(1)
Magnetic Field Distribution around a current carrying conductor above a two-layer ground

M. Abdel-Salam, S. Abdel-Sattar. A. Ibrahim and M. Nayel

Abstract:

The present work is aimed at calculating the magnetic field around a current-carrying conductor positioned in air at a given height above a two-layer ground. The method is based on the successive imaging technique. A three-phase transmission model was constructed to simulate three-phase transmission line above a two-layer ground. The measured magnetic fields agreed reasonably with those calculated for one- and two-layer ground models. The proposed method of calculation is extended for magnetic field assessment in AC substations. The effect of magnetic ores in the top-layer of the ground on substation magnetic field values is discussed. © 2001 Elsevier Science B.V. All rights reserved.

Keywords:

Published In:

(2)
Study Apparent Grounding Resistivity in Vertical-layer Soil

Mohamed Nayel

Abstract:

Soil structure effects grounding systems designed to guarantee safe operation of electric power systems. This work investigated effects of the presence of two/three vertical adjacent mediums on measured apparent soil resistivity. The Wenner method was used to measure the apparent soil resistivity in the vertical-layer soil. Different vertical-layer soils were studied, such as two-verticallayer soil, three-parallel-vertical-layer soil, and three-perpendicularvertical- layer soil. Numerical models were used to model the four electrodes at different vertical-layer soil by using the current source simulation method. The measured apparent soil resistivities at different vertical-layer soils were compared with the apparent soil resistivity at a uniform-layer soil. Results show that the apparent soil resistivity was affected by the presence of vertical-layer/s soil. Different parameters affected the measured apparent soil resistivity, such as measuring angle slope with vertical layer, distance between measuring electrodes, and distance between measuring electrodes and interface between the vertical-layer soil.

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(3)
ESTIMATION OF LIGHTNING STRIKING DISTANCE TO HORIZONTAL CONDUCTOR

Mohamed Nayel

Abstract:

This paper attempts to investigate the horizontal conductor lightning striking distance estimation. An electromagnetic model was proposed to model a vertical downward lightning leader and an infinite grounded horizontal conductor by using the charge simulation method (CSM) to calculate the lateral striking distance. A formula between the lateral striking distance, the lightning current, and the horizontal conductor height was estimated. The proposed formula was compared with electromagnetic model and previous formulas. By the use of a similar methodology, a horizontal conductor voltage coefficient had been proposed and estimated. The proposed voltage coefficient was used to modify the electrogeometric model in order to study lightning striking rates of an unshielded horizontal conductor for different heights at either AC or DC voltages.

Keywords:

Electromagnetic theory, Electro-geometric model, horizontal conductor, lightning leader, striking distance, charge simulation method, conductor voltage.

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(4)
Fayoumi weir, bottom pipes, free discharge, discharge coefficient, contracted and un-contracted piped-weirs.

Mohamed Nayel

Abstract:

This paper studies the apparent ground resistivity in two-horizontal layer ground and in two-vertical layer ground through the site measurements obtained. Wenner method was used to measure apparent ground resistance in different grounds. A numerical model was proposed to model the four electrode buried in ground. The apparent ground resistivity had been studied for different conditions which are two-horizontal and -vertical layer grounds. Field measurements had been done in various sites close to water channel and also far away from any apparent vertical layer ground. Generally, the calculated results agreed with the measured results. Analytical calculations had been proposed to distinguish between two-horizontal and two-vertical layer ground.

Keywords:

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(5)
Surface Potential and Resistance of Grounding Grid Systems in Homogeneous Soil

M. ABDEL-SALAM A. AHMED M. NAYEL ABOELSOOD ZIDAN

Abstract:

This article presents laboratory scale models developed to study the per- formance of grounding systems in uniform soil. Two parallel grids are investigated and correlated with a same mass grid having the same conductormaterial and extend- ing over the same area at a depth equal to that of the upper grid. The experimental results demonstrate how the potential profiles and ground resistance are influenced by the grounding grid design such as number of meshes, grid depth and spacing between parallel grids. The effectiveness of the two parallel grids is compared with that of the upper grid only. The measured surface potential and ground resistance agreed satisfactorily with the present calculated values

Keywords:

surface potential, step voltage, ground resistance, scale model, grounding grids

Published In:

(6)
Electrical Energy Consumption Forecasting Using Gaussian Process Regression

Morad, Mohammed; Abbas, Hossam S.; Nayel, Mohamed; Elbaset, Adel A.; Galal, A.I.A.

Abstract:

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Keywords:

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