AFL CASE STUDY

DESERT RING NETWORK

CHALLENGE

The Implementation of new fibre optic Ring Network to link substations for protection purposes on electricity transmission line infrastructure. The cable solution needed to be suitable for a desert climate and provide a reliable long term solution.

SOLUTION

A 24 optical fibre SkyWrap® installed on the existing ground wire using a birdshot resistant cable design.

RESULTS

The SkyWrap cable was used to upgrade older areas of the network to join up with existing OPGW installations already in existence. The SkyWrap solution completed crucial ring networks to provide data communications between substations while also removing the need to replace existing ground wire that is well within its operational life time. The SkyWrap solution has been so successful that there have been further installations since to join up more of the network.

CHALLENGE

A large electricity transmission company based in the Middle East needed to upgrade their communications network using the overhead power transmission lines. The 132 kV transmission network had some 24 fibre Optical Ground Wire (OPGW) already installed in a number of places which needed to be linked up. The rest of the network had ordinary ground wire which was still in good working order and not in need of replacement. With the ground wire still having significant residual value, the electricity company needed an additional fibre optic cable solution to be installed on the network.

The transmission network was situated in a desert climate making it a challenging environment for overhead cable solutions. The build up of particulate pollution without the washing effects of rain can be very aggressive to some cable designs and can severely reduce the life of some cables such as ADSS.

The transmission company was also not able to accommodate alternative power feeding or power outages; therefore, the cable installations needed to be conducted in live line conditions.

SOLUTION

AFL SkyWrap was considered to be the best solution and was, in fact, specified by the customer. A 24 fibre SkyWrap birdshot cable was wrapped onto the existing ground wire to join up with the 24 fibre OPGW and complete a number of ring networks.

SkyWrap is a quick, cost effective solution for wrapping fibre optic cable onto existing overhead power lines using specially designed installation equipment and accessories.

The cable is small and imposes little additional load on overhead line conductors and towers. Because the cable is wrapped directly around the ground wire it is kept at the same electrical potential as that wire, which removes the ability of an electric charge to build up and is therefore not subject to tracking damage caused by particle pollution present in desert environments.

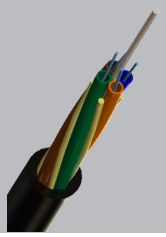
The installation technique is quick and has low impact on the surrounding environment and was installed on the ground wire under live line conditions. The lightweight equipment was able to be easily transported to towers over rocky uneven terrain.

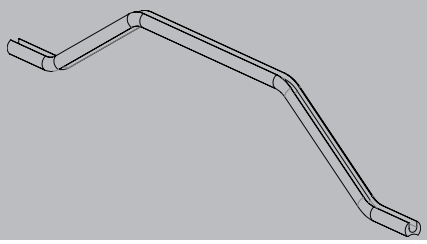
AFL provided a full project management service from route planning, training, installation equipment and site supervision. Existing aircraft marker balls that were in place on the ground wire were removed before the installation and then replaced using adapted marker balls that are compatible with SkyWrap, installed from a conductor trolley (provided by AFL) which is designed to pass over the SkyWrap cable without damage.

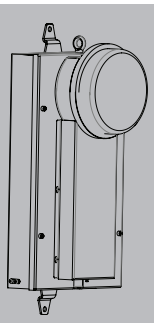
CASE STUDY DESERT RING NETWORK

SOLUTIONS DESIGNED AND INSTALLED BY AFL:

- SkyWrap®







RESULTS

The SkyWrap cable was successfully installed to link up with the existing 24 optical fibre network to provide protection monitoring across the network, linking up substations and critical assets. A total of 200 km of SkyWrap cable was installed quickly and effectively on the existing ground wire without the need to replace or modify any existing infrastructure.

This SkyWrap desert installation has seen the highest service temperature ever recorded for SkyWrap at over 50°C. SkyWrap is designed not to see any fibre strain or attenuation over its lifetime even with the long term cable creep and changes in sag caused by changes in temperature.

The electricity customer has since installed more SkyWrap to further increase the optical fibre ring network.

ABOUT AFL

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise and industrial markets as well as several emerging markets. The company's products are in use in over 130 countries and include fibre optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, fusion splicers and training. AFL also offers a wide variety of services supporting data centre, enterprise, wireless and outside plant applications. For more information, visit www.AFLglobal.com.

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