52 km High Voltage Subsea Power Link

Denmark / Germany

Power Grid Operator Selects AP Sensing for Long Distance Subsea Monitoring

Energinet.dk is the Danish operator of the natural gas transmission system as well as the **400 kV, 150 kV and 132 kV electricity transmission systems**. Energinet.dk is also the co-owner of the electrical interconnections to Norway, Sweden, and Germany.

AP Sensing was recently selected to provide a fiber-optic based Distributed Temperature Sensing (DTS) system **to monitor the high-voltage subsea power links** between Gedser, Denmark and Rostock, Germany, plus an additional subsea link in Denmark from Orevej to Orehoved.

In total, two AP Sensing *Linear Power Series* devices with 30 km measurement length capabilities and one device with 12 km length were installed for these subsea links.

Two 30 km devices are installed at both ends of the Gedser and Rostock connection and measure non-terminating sensor fiber with a length of 45 km. The **trace data from these two devices is combined together in the SmartVision database to produce one coherent 45 km circuit temperature trace** for the total run.

Overhead lines are moved underground

AP Sensing's solution was selected not only for its stability and reliability, but for its versatility, which helped meet many of Energinet.dk's needs for this installation:

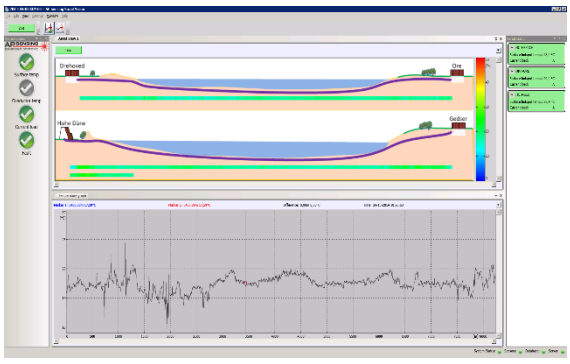
- Both **rack and IP66 wall mounted housings** were required. The installation requirements in the substation called for **a compact solution requiring minimal space, low power and without requirements for a temperature-controlled environment** (e.g., air conditioning).

- **No co-located Windows PC is required** inside the substation for continuous monitoring.

- All trace data from all three devices is **simultaneously collected into the central SmartVision software database.**

- The SmartVision software itself **runs on a virtual Windows 2012 server, which is highly available, easy to maintain, and can be accessed within Energinet.dk's organization.**

The planning, installation processes and the support from AP Sensing's Project Engineering team, working in close cooperation with Energinet.dk's engineering staff, were considered to be key factors for this successful subsea project.



SmartVision asset visualization showing circuit box status

Linear Power Series rack model: Integrated LAN & USB interface, SD card reader and Multi Sensor Board.