

CONDITION MONITORING OF POWER CABLES

Abstract

It has long been the dream of Cable Engineers, to have a means of assessing the future life of cables in service. New methods of recognising and measuring various parameters that effect cable performance are now becoming available, so that condition Monitoring of power cables is now becoming a reality.

Changes in the Electricity Industry have also created a renewed focus on the need to limit installation and service costs yet still obtain higher performance and reliability.

The main question always remains "how long will the cable system provide reliable service?" To address this issue we are witnessing a trend to 'smart cables and accessories' adapted for 'on-line', 'real-time', continuous, condition monitoring as well as other equipment designed to establish what changes may have occurred in the cable environment or properties of the cable insulation and accessories.

Having the technology to measure these various parameters is however only one part of the puzzle, to understand what they mean can still be the most difficult task of all.

Within the cable engineering fraternity the understanding of the influence and importance of soil thermal resistivity, ambient temperatures, mutual heating from adjacent circuits, and partial discharge amongst others, has grown enormously in the last few years. However much work is still needed to allow system operators to confidently make (sometimes critical) decisions regarding operational limits for cables in service.

This paper discusses currently available technology, the shortcomings, and the trends for future development.