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DESIGN AND IMPLEMENTATION OF AUTOMATIC RAILWAY GATE OPERATOR

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ABSTRACT

Mischances in the unmanned level intersections are expanding step by step. No productive measures implemented so far in these ranges. Our paper manages programmed railroad entryway operation (i.e.,) programmed railroad door control at a level intersection supplanting the entryways worked by the guards, It manages two factors, it manages the lessening of time for which the entryway is fixed shut and also, to give security to the vehicles and passengers by diminishing the mishaps.

Keywords: Automatic Railway Gate Operator

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1. INTRODUCTION

The spot where track and thruway/street meets one another at the same location is known as "level intersection". There are two sorts of level intersection they are manned level intersection and unmanned level intersection. Railroads being the least expensive method o are favored over the various means. We experience the everyday papers we run over numerous rail line mischances happening at unmanned rail line intersections [1-4]. We attempted an answer for the same. Utilizing basic electronic parts we robotized the control of railroad entryways at unmanned rail route intersections. we tried to mechanize the method of railroad entryways. The sensors put at a sure separation from the entryway which distinguishes the drawing closer prepare and do the needful. Show train entry. This is outlined utilizing AT89S52 microcontroller to evade railroad mishaps happening at unattended railroad door [5-7].

Sensors set in the track at a sure separation from the entryway recognizes the drawing nearer prepare and likewise controls the operation of the gate.

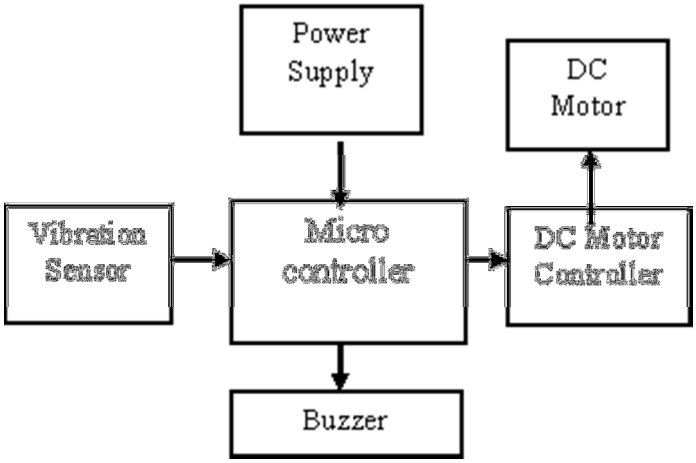


Figure 1 Block Diagram:

2. SAFETY SIGNIFICANCE:

Utilizing the same guideline as that for entryway control, we have built up an idea of programmed track exchanging. Considering a circumstance where in an express prepare and a nearby prepare are going in inverse bearings on the same track; the express prepare is permitted to go on the same track and the neighborhood train needs to change on to the next track. Pointer lights helps to keep away from crashes .Here the task is done utilizing a stepper motor. In handy purposes this can be accomplished utilizing electromagnets**.**

3. VIBRATION SENSOR

Many sensors are used for the system in which this vibration sensor is significant one which works based on piezoelectric principle and hence proportional signal is generated which plays a significant role in this process.

Here the distance of sensors from the gate is taken as 1KM

Timing calculation:

Maximum speed of train in level crossing gate 70Km/hr

Average speed of train in level crossing gate 30Km/hr

Minimum speed of train in level crossing gate 15Km/hr

Execution time

At maximum speed total time of execution: 1min 20 sec

At average speed total time of execution: 2.5 min

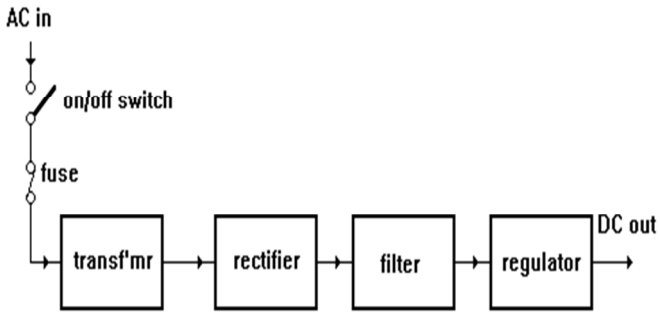
At minimum speed total time of execution: 5 min

4. MOTOR FOR GATE CONTROL

The stepper instructional exercise manages the fundamental last stage drive for venturing engines. This is focused on a solitary issue, exchanging the current in every engine twisting on and off, and controlling its heading. The hardware talked about in this area is joined straightforwardly to the windings and the motor control supply, and this hardware is motivated by an advanced framework that decides when the system to be on or off.

5. BASIC FUNCTIONAL UNITS:

Most electronic circuits require a DC supply, for example, a battery to power them. Since the mains supply is AC it must be changed over to DC to be valuable in hardware.

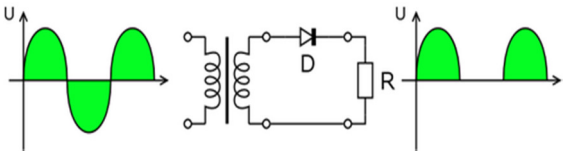


6. RECTIFIER:

Rectification is the change of exchanging current (AC) to direct current (DC). This quite often includes the utilization of some gadget that just permits one-path stream of electrons. As we have seen, this is precisely what a semiconductor diode does. The easiest kind of rectifier circuit is the half-wave rectifier, alleged on the grounds that it just permits one portion of an AC waveform to go through .

7. HALF WAVE RECTIFICATION:

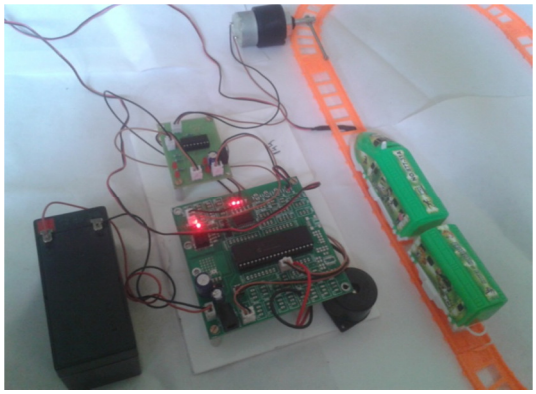
In this rectification either the positive or negative portion of the AC wave is sent effectively while the other half is restricted, contingent upon the extremity of the rectifier.



8. MICROCONTROLLER (AT89S52)

The AT89S52 is a low-power, superior CMOS 8-bit microcomputer with 8K bytes of Flash programmable and erasable read just memory (PEROM).

Hardware Configuration



8.1. PRINCIPLE OF OPERATION

The sensor gives an individual test include that permits the check of the mechanical and electrical trustworthiness of the accelerometer whenever before or after establishment. This element is basic in applications, for example, hard plate drive insurance where framework honesty must be guaranteed over the life of the item. Clients can utilize individual test to check the patch capacity to affirm that the part was mounted to the PCB effectively.

9. CONCLUSION

The mishaps are stayed away from at spots where there is no individual keeping an eye on the railroad crossing doors. Here we utilize the stepper engine to open and close the doors naturally when it is pivoted clockwise or anticlockwise heading. At the point when the train lands in a specific bearing the transmitter IR faculties and creates suitable sign, then in the meantime the recipient IR gets the sign and produces an intruder. At the point when the hinder is created the stepper motor pivots in clockwise heading. At the point when the hinder finishes the stepper engine turns in hostile to clock shrewd headings.

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