Aids to Navigation

Offshore Wind Farms

August 2016

Background:

With the ever growing renewable energy industry, fuelled by the global endeavour to achieve sustainable power, the UK has become a world leader within the offshore wind sector. Britain now produces close to 12% of its total electricity from wind farms. A statistic that is likely to grow, with overall investment in Europe doubling to €13.3bn in 2015.

PowerPoint's involvement began on one of the UKs very first offshore wind farms back in 2003, delivering high quality technical provisions, essential for offshore operations. To this day PowerPoint have continued to provide Aids to Navigation systems, Meteorological Systems, Communications and O&M services throughout the development of all three rounds of the UK's offshore wind power development.

Overview:

The continued installation of offshore wind turbine generators can pose potential hazards to shipping and other maritime craft particularly during the construction phase of the wind farms.

IALA is an international authority that publishes guidelines for marine navigation and safety which relevant local authorities, such as Trinity House, then enforce. PowerPoint have installed numerous Aids to Navigation Systems which include passive and active AIS (Automatic Identification System), LED navigation lanterns, visibility & LUX sensors, fog warning signals, and avionics obstruction lighting.

Solution:

PowerPoint has developed many bespoke systems to suit various offshore installations, from meteorological masts to the wind turbines themselves and even temporary systems to mark transition piles (i.e. pile without installed turbine) during the construction phase.

During the wind farm construction phase aids to navigation are often still required to mark the structures. However, due to the lack of power available, this can be a difficult requirement to fulfil and as a temporary measure 'guard vessels' are often employed to protect marine traffic.

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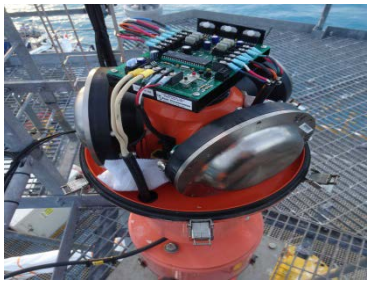
Provision of a 'Guard Vessel' is however a costly outlay given that the requirement could be in place for a number of months. PowerPoint have worked to help curtail these costs by creating a system that can provide temporary aids to navigation, complete with full telemetry monitoring, which can then later be converted to a permanent system once the wind turbines have been installed.

The aids to navigation systems provided by PowerPoint not only identify to marine traffic the location of the offshore structures but also provide the client with complete monitoring and remote access/control of the aids to navigation equipment and associated power systems. Monitoring is key to effective management of the aids to navigation systems, immediately notifying the client of equipment failure to ensure that prompt action can be taken. This helps the client maintain the high 'system availability' requirement specified by the regulatory authorities.

Availability is a key figure used by the authorities to ensure the wind farm complies with statutory requirements. Availability is effectively the amount of time the system has operated without failure, over a set time period. Software within PowerPoint's 'AtoN' systems is designed to self-calculate the availability data for the client. This data is also often made available on the clients SCADA system and can be used for the statutory reporting to the relevant authority.

PowerPoints aids to navigation monitoring systems can be tailored to suit the requirements of the client. Alarms can be generated, emailed or sent via SMS to a list of pre-determined contacts, using GSM/GPRS or satellite communications. Once the wind farm construction phase has been completed, the communication system can be modified to utilize the wind farms own subsea fibre network.

Conclusion:

PowerPoint has created fully functional temporary and permanent offshore aids to navigation systems which can be monitored remotely and also facilitate control from the wind farms SCADA system. These systems also calculate the availability figures automatically thus saving time and resources for the client. Each installation is bespoke for the application and many more features can be added, such as incorporating active or passive AIS equipment. This helps to ensure that PowerPoint's 'Aids to Navigation' systems are some of the most affordable and cost effective available.

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