

## Long Range Cable Monitoring on North Sea Offshore Wind Farm

In this project, NKT Photonics supplied a LIOS EN.SURE Long Range power cable sensing system to monitor a 50 km long export cable from an offshore wind farm in the North Sea.

The cable included a single mode fiber optic cable installed just under the steel armor of the submarine power cable. The LIOS system was connected to this fiber, making installation and setup quick and easy.

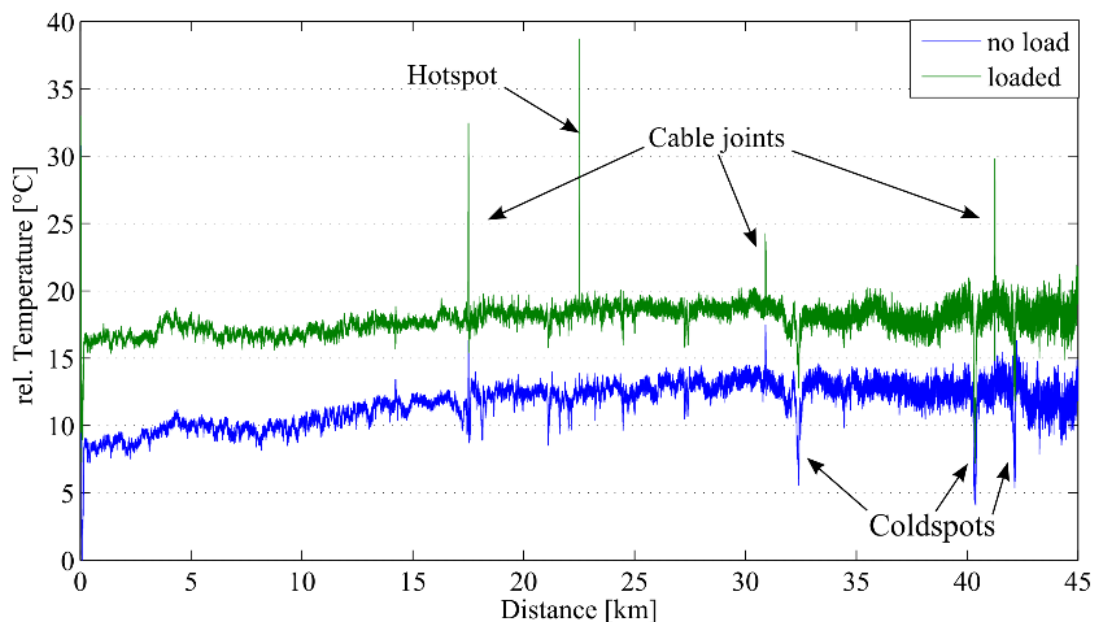
### Project highlights

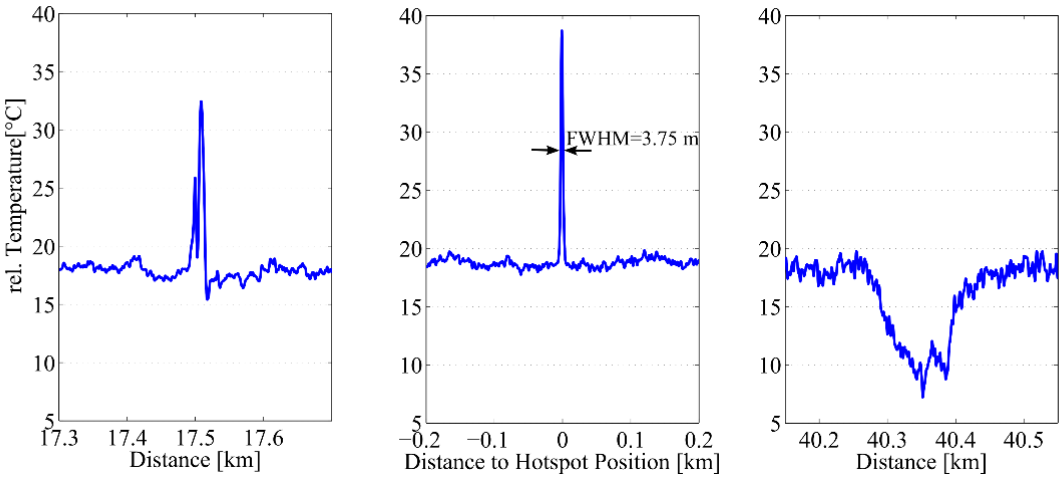
- 50 km long North Sea Offshore Wind Farm export cable monitoring project
- Superior temperature resolution and accuracy along the whole power cable circuit length
- Easy and quick installation set-up
- Excellent measurement performance to identify hot and cold spots
- Correct identification of mid-cable hotspot that later leads to cable failure

The temperature profiles provided showed an overall continuous temperature distribution along the power cable with an average increase of fiber temperature of 6.5°C when the wind farm runs on full load. We did, however, detect four hotspots.

Three of them were assigned to cable joints where the thick plastic sheath reduces heat conduction. There was another narrow hotspot detected at the middle of the circuit.

The narrow profile of the hotspot confirms the very good spatial resolution of the Brillouin-DTS. Most importantly, the power cable later failed at the exact same location as the hotspot.





Above, closeups of two hotspots and one coldspot. 10-min measurement time, 0.25-m sampling interval & 3-m spatial resolution