ABSTRACT

A landslide is a geological event that occurs due to mass transfer or soil mass. Based on data from the National Disaster Management Agency (BPNB) in 2019, there were 108 landslides in West Java and 158 times in Central Java. The main causes of landslides in Indonesia come from two factors, namely climate and geographical layout. Indonesia's Tropical Climate with high rainfall until it becomes weathered. Indonesia's geographical layout is located on the Pacific Ring of Fire which is the most active earthquake path in the world and is above 3 continental plates collision. The aim of this Final Project is to make a soil detection system using an IoT based rotary encoder sensor. The landslide detection sensor test was carried out on a plant simulation prototype. The rotary encoder sensor calibration test is performed to obtain the ground shift value (L) from a rotary rotary encoder signal using the calibration correction coefficient $L = 0.3208n-0.2744$. Landslide simulation adapts flow type landslide type (flow) using soil from two different places, with the soil density value is $\rho_A = 974.02$ kg/m^3 and $\rho_B = 1,182.74$ kg/m^3. The accuracy of the soil shift measurement carried out by the rotary encoder to the actual shift that occurred in soil A and B was successful was 86.49% and 83.08%. The IoT-based soil shift monitoring system with the Antares platform has been able to display soil shift monitoring data with a permissible delivery interval of 17 seconds and the power consumption of each shipment is 0.606 kW.

Keywords : landslide, IoT, extentometer, *rotary encoder*