

## EFFECT OF AGEING ON MV UNDERGROUND ASSET RELIABILITY



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### **ABSTRACT**

*Ageing is becoming a serious concern for companies operating a growing old network. Question is whether asset failure is a question of time and how to model it.*

*The paper focuses on the MV underground cables. It describes the actuarial method used to study the impact of ageing on asset reliability: the yearly failure rate calculated allowed to build up the lifecycle of underground cables.*

*Firstly MV cables have been clustered into homogeneous groups according to their mean types (metal, section, technology PILC or XLPE) and environment (rural/urban). A slight increase in fault rate with time can be detected.*

*Since each point of the curve refers to a specific group of asset, we can't affirm increase is the result of ageing. It may be due to any other 'hidden' factors such as load, stressed operational condition, ambient temperature, or number and type of joints...*

*In particular joints aren't identified in our asset database. So an important work had been done in order to determine the number and the type (PILC-XLPE join, PILC-PILC and XLPE-XLPE joins) of joins on each cable section. The purpose is to establish the evolution of fault rate per unit with time for each elementary component, cable and join. The last step is to determine an estimated life duration for each type of joins. One of the purpose of this step is to add joins due to the failures occurred on the network, in order to forecast the architecture of the networks, and the probable increase of failures due to the component density, and not only because of the aging of the component.*