

Siritorn Plublek 2012: Grounding Design Analysis for Limited Area Gas-Insulated Switchgear Indoor Substation. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Associate Professor Santi Asawasripongton, M.Eng.Sc. 97 pages.

This thesis presents the method of ground grid design by using Current, Distribution, Electromagnetic Fields, Grounding And Soil Structure Analysis (CDEGS) software and the development of computer software for ground grid design of Gas-Insulated Switchgear (GIS) Indoor Substation in the limited area for Provincial Electricity Authority (PEA), Thailand. The design shall be improved by selecting the various types of material covered on the surface to increase tolerable touch and step voltage. Moreover, the effect of the grid current distributing to overhead ground wire of the transmission line shall be considered in order to reduce ground potential rise for safety. This design method refers to IEEE std. 80-2000. The Ground Grid Tool (GGT) is created and developed by using Excel-VBA. This tool is easy to use and appropriate for all users. Also the report of a result can be printed out as well.

The result of the ground grid design by using the criteria in this report shows that the ground grid will be safe when the maximum mesh voltage is lower than the maximum tolerable touch voltage. It also shows that the alignment of grounding conductors can be designed to provide grid safety according to IEEE std. 80-2000.

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