

**C6.12****Interface behaviour in HV and EHV accessories**

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Résumé

Dans les accessoires HT et THT, les interfaces entre les composants constituent des zones faibles qui sont des zones privilégiées pour la génération des décharges partielles, les contournements et la dégradation du matériau. Ces interfaces se situent entre a) les accessoires prémoulés et l'isolation du câble synthétique, b) les composants prémoulés les produits de remplissage isolant, et c) l'isolant du câble synthétique et les produits de remplissage isolant.

Un contrôle adéquat de ces interfaces est nécessaire pour optimiser la conception des accessoires très haute tension. Ce papier a pour objet de discuter les différents paramètres de contrôle tels que la nature de l'isolant solide et du fluide environnant, la pression hydrostatique, la température et la forme d'onde de la contrainte appliquée.

Une étude détaillée de l'influence de ces paramètres doit permettre d'améliorer la conception des accessoires très haute tension.

Abstract

In HV and EHV accessories, the interfaces between components constitute weak zones which are privileged areas for partial discharge generation, flashover and material degradation. These interfaces are between a) premolded accessories and the synthetic cable insulation, b) premolded components and insulating filling compounds, and c) synthetic cable insulation and insulating filling compounds.

An adequate control of the interfaces is required to optimise the design of EHV accessories, and this paper intends to discuss various control parameters such as the nature of the solid insulation and the surrounding fluids, the hydrostatic pressure, the temperature and the wave form of the applied stress. A comprehensive study of the influence of these parameters is expected to help improving the design of EHV accessories.

1. Introduction

XLPE power links have been developed and used for nearly thirty years; the main challenges have been overcome, but smaller, lighter and easier to use oil insulated accessories remain desirable, in view of the green house hazards involved with SF₆.

Increased compactness means enhanced bulk and interfacial electric fields and hence requires more care to prevent the occurrence of partial discharges and breakdown.

The work presented here intends to clarify the behaviour of the interfaces between components, and suggests the use of alternate dielectric fluids to reduce size and weight.

2. Description of a termination

A standard porcelain outdoor termination is represented fig 1.

One can notice that the different interfaces are:

- cable / fluid (i.e. XLPE / SF₆ or oil),
- stress cone / fluid (i.e. EPDM / SF₆ or oil),
- support / fluid (i.e. epoxy / SF₆ or oil).

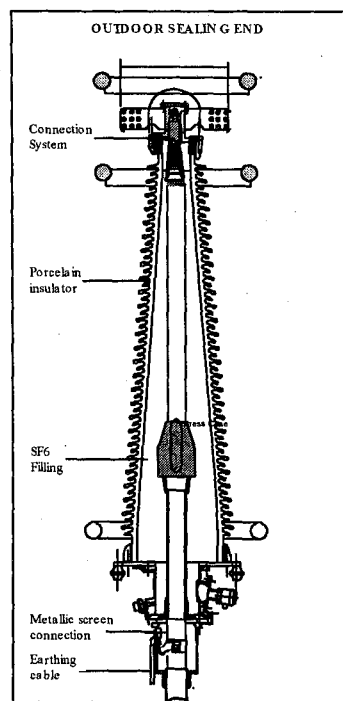


Figure 1

An outdoor termination