicator returns with only the release liner and cardboard as waste. The operator never has to reach the point of blasting, creating a profile, removing chlorides and painting the towers until the end of their design life, which, depending on time in-situ, could be up to 25 or 30 years. Every corrosion spot can potentially be halted from expansion as soon as it is observed.

**PES: Corrosion costs time and money when it comes to maintenance, how can the application of products like Easy-Qote help reduce these?**

**DC:** It does, and the costs are staggering. The most recent Impact Study by AMPP in 2021 suggested that in Canada alone, the annual cost of corrosion is $51.9 billion. That is a staggering number. By employing effective corrosion mitigation practices that number is reduced.

In the scenario above we explained how Easy-Qote requires minimal manpower, minimal equipment and is quick, easy and simple to apply. It is clear to see that overheads are going to be greatly reduced, transportation and manpower costs kept down, and with a lifetime of 25+ years, the need to repeat the coating is gone.

**PES: Are cost and lifespan of the turbine just two of several advantages?**



**LH:** Since other solutions require blasting, which releases hazardous by-products into the environment, another major advantage is the detrimental environmental impacts avoided. In terms of cost, it is not just in the initial application, but cost savings over time as there is no need to re-visit and make further repairs, unlike some coatings which degrade.

This cost saving spreads further into reduced manpower, logistics and time spent conducting inspections and subsequent repairs.

There is then the advantage of the reduction in failure of the turbine from corrosion issues, which will improve productivity, longevity and the sustainability of renewable energy.

**PES: How long, once applied is the coating likely to last and will that depend on weather conditions etc?**

**DC:** Easy-Qote is formulated using non ageing polymers, with free radicals filtered out, thus bringing the oxidation or breakdown of the polymer to a minimum. Even with intense weather conditions like the ones we see in offshore installations, we can still provide a 30 year minimum protection of the asset.

**PES: Can the coating be applied retrospectively to equipment or should this be carried out before installation ideally? Doesn't it require a lot of downtime for the coating to set?**

**DC:** There is no doubt preventative action is the best action, but absolutely it can be applied once the turbine is in situ and operation. Since there is no need to perform extensive surface preparation, just a simple wire brush, application is quick and easy. Once applied the coating gets to work providing immediate protection, there is no cure time required.

**PES: Another solution of yours, Oxifree, helps maintain normal operational use to reduce downtime as well, doesn't it?**

**LH:** Yes it does. Oxifree offers TM198, a thermoplastic coating which is applied in a melted state via a heated hose and gun and conforms to any shape. It is currently being used in the wind industry both onshore and offshore.

In fact our most recent projects have seen it being used to protect flanges and valves on offshore substations which collect and export the energy created by the turbines at sea.

In this environment, salt, water and fluctuating temperatures create the perfect storm for corrosion. TM198 can be applied with minimal surface preparation, just the use of a wire brush, and the asset coated quickly, providing immediate protection as the product cures on application. It can easily be removed for inspection or maintenance and simply reapplied.

**PES: What about the chemicals in the coating? With the turbine being placed back in the water once treated, how can wind farmers be certain that it is safe for the environment, as well as for those applying the treatment?**


**LH:** TM198 is organic and has less than 0.05% VOCs. It is completely environmentally friendly and has undergone OECD 201, 202, 203 water toxicity testing. It is safe to apply and would cause no harm to the environment both on land and in water.

**PES: Do you see the problem of corrosion and the subsequent challenges it poses only getting bigger from here, as wind farms and the industry itself grows?**

**LH:** I think if a proactive approach to preventative maintenance is not undertaken then yes, there is no doubt corrosion will become a bigger challenge in the years to come.

But corrosion coatings are getting smarter and easier to apply. We are seeing this across our suite of brands in other renewable markets. A proactive approach can add years to the lifetime of those critical assets and that has to be the way forward.

Equally, we are proud to offer fantastic solutions that can provide long term protection for the after installation phase and we are confident that by using them, we can ensure that the future does not become a cycle of repetitive maintenance, but instead these important installations can fulfil their ultimate aim of true sustainability.

**PES: What do you think the future will look like? Is there an Easy-Qote or Oxifree version 2 already in development, or indeed something new?**

**LH:** At Seal For Life innovation is at the heart of our business, in all we do. There is no doubt that we will have new offerings to market in the future. But for now we stand behind our current offerings, knowing that they can do exactly what the industry needs in protecting critical infrastructure and in turn protecting the future.

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