This paper presents a novel concept being followed in the computational design of a ground mat for a 33/11kV central switching station at dry loose sandy soil containing high soil resistivity. The area available for mat is less and unsymmetrical. In areas where the soil resistivity is high and the space available for substation ground mat is less, it may not be possible to meet the expected safe touch and step voltage criteria with conventional ground mat design. A methodical analysis of design of three dimensional ground mat is performed by adopting wenner four pin method of computation. The major advantage behind this model is that it inherently develops a safe touch and step potential with the electrical apparatus considerably even at unusual working conditions. Since the location has high resistive soil and multilayered, a novel three dimensional ground mat with controlled safe region is designed and analyzed with Auto Grid Pro (application for grounding studies) software.

References
Computational Modelling of a Novel Three Dimensional Ground Mat for 33/11kV Central Switching Station


Index Terms

Computer Science Circuits and Systems

Keywords

Ground Potential Rise (GPR), Touch Potential, Step Potential, Ground Mat, Soil Resistivity, Grounding Grid, Ground Rods, Grounding Electrodes.