



DEVELOPMENT OF DRY TYPE OUTDOOR TERMINATION FOR 66 - 110KV XLPE CABLE



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ABSTRACT

The typical outdoor termination for XLPE cables is composed of a porcelain bushing or composite bushing filled with insulating oil. (1) The authors have developed a dry-type outdoor termination for 66–110kV XLPE cables without using a porcelain bushing or insulating oil, consisting of electric field shielding epoxy and a metal rod covered with silicone rubber casing molded on the surface. (2) The termination uses few parts and can be quickly installed in the field. Initial and long-term tests for the termination were conducted in accordance with the JEC standard. All samples met the performance requirements.

This paper describes the design of the outdoor termination for 66–110kV XLPE cables and the results of the tests, as well as the development of the higher voltage class outdoor termination.

KEYWORDS

outdoor termination, dry type, XLPE cable, cold-shrinkable-joint

1. INTRODUCTION

The outdoor termination for XLPE cables is usually composed of a porcelain bushing filled with insulating oil, which makes it very heavy and the direction of installation is restricted. To solve those problems, we have developed a completely dry-type outdoor termination with silicone

rubber casing without using insulating oil. The termination without a porcelain bushing is light, and the absence of insulating oil permits the bushing to be freely installed at any desired angle. The assembly is very simple because XLPE cables are connected to the terminal with a rubber block. This paper reports the results of various tests of this dry-type outdoor termination.

2. STRUCTURE AND FEATURE

Figure 1 shows the structure of the dry-type outdoor termination for 66–110kV class cables, which has the following features.

- The epoxy unit with metal rod is covered with a silicone rubber casing.
- Completely dry-type solid insulation structure
- Easy handling and lightweight (about 90kg)
- Free installation angle and environment-friendly
- No need for special tools or skills

Connection of termination and XLPE cable conductor with rubber block

3. ELECTRICAL DESIGN

The insulation of the outdoor termination was designed in accordance with JEC3408 and IEC60840. Figure 2 shows an example of the equivalent potential distribution. The electric field control mechanism was optimized by the electric field design. There is no part that will be affected by the stress of epoxy or silicone rubber.

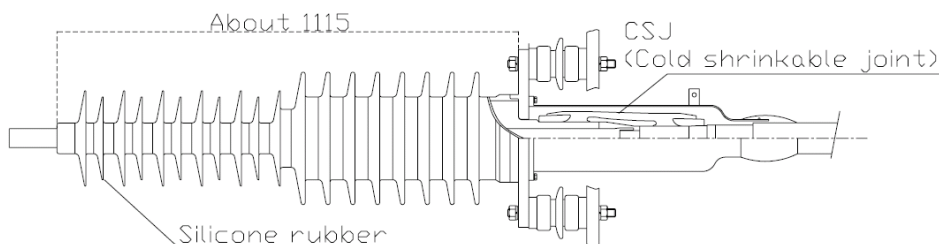


Figure 1. Structure of dry-type outdoor termination for 66–110kV class cables

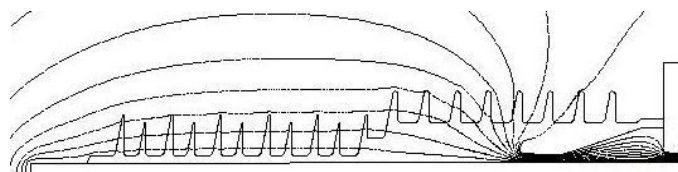


Figure 2. Potential distribution for out-door termination