

UTILIZATION OF ELECTROMAGNETICS BASED ON ARDUINO UNO WITH METAL SENSOR ON CAR BUMPER TO REDUCE THE RISK OF LEAK TIRES

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ABSTRACT

Driving safety is very important for vehicle drivers. Many traffic accidents occur every day which result in material losses, injuries, and even the loss of someone's life. These traffic accidents occur due to many factors, one of which is caused by a flat tire. To overcome this problem, a solution is needed, one of which is by utilizing the electromagnetic concept. This concept can be applied to car bumpers by adding a proximity sensor as an attracted metal detector. In this research, an attempt has been made to apply this concept on a laboratory scale in the form of an electromagnetic bumper prototype. The prototype was built using several components such as Arduino Uno, electromagnetic solenoid, proximity sensor, and LCD display. Based on the tests that have been carried out, it was found that the maximum distance of the magnetic field and the change in magnetic heat were carried out 5 times each in a period of 2 minutes, respectively obtained values of 5 mm and 11.23 Joules, then also obtained a calculation of the combination of opportunities for looking for the state of the proximity sensor when working, 15 combinations were obtained, and the results of testing the strength of the electromagnet solenoid showed that the maximum load that can be lifted is under 1 kg, in other words this tool can work well and optimally because it has 100% success in 10 trials in overall system testing.

Keywords: *Electromagnetic, Bumper, Proximity Sensor*