

ANALYSIS OF HEAT TRANSFER OF FLAT CABLE SYSTEM USING FINITE ELEMENTS TECHNIQUE

By

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ABSTRACT

The gas-insulated transmission line (GIL), which is a replacement of an overhead line in some special environments has been used because of its high capacity, low losses and no electromagnetic interference.

A mathematical thermal model for predicting the steady state temperature distribution inside and outside GIL is investigated by merging two techniques to get rid of using sensors inside the GIL cable.

The finite element analysis involving formulation and solution of the heat conduction equations has been done. During the solution of the heat conduction equations of the proposed model, a numerical study based on energy conservation equation using MATLAB © programming is performed to determine the bulk temperatures of the insulating gas inside the cable.

The obtained results are validated against experimentally measured values under the same conditions. The validation indicates that the results are very close to the experimental measurements.