

ABSTRACT

Electrical Impedance Tomography (EIT) is a measurement system of tomography which has the main principle of describing the resistivity distribution of an object. One of the methods applied in EIT is Applied Current Electrical Impedance Tomography (ACEIT). In this study, the ACEIT method was used to identify the presence of voids in the soil. The tests were carried out using two variations of square and circular phantoms which were given 16 transmitter electrodes and 16 receiver electrodes around them. Variations of the injected current in the form of DC current and AC current. The object is lateritic soil and ping-pong ball anomaly which is represented as a pore in the soil. The current will be injected into the transmitter electrode pair using the adjacent method and then the voltage value is measured by the receiver electrode in the data acquisition system. The voltage distribution pattern generated when the phantom is given a ping-pong ball anomaly changes from when the phantom is in a homogeneous state with a change in the voltage range of 1 volt. Based on the measurements that have been made, the voltage distribution pattern when AC current is injected has the same pattern at each injection of the transmitter electrode pair. While the square phantom distribution pattern has a large voltage value on the pair of electrodes located at the corner of the phantom because the position of the electrode pair is perpendicular. The peak point value in the circular phantom is 0.6 volts and the square phantom is 1.3 volts. The results showed that AC current as well as circular phantom have good results on the ACEIT system.

Keywords: adjacent method, anomaly, EIT, homogeneous, phantom, voltage