ABSTRACT

The poor crackers in Jambangan Village use sand from the North Coast as a frying agent. Based on research data from the Research and Development Agency of Central Java Province, it is known that there are heavy metal content in the waters of the Java Sea, especially on the North Coast of Java. The Pb content on the north coast of Central Java in shellfish ranged from 0.008-18 mg/kg, Cu content was 0.5-186 mg/kg and Cd content ranged from 0.006-4 mg/kg. In this study, an instrument was made that can detect metal in roasted crackers with a weight of 16 grams of sand and variations of metal powder 5 grams, 7.5 grams, 10 grams. This detection uses an inductive proximity sensor that can detect metal without physical touch. Sensor testing obtained the effect of distance on the sensor output in the form of voltage. A significant effect occurs in the distance between the sensor and metal objects of iron, zinc, and aluminum with a distance of 0.5 mm-4 mm. The maximum distance that can be detected by the sensor to the elements of iron and zinc is 4 mm, while that of aluminum is 2 mm. Testing on crackers roasted with a mixture of sand and metal using low heat which has a temperature below 1000 degrees Celsius with a roasting time of ± 15 minutes, the maximum detection distance is 0.5 mm only for zinc metal, while other metals cannot be detected.

***Keywords**: proximity sensor, metal, inductive proximity sensor*