



C.8.1.15.

Tailor-made medium voltage cables

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Abstract: Medium voltage XLPE-cables (10-30kV) are usually designed in a traditional way.

There are several reasons for this, accessories should fit and the utility should have comparable sources for the cable. Medium voltage cables are today a standard commodity product.

For special purposes, medium voltage cables, overall performance can be largely enhanced if the design is optimized.

This paper gives some examples of how material knowledge and good design can produce a better overall performing cable.

Keywords: XLPE cable, medium voltage cable, cable design.

1. Introduction

Medium Voltage cables, (MV-cables, by this expression we in this paper refer to 10–30 kV cables) traditionally are designed strictly according standards (IEC, VDE etc.).

When designing high voltage cables it has been accepted for a long time that each cable is optimized for the specific use. The cable components involved are usually the insulation with varying thickness, the screen with area adapted to the actual short circuit demands and the sheath with the density of the polyethylene and a possible water diffusion barrier usually of aluminium.

In this paper, we will discuss how this way of cable design can be used for MV-cables. We are also showing successful cable designs based on these theories.

2. Cable design

The most obvious uses for optimized design of MV-cables are cables for special use such as aerial cables, submarine cables etc.

Résumé: Cet article explique par des exemples comment produire un câble de moyenne tension ayant des performances supérieures en utilisant de bonnes connaissances des matériaux et du design.

Les câbles de moyenne tension de polyéthylène réticulé, PRC, (10-30 kV) sont habituellement dimensionnées d'une manière traditionnelle - les accessoires doivent se raccorder et l'exploitation doit avoir des sources compatibles pour le câble. Les câbles de moyenne tension sont aujourd'hui des produits de base.

Pour des applications spéciales la performance des câbles de moyenne tension peut être largement améliorée si la construction est optimisée, donnant un coût réduit pour le propriétaire.

Mots clés : polyéthylène réticulé, câbles moyenne tension, design des câbles.

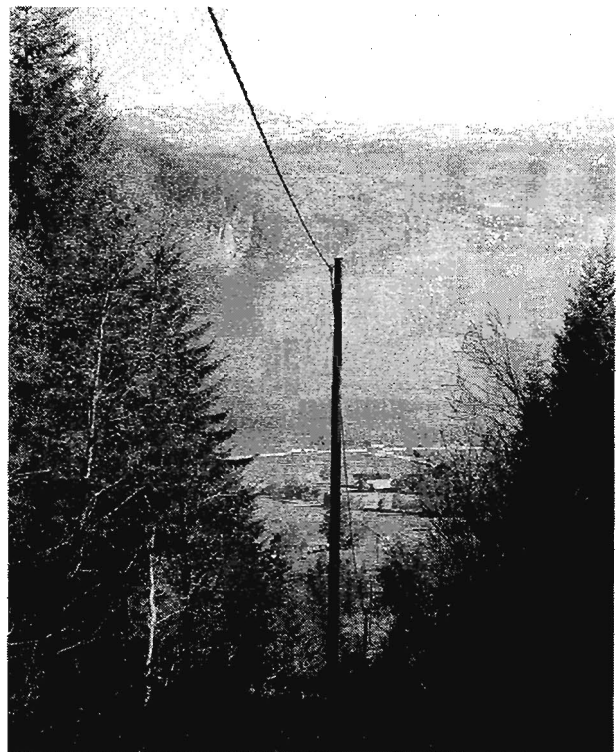


Figure 1.