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COMPUTER STUDY OF DAMAGED CABLES WITH ELECTRIC FIELD DISTRIBUTION OUTSIDE THEM

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Abstract

The electric field distribution inside the polyethylene insulation of power cable and outside the cable with typical degradation of its jacket, metallic shield and a large part of the insulation is studied by computer modeling. The two- and three-dimensional problems are solved numerically to determine electric field strength. As shown, the interface between the main insulation and the defects is a weak site which is liable to further failure and deterioration of cable in service. For the damages under consideration the electric field is spread outside the cable at small distance, not more than 1.5 times larger than cable radius as the average. References 11, figures 5.

Key words: cross-linked polyethylene insulation, cable damages (damages of metallic shield / neutral, outer semiconducting layer, main insulation), electric filed outside the cable, two- and three-dimensional computer modeling.

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