

Fred. Olsen Renewables is a leading developer, owner and operator of renewable energy assets, primarily onshore wind farms.

Background

As the demand for wind energy continues to grow, the requirements for wind farms are equally increasing. The efficiency relies on reducing maintenance and operation costs and improving reliability, i.e. minimising downtime and maximising service life. Fibre optic cables are increasingly being used for remote control of temperature, blade angle, speed of the rotor, hydraulic levels, etc.

Wind farms work in a challenging environment and are not suited for traditional fibre optic equipment. The ideal fibre optic equipment deploys within a wind farm should have rugged, lightweight features for extreme environments to extend its life-cycle.

As this is not usually the case, the half-life servicing will encounter that the fibre optic cables are inadequate and often damaged.

Problem

Breaking of assemblies inside the wind turbines due to moving, rubbing and consumption. Alker were tasked with replacing ageing fibre optics within turbine towers as "half-life" servicing and upgrade.

Solution

A complete redesign of the assemblies was developed and manufactured by Alker. From an initial working prototype, we produced a range of assemblies/breakouts with 2 and 4 micro armoured tails, and ST, SC, SMA or LC connectors.

Upgrading assemblies during half-life servicing will extend the life expectancy.

Armouring and braiding assemblies at the design and manufacturing stage would immediately improve service-life..

Features

- ▶ We developed flexible armouring within the assemblies for extra protection;
- ▶ We added stainless steel braiding to the outside assemblies to prevent rubbing;
- ▶ Armoured the internal multicore fibre optics with Kevlar for additional protection;
- ▶ We developed a stainless-steel solution for the breakout tails;
- ▶ We added sacrificial patch cords to the breakout to protect the main assembly.

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