

ABSTRACT

The need for a testing method that can be used to gather informations about the the quality of a products without harming it has answered by the non-destructive testing method. One of the non-destructive testing methods is ultrasonic testing. A research done with this method previously on a sample with 24 points of measurements to determine the contour of fertile soil layers. But the result need to be interpolate due to data limitations before the conclusion. In this research, will be determine the thickness of the soil layers on the miniature contour as the sample test with 225 points measurements. Ultrasonic waves will be generated by the T1 Development Kit which is supplied with a power of 15 VDC and the ultrasonic waves will be emitted by an ultrasonic transducer type AT200 with a 200 KHz frequency. The characterization of the sample will be carried out first before the research begin to determine the average speed of ultrasonic waves on the soil. Furthermore, the measurements and data collection will be done to determine the Time-of-Flight, and this data will be proceed with the average speed of ultrasonic waves to determine the thickness of soil layers so that the contours can be digitally described (3D). Error values in this research is 4,259% for the first variation of sample and 2,097% for the second variation of the sample.

Keywords: , *Non-Destructive Testing, Soil Thickness, and Ultrasonic Testing.*