

**A.2.4.****Prequalification test of 400 kV XLPE cable system**

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Abstract

As the city is modernized and expanded in size, the underground transmission system needs to be upgraded for the higher transmission voltage and larger ampacity. In order to satisfy the current demand, the 400kV XLPE cable system was developed and tested. Furthermore, in order to ensure the safe operation of the newly developed system and verify the long-term reliability, the pre-qualification test has been carried out at the independent laboratory, KEMA, Netherlands. This paper introduces the pre-qualification test in KEMA and briefly reviews the result of the test.

Keywords: XLPE, pre-qualification test, cable, accessory

1. Introduction

With the ease of maintenance and better environmental aspects, crosslinked polyethylene (XLPE) extruded cables and accessories are widely used over conventional oil-filled (OF) cables for extra-high voltage underground transmission system. Keeping pace with the current trends, the portion of XLPE cables has also rapidly increased in Korea since they were introduced in 1983 for 154kV transmission lines. Currently XLPE cables take the most part of underground transmission lines in Korea.

In the meantime, as the city is growing fast, the higher transmission voltage as well as larger ampacity are required to meet the increasing need of electricity at the highly densed areas. In spite of large transmission capacity, overhead transmission lines are avoided in the urban areas due to the safety matters. Thus, the solution must be found in the underground transmission system. There are several possible solutions and the development of 400kV XLPE cable system was one of them.

As soon as the development stage was completed, the subsequent test procedures were followed. For the verification of design concept and short term performance, the system was type-tested and tested for the long term reliability. A long term test in Korea

Résumé

Pendant que la ville est modernisée et augmentée dans la taille, le système souterrain de transmission doit être amélioré pour la tension plus élevée de transmission et l'ampérage plus grand. Afin de satisfaire la demande courante, le système de câble de 400kv XLPE a été développé et examiné. En outre, afin d'assurer l'exploitation sûre du système nouvellement développé et vérifier la fiabilité à long terme, l'essai de pré-qualification a été effectué au laboratoire indépendant, KEMA, aux Pays-Bas. Cet article présente l'essai de pré-qualification dans KEMA et passe en revue brièvement le résultat de l'essai.

Mots clés: XLPE, l'essai de pré-qualification, câble, accessoi

as well as pre-qualification test in KEMA were carried out with already type-tested system. All the tests were carried out in accordance with IEC 62067.

2. Long term reliability test in Korea

With the numerous test experiences and the success of KEMA type test, the design and the short-term performance of 400kV XLPE cable and accessories showed fully reliable performances. As a whole system, however, their long-term reliability had to be verified. Therefore, simultaneously with the prequalificaion test at KEMA, a long term test was carried out at the testing site in Korea for duration of 6 months. The test was carried out in accordance with IEC 62067 and was successfully completed.

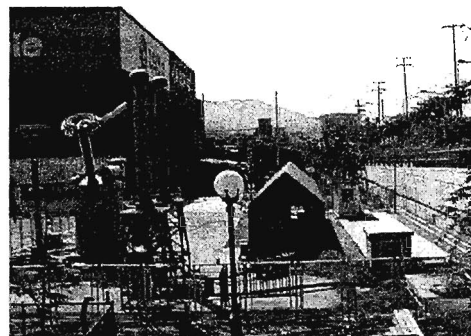


Fig. 1 : Overview of long term testing site