

RTE Network Infrastructure

Summary

Fibre optic telecommunications and digital technology is used by power utility companies for monitoring and securing the power network to guarantee consistency in electricity transmission provision. French power utility company, RTE, wanted to ensure that communications were always available for this purpose and initiated an extensive upgrade programme of existing radio networks and leased telecommunications lines with optical fibre deployed on its own power distribution network.

Challenge

In 2001, French government authorities announced intentions to reduce nationwide inequalities in public access to high-speed communications and digital information (such as video, voice and data) by setting up telecommunications concessions in all regions. RTE recognised that excess optical fibre planned for its power lines was suitable and uniquely positioned to support this initiative and, in 2002, formed a subsidiary company, @rteria, to manage the telecom operations to install a fibre optic telecommunications infrastructure throughout the RTE power distribution network.

The installation project, called ROSE (Réseau Optique de Sécurité or Secure Optical Network), was rolled out in 2010 and comprised of 9,000 km of additional optical cables on top of the existing 6,000 km already in service. In addition to RTE's own network build under ROSE, @rteria also installed a number of links to offer concessions to local telecoms.

AFL provides fibre optic cable solutions for power networks by either replacing existing ground wire with optical ground wire (OPGW) or by installing a retrofit optical cable on to the existing power network where possible. In RTE's project, the replacement of the entire power network ground wire would have represented a massive and expensive installation project for RTE requiring long outage times across the network. Much of the power network also had significant residual value and did not represent a viable renewal option.

Solution

The most cost effective and efficient solution for RTE was to install fibre optic cables on existing medium voltage networks (63 kV and 90 kV lines) wherever possible and only replace ground wire where needed or convenient. AFL was the first to provide a satisfactory solution for RTE based on its patented SkyWrap® system, which has since been utilized for the great majority of this project.

The SkyWrap system uses specialist installation equipment to helically wrap fibre optic cable onto existing earth or phase wires of overhead power lines. Specially designed SkyWrap fibre optic cable is usually installed without modification to towers or poles and with little preparation or up front expense. The installation equipment is light and portable and does not require any special access clearance. It can operate in even the most difficult terrains achieving rates of up to 4 km per day.



RTE Network Infrastructure (cont.)

Results

Working with local partners, AFL has installed approximately 1,000 km of SkyWrap cable a year on a turnkey basis since 2004. The installed SkyWrap cable has been found to perform reliably in all environmental conditions from the cold of the Alps to the heat of the Cote d'Azure. AFL has also helped RTE to adapt its power line maintenance procedures to take account of the presence of the SkyWrap cable so that both optical and electrical networks can operate in harmony.

Since 2004, a total of 5,000 km of AFL SkyWrap cable has been installed on RTE power networks throughout France. The SkyWrap solution has enabled RTE to fulfil its communications needs in a cost effective and timely manner with minimal disruption to customers. The AFL solution also enabled @rteria to offer competitive bids in response to local telecom concessions tenders.

