



Study Apparent Grounding Resistivity in Vertical-layer Soil

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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-vertical-layer soil, three-parallel-vertical-layer soil, and three-perpendicular-vertical-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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