A.6.1.

Super compact rubber block joint with high dielectric constant layer

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Application of rubber block joint (RBJ or one piece joint) has been recently increasing in 66 to 110 kV XLPE cable from the merit of the less skilled and shorter construction. The authors are developing the economical and super compact RBJ whose volume is reduced to about 1/3 of the conventional one, by employing the high dielectric constant thin rubber layer (High-ε layer) between insulation and inner semi-conductive electrode layer in order to relieve electrical stress.

At the basic examination, the reduction effect for electrical stress by High-ε layer has been verified to be tested in model joint of taping type insulation on the High-ε tube with premolded semi-conductive rubber for HV shield. That effect is equivalent to an estimation by electrical field analysis.

Moreover, 22 kV prototype rubber block has been made as an experiment, excellent performance was confirmed in the initial breakdown test.

At the experiment for 66 kV class rubber block, the stress cone to relieve the electric field are omitted to be shorten the length of joint by employing High-ε layer at the edge on cable outer screen. The initial performance test and the one month long-term aging test in accordance with JEC4308 standard have been carried out at Fujikura Tokyo Bay Plant. The prospect towards practical use for rubber block joint with high-ε layer was acquired.