



JICABLE'07

Rapporteur's Session Report

A.1 SESSION : HV / EHV CABLES SYSTEMS DEVELOPMENTS

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This session, which included six papers, was dedicated to cable system developments.

After having developed the XLPE insulation in the past years, manufacturers focused now on accessories, joints and terminations, to reduce the construction times and the overall costs. All these developments are tested according to IEC standards, especially IEC 62 067 for EHV cable systems. In some very specific environmental conditions, the client may ask a new test representing the real conditions. The first countries that installed these optimised XLPE cable systems are willing to share their feedback which is excellent, showing that cable systems are more and more reliable and ready to substitute for overhead lines in densely populated areas and in areas of outstanding environment value.

Paper A.1.1. dealt with the design and the testing of a new 400 kV one-piece premoulded joint in Japan using the cold shrinkable technology. This joint made of silicone rubber is expanded and maintained on spiral cores in the factory and is able to connect cables of different diameters. It successfully completed the type test and the prequalification test. The reason to develop this technology was to reduce drastically the construction times.

Paper A.1.2. proposed, with the same wish to reduce the construction times, a 400 kV dry plug in termination. It was developed, type tested and long term tested to allow applications up to 550 kV and 2500 mm². It was first installed on the 400 kV connection between the Thessaloniki Power plant and the PPC network, first 400 kV XLPE cable system in Greece.

Paper A.1.3. discussed the development of another compact one piece premoulded joint in Japan derived from the technology used in 225 kV. The main goal was to reduce the necessary skills that the previous Extrusion Moulded Joint (EMJ) required, thus reducing both the installation period and the space required for jointing. The long term performance of the self pressurizing insulator was comprehensively addressed and finally, it was confirmed that the interface pressure will be over the required value after 30 years.

Paper A.1.4 considered the French experience on aluminium laminated screens, used firstly on MV cables, then developed for HV cables and finally for 400 kV cables. This technology has been laid intensively for more than 10 years at HV level (over 1000 km of circuits), and since 2004 at 400 kV. The paper describes the advantages of the laminated moisture barrier regarding the installation and the Joule losses.

Paper A.1.5. presented the Italian experience of extruded cables and explained the improvements done along the years on the different layers of the cable as the change from EPR to XLPE, the accessories and the installation leading to optimization and rationalization giving savings on the investments and excellent reliability.

Paper A.1.6. discussed the tests asked by the client before installing a 12 km 400 kV link in a warm and wet environment in the middle East countries. The cable system is composed of a 2500 mm² conductor and EPDM joints.