

ABSTRACT

This paper proposes an approach to analysis of voltage difference data on the ICEIT system which has nine active multicoil patterns to improve the accuracy of identification of anomalies in the soil. The main contribution of this research is helps in analyzing changes in the stress distribution when there is an anomaly in the object. This change can be used as an indicator of the validity of the measurement that can be compared with the results of the theoretical calculation simulation. The data retrieval of the voltage difference in the ICEIT system uses the *Adjacent* method which measures the voltage difference on a pair of adjacent electrodes by inducing each of the nine active multicoil patterns. The measurement of the voltage difference for each pair of adjacent electrodes is measured automatically using a data acquisition tool. The research was carried out by experimenting with frequency variations and amplitude variations on the function generator induced through the nine multicoil patterns using a data acquisition tool with a PVC pipe core as a coil transmitter and then received by 16 pairs of adjacent electrodes around the object that produce voltage difference data when the object condition homogeneous and anomalous objects. This is done to observe the effect of changes in the voltage distribution with more multicoil positions than previous studies. The result is that there are differences and changes in the pattern of voltage distribution through the potential difference graph when conditions are homogeneous or anomalous with a voltage difference data range of -1914 mV to 2241 mV. The ideal physical parameters of the system with source frequency $f = 5 \text{ MHz}$, amplitude = 20 Vpp and coil inductance value range $76 \mu\text{H} - 86 \mu\text{H}$. With the change in the distribution of this potential difference, the next image reconstruction can give good results.

Keywords : anomaly, ICEIT, multicoils, potential difference