

Fabrication of Industrial Safety with LDR



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Abstract : People who work in different types of industries such as lathe and grinding industries tend to meet with accidents which are due to the manual or machinery faults and thus causing death. This prototype will play a major role in saving the life of the worker. A LDR(Light Dependent Resistor) is used in this prototype which is the important part of the circuit and a 555 IC is used which is the brain of the circuit. Light Dependent Resistor which senses the light and if there is no light incident on it, it triggers the IC and an LED glows which is attached to the circuit. In the place of LED, a buzzer or speaker can be used as detector alarm. The concept is based on the work of a LDR. This prototype is designed in a way that LDR senses the light and if there is no light, the sensor triggers the IC and the machine stops even before the worker gets stuck into the machine and the alarm rings till the area is examined and the worker can be saved from this.

Keywords- Light dependent resistors, alarm.

I. INTRODUCTION

Profit is the crucial thing that corporate companies see in the first place but safety is paramount in the case of hazardous environments. Putting safety low-key to workers may cause life threatening injuries which influences the worker as well as the organizations involved. This prototype will give a good impact to the companies that try to maintain their reputation. Sensors are common in industries and the main intention of those sensors is to prevent accidents in heavy machineries which this prototype will do and it proves to be very promising. [1],[3],[5]

II. MAJOR COMPONENT

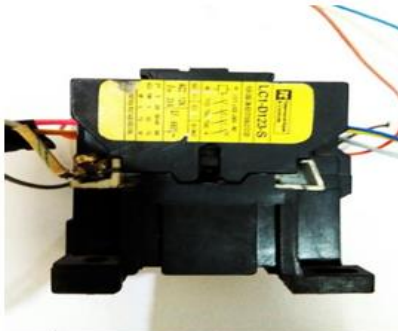


Fig. 1 Contactor

III. HARDWARE

- LDR(Light Dependent Resistor)
- 555 Timer IC
- Capacitors
- Resistors (1k, 4.7k, 47k Ohm)
- LED
- 9V Battery
- Alarm 24V

CONTRACTOR

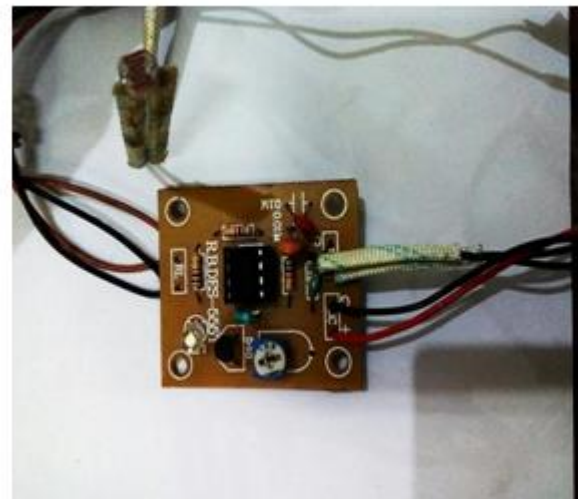


Fig. 2 LDR CIRCUIT WITH 555 IC

IV. PRINCIPLE OF WORKING

This circuit is operated with a 9V adaptor. The laser light is kept in a particular position in the machine where accidents may occur. The laser light strikes the LDR (light dependent resistor) continuously. When the worker leaves his hand or any of his body parts close to the machine, it obstructs the laser light falling on the LDR. There is a chance of accident here. The system now uses the sensor kept in the machine which will save his life. When the worker leaves his hand near the rotor the LDR gets activated and turns the Relay ON and activates the contactor (controls the flow of current) to break the flow of power supply to the machine, thus the machine turns off before the worker's hand gets crushed and the alarm is activated to identify the fault or the mistake made by the worker due to any distraction or some health issues. The machine cannot be turned on until the higher official come and inspect the area, thus the worker's life is saved.

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Due to this mechanism, there may not be any accidents occurring due to the distraction of workers or machinery faults. The fig 1 shows the circuit which controls the LDR and the fig 2. shows the device that controls the flow of current of the machine. [2],[4],[6]



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V. RESULT AND CONCLUSION

The Industrial safety prototype is done and tested well. This system is applicable for the machines which have low RPM motors. If this system is implemented in the high RPM motors due to centripetal acceleration the machine gets stopped after few revolutions. Hence we can't save the workers life hence we need a advance system for this. So the advanced prototype is that we should have brake systems that will help to stop the high RPM motors. [7],[9], [10]

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