

# Offshore wind farms

Keeping workers in remote and challenging environments connected at all times

**COBHAM**

## Case study

The most important thing we build is trust

### Overview

Cobham Wireless' TETRA and DMR public safety systems enable reliable and robust public safety communications provision across entire offshore wind farm sites, including within the maintenance areas of each individual turbine.

### Challenge

Offshore wind farms are amongst the most challenging environments to provision emergency communications services with RF-reflecting construction materials, harsh weather conditions and proximity to the coast all hampering traditional services.



### The Challenge

Providing emergency communications services for workers offshore is one of the most critically important challenges for companies with operations in these environments. Severe weather conditions combined with logistical difficulties caused by the positioning of facilities well away from the coast render traditional solutions impossible or, at best, very unreliable.

In the case of offshore wind-farms, where the average facility is positioned 29km from the coast<sup>1</sup>, the problem of providing emergency communication services is compounded by the difficulty of penetrating metal wind turbines with RF signals when the door is closed. This creates a 'Faraday cage' effect and makes getting signals in from the outside impossible.

Although these facilities are unmanned for the majority of the time, engineers regularly have to perform routine maintenance and repairs on site. Given the harsh outside conditions in many of these areas, a robust public safety communications infrastructure is of vital importance.

Outside of public safety, many maintenance companies can create significant efficiencies through enhancing communications between staff on site and those in offices on the mainland. This improves their abilities to provide level technical support and opens the door to the use of machine-to-machine technology at the site.

Delivering robust communications infrastructure to offshore workers is essential to meet regulations, improve safety and enhance the abilities of engineering teams to increase the performance of the facility.

### The Solution

Connecting offshore workers to each other, alongside colleagues and emergency services on the mainland, requires a robust TETRA or DMR (Digital Mobile Radio) network accessible throughout the site.

Cobham Wireless is the obvious choice for the provision of this equipment given its extensive experience in this area, having developed TETRA (since 1997) and DMR (since 2005) systems into some of the world's most remote and difficult environments.

As with any offshore TETRA or DMR deployment, Cobham Wireless installs patented DSP (Digital Signal Processing) technology into wind farms to provide communication services with extremely low delay and high selectivity filtering capability. This enables systems to be configured precisely to the requirements of the specific wind farm given its proximity

<sup>1</sup> European Wind Energy Association, 2012



to the mainland and other geographical factors.

These TETRA and DMR repeaters incorporate Cobham's industry-leading frequency and band shifting technology used in cellular products, enhancing the ability to extend the reach of base stations to far offshore environments.

For example, to provision a typical offshore wind farm containing a series of GE 1.5-megawatt units, consisting of 35m blades mounted on a 60m tower, the system will require facilities to deal with 90dB path loss. Using an antenna mounted 25m above sea level on a 60m tall wind turbine, could provide 10dB antenna gain.

Systems are easily configured either locally or remotely via a simple web interface or through the Active Element Manager (AEM) system. To protect equipment from the harsh elements of an offshore industrial environment it is supplied in IP65/NEMA 4 grade protective cases, which are completely weatherproof, secure and robust.

### The Benefit

Following the system installation, high-grade public safety communication systems are available across the site providing emergency coverage both inside and outside of the turbine tower. This valuable resource enhances the ability of workers to communicate with colleagues elsewhere on the site, staff on the mainland and first responders in case of an emergency.

Cobham Wireless' TETRA and DMR systems are fully weatherproof and tested in the most challenging of natural environments, providing reliable and robust facilities to enhance safety for offshore maintenance teams.

In addition to offering emergency service provision, Cobham Wireless' communication technology vastly improves the abilities of engineering teams to communicate with each other to improve operational efficiency.

By selecting an experienced communication provider such as Cobham Wireless, with a competitively priced portfolio of products, facilities owners can ensure maximum uptime of turbines, the safety of its workforce and cost-effectiveness of the site itself.

