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Comparison of Finite-Element and IEC Methods for Cable Thermal Analysis under Various Operating Environments

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Abstract : In this paper, steady-state ampacity (current carrying capacity) evaluation of underground power cable system by using analytical and numerical methods for different conditions (depth of cable, spacing between phases, soil thermal resistivity, ambient temperature, wind speed), for two system voltage level were used 132 and 380 kV. The analytical method or traditional method that was used is based on the thermal analysis method developed by Neher-McGrath and further enhanced by International Electrotechnical Commission (IEC) and published in standard IEC 60287. The numerical method that was used is finite element method and it was recourse commercial software based on finite element method.

Keywords : cable ampacity, finite element method, underground cable, thermal rating
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