



Wind Park Underwater Power Cable Monitoring

Shanghai

The Donghai Bridge Wind Farm is located near the Donghai Bridge, Shanghai, which is the second largest bridge in the world. The wind farm is the first commercial offshore wind park, and was completed prior to the 2010 World Expo in Shanghai.

AP Sensing, together with their local partner, are supporting this project to monitor the submarine power cable with an approximate length of 15km.



The project is designed with a total capacity of 100 megawatts and can supply 400,000 people with green power when completed.

Each wind turbine is 90 meters high and weighs 400 tons. The blades are 45 meters long. "The 2.3 billion yuan (US\$337 million) plant will generate 260 million kilowatt hours of electricity yearly, supplying some 170,000 families," said the Shanghai Electric Co Ltd.

The requirements

The demanding environment of monitoring submarine power cables (water, pressure, difficult and expensive to maintain) resulted in the following requirements :

- Robust sensors that will perform under water for a lifetime with no maintenance
- High degree of integration, highly reduced number of active components
- 15km measurement range with a single Distributed Temperature Sensing (DTS) instrument
- GB/T 21197-2007 certified in China
- Working life more than 30 years
- Accurate measurements

The AP Sensing solution

AP Sensing “Linear Power Series” is the most appropriate technology for these requirements under severe conditions. The heat sensor is a passive fiber optical cable. The sensor cable itself requires no maintenance and operates without any electrical components. The measurement range of AP Sensing “Linear Power Series” can reach 15km in one Channel.

An AP Sensing “Linear Power Series” DTS with 4 channels is used for this project. The monitoring length of each channel is: 10,000m, 12,500m, 13,500m, and 14,500m. And the temperature data can also be used to calculate the capacity of the Power Cable.