

Resilient 12 to 36kV touch safe aerial network solution with a competitive total cost of ownership

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This system has been developed in response to utilities demands for more efficient installation methods, cost savings and increased reliability. The fully insulated aerial cables offers a more profitable long-term investment by reducing costs for right of way, building, maintenance and causing less power interruptions. The construction reduces repair down time in comparison with other systems - resulting in less repair call-outs and smooth maintenance. In general the danger due to exposure to live lines is removed.



Fig 1 Cable suspension clamp and dead-end fixing helical

The robust construction of the fully insulated cable system offers several significant savings by greater freedom and flexibility of line routing. It can be routed overhead, in the ground, underwater, or adjacent to trees. For aerial installation, the cable manages even long span lengths. These multipurpose cables are also powering railways and supplying power to mines through vertical drilled holes.



Fig 2 Use as aerial and ground cable



Fig 3 Joint installation



Fig 4 Steep rise



Fig 5-6 Cable from air into a substation

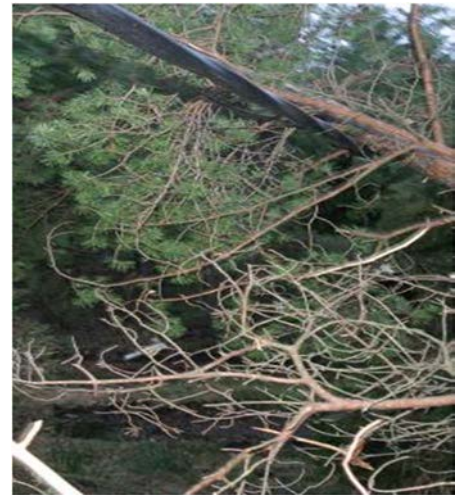


Fig 7 Trees on cable after storm

The overall project execution times are shorter and more cost effective. This includes all phases, from concession, planning, layout and design, and finally during building of the insulated aerial cable system.

An illustrative example: a cost effective way to upgrade an existing transmission line is to install the insulated cable system beneath the air insulated bare conductor transmission line, which can be kept in full operation. Transfer of power to the cable system requires as a maximum only a few minutes power outage. Temporary power during building of the new line is consequently not required. After removal of the old conductors, the fully insulated cable can be elevated live on line.

In other applications fully insulated aerial cables have been built in parallel with the LV lines which needed upgrading due to overload or voltage drop issues.

Powering the electrical grid with fully insulated aerial cables provides a lower TCO (Total Cost of Ownership) than air insulated bare lines. The improved service - no loss of supply for customers in vegetation dense areas also mean cost savings for utilities. The cable solution results in excellent safety - a fully insulated, screened robust cable is safe for maintenance as well as for vegetation management crews and last but not least the local residents.

Galloping waves and vibration are no issues for these cable lines as documented by EA-Technology on their Shetland Island test site.