

ABSTRACT

The strength of wood can be different for each type. Factors that influence the strength of wood are biological factors, moisture content, wood density. Wood checks are carried out to determine the damage caused. Wood damage can be detected using the method *Non-Destructive Testing* (NDT). This research was conducted to determine the relationship between the capacitance value of wood with variations in the width of the holes and variations in the position of the holes using the capacitive sensor *Multi Array*. This study uses four different types of wood. Each type of wood has a variety of hole areas and hole positions.

In previous research using a flat plate by varying the type of object and the size of the electrode with the results of the sensor being able to detect different types of objects even though the capacitance value is relatively small. In this study, using a capacitive sensor plate array arranged in an array. A mica-based capacitive sensor has a copper plate added to it. The copper plates are arranged in a 3 x 3 matrix array with a distance of 0.5 cm between the plates. Measurement of the capacitance value using the LCR Meter 700 which is connected to the sensor. The object is placed directly under the sensor.

This research was conducted with the results of the sensor being able to detect differences in the capacitance value of a wood. The sensor detects a hole based on the difference in capacitance value. The bigger the hole, the smaller the capacitance value. The farther the distance between the transmitter and receiver, the smaller the capacitance value. The sensor has not been able to detect the position of the hole in the wood.

Keywords: Capacitive Sensor, Multi Array, Level Plate, Capacitance, Wood