

## **ABSTRACT**

Metal detector is a device used for detecting metal, it uses some methods known as ultrasonic sensor, ground penetrating radar and others. This device only detects the existence of metal but it cannot differ kind of the metal detect.

In this final project, it is made a device for detecting metal kind. Inductive sensor will work properly if there is a metal between the sensor, and then the induction and the characteristic of oscillator will change. The fluctuation that happened in oscillator will also make frequency and amplitude change on output of the second sensor. Microcontroller used for this project is ATmega8535 which has some features named architecture of RISC ( Reduced Instruction Set Computing ) 8 bits and most of its instructions are almost executed in one clock cycle.

The device is designed for recognizing metal kind like iron, copper, and aluminium that still depend on dimension of metal detected. The output of inductive sensor is so relatively small that it needs a powerful auxiliary. The output of inductive sensor also needs an auxiliary that makes it in one direction in order to be readable by ADC and to be processed by ATmega8535 microcontroller then it is viewed to LCD. The result of this realization of the device has high accuracy percentage that is 100 %.

Key word: Inductive sensor, Beat frequency oscillator, Microcontroller ATmega8535 and LCD.