North Sea company offers radical turbine blade protection solution

Claim is that system will eliminate blade erosion repair over the full design life of 20 years or so. That's a game-changer

TRAC of Aberdeen's new wind turbine blade repair system can be deployed in-situ offshore

RENEWABLES

BY JEREMY CRESSWELL

TRAC International of Aberdeen has developed a new approach to better protecting the leading edges of wind turbine blades against erosion damage.

The system being brought to market has been developed at group subsidiary TRAC advantEDGE and is due to be launched early Spring.

While initially offered as a repair solution, TRAC believes incorporating its approach to blade defence at the time of manufacture would deliver lifetime protection, which means about 20 years.

According to the company, current materials on the leading edge surface of a wind turbine blade provides no defence against erosion, which disrupts the aerodynamic performance and reduces the yield (the amount of power generated).

Bearing in mind that there are apparently some 1million operational blades worldwide and that this figure is expected to double by 2020, the cumulative impact of leading edge erosion (LEE) in terms of impaired power generation efficiency is enormous. That has a cost.

TRAC notes that LEE repairs are typically performed manually, they are time consuming, labour intensive and expensive with all the work being carried out at height and subject to variable environmental factors, which adversely impact the integrity of repairs.

Once repairs are completed leading edge protection (LEP) coatings are then applied on-site, this process is also subject to the same variable environmental conditions, which significantly reduce operational performance of such coatings.

Apparently, some of these repairs fail within six to 12 months and reports indicate the majority seldom last longer than one to two years.

However, it seems that many windfarm owners/operators can only justify the cost of scheduling full inspections every two to three years so the majority of repair failures often go unnoticed until the next scheduled inspection identifies the need to repeat the repair process.

As a result, this intervening period typically results in additional damage and increased costs.

The solution developed by TRAC employs high-tech, lightweight automated robotics, in conjunction with prefabricated modular erosion shields. The impact of these innovations is that repair times are cut, so minimising turbine downtime and, according to the company, offers much improved operational protection for blades so treated.

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advantEDGE will be available globally under licence from this Spring to original equipment manufacturers (OEMs), utilities and other windfarm owners and operators, and independent specialist blade repair service providers.

Annual licences are available for each of three global regions: Europe, Middle East and Africa (EMEA), Asia Pacific (APAC), and Americas (North, South and Latin America).

In addition to the O&M market, the TRAC advantEDGE wants to open dialogues with OEMs and blade manufacturers to discuss installing these erosion shields on newly manufactured blades.

The claim is that their use would eliminate leading edge maintenance and repair over the full design life of 20 years or so.

Management of global advantEDGE field trial teams will be led by Francois Low, who has joined the TRAC advantEDGE team from Siemens, where he was rope access technical supervisor managing end of warranty inspections and blade repair campaigns.

Siemens is the dominant turbine OEM in the North Sea and regarded as a global leader in the wind industry.