Fabrication of Modified Railway Gate

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Abstract- **In today industrial world, Pneumatic system play a vital role, it is actually and arrangement of different elements in order to regulate, direct, sense and command itself to achieve the desired result.**

A level crossing occurs where a railway line is intersected by a road or path on one level, without recourse to a bridge or tunnel. It is a type of at-grade intersection .The term also applies when a light rail line with separate right-of-way or reserved track crosses a road in the same fashion. Other names include railway crossing, railroad crossing, road through railroad, train crossing or grade crossing. It is project to avoid accidents in level crossings, When train arrives on track, before it reaches to crossing sensor is placed with load cell beside the track and sensor sends electrical signal to pneumatic system.

In Pneumatic system working media is fluid power. The term fluid power related to the employment of fluid media under control conditions to perform some useful work.

Fluid power in industries has been important in the development of automatic machinery and equipment's for the use in industrial plants. The fluid media for power transmission has many advantages over the media of power transmission.

As a part of literature review different total presentation have been collected from the journals. This paper have been found to the co-related to project topic. The system employs Pneumatic actuator for linear movement of slide gate. Pneumatic actuator work on the command of direction control valve. The smooth movement of slide gate controlled through flow control valve.

The system been cost effective, has a wide applications which when implement can show good and effective result. It can be use deliberately in industrial applications, commercial and in automobile sectors where the requirement of automatic work demands.

Synchronization of various equipment involve in the system. Preparing a Pneumatic control system model and work on it is effectiveness.

Index Terms- Pneumatic cylinder,5/2 direction control valve, IR sensor, Vibration sensor, Load cell (mesure the weight in tons), Push button for system on, Flow control valve

1. INTRODUCTION

Railway being chipset mode of transportation are preferred over all the other means. When we go through the daily newspaper we come across many railway accidents occurring at unmanned railway crossing. This is mainly due to the carelessness in manual operation or lack of worker.

We, in this project have come up with a solution for the same using this simple electronic components we have tried to automated the control from either side , the sensor placed at a certain distance from the gate detect the approaching train and accordingly controls the operation of the gate. Also indicator light has been provide to alert the motorist about the approaching train.

Present project is designed using microcontroller to avoid railway accidents happening at unattended railway gates, if implemented in spirit. this project utilized two powerful transmitter and two receivers, one pair of transmitter and receiver is fixed at upside (from the train comes) At a level higher than a human being in exact alignment and similarly the other pair is fixed at down side of the train direction.

Sensor activation time is so adjusted by calculating the time taken at certain speed to across at least one compartment of standard minimum size of the Indian railway we have considered 8 second for this project. Sensors are fixed at 1 km on both side of the gate.

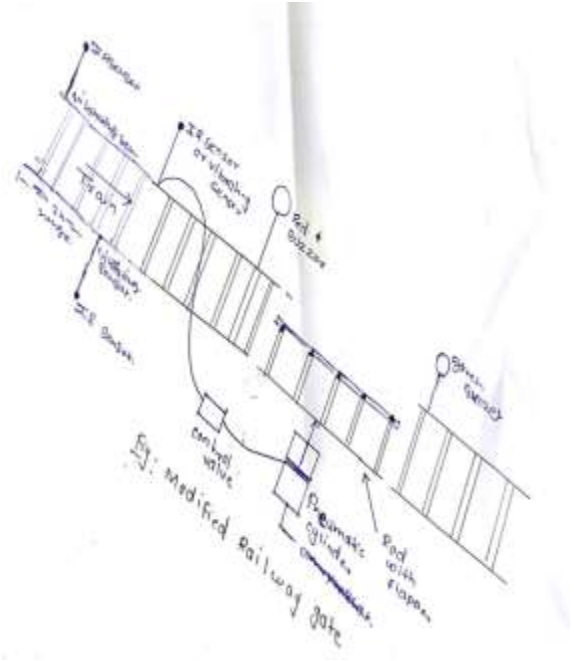
We call the sensor along the train direction as fore side sensor and the other as aft side sensor .when fore side receiver gets activated , the gate motor is turned on in one direction and the gate is closed and stay closed until the train crossing the gate and reaches aft side sensors.

When after side receiver gets activated motor turns in opposite direction gate opens and motor tops. buzzer will immediately sound at the fore side receiver activation and the gate will closed after 5 second , so giving time to the driver to clear gate area in order to avoid trapping between the gates stop sound after the train has crossed.

2 CONSRTUCTION AND WORKING

It consist of pneumatic cylinder, 5/2 directional control valve, IR sensor, push button for system on, flow control valve, compressor.

Working:- The objective of this project is to manage the control system of railway gate using the infrared sensor. When train arrives at the sensing point alarm is triggered at the railway crossing point so that the people get intimation that gate is going to be closed. Then the control system activates and closes the gate on either side of the track. once the train crosses the other end control system automatically lifts the gate. For mechanical operation of the gates solenoid valve is employed. Here we are using pneumatic system for the control the gate.



3. ADVANTAGES

1. No Manual Effort
2. Portable System
3. All movements are pneumatically operated.
4. Air is available everywhere
5. Can be stored easily
6. Clean and non – pollutant
7. Transportable over long distances
8. High speed operation
9. No return lines
10. Relatively low cost to produce
11. Largely insensitive to temperature
12. Technology can be easily learned

4 CONCLUSIONS

Presently manually operated railway crossings cause many problems like accidents and time delay, Pneumatic operated automatic railway gate control type of gates can be employed in an unmanned level crossing where the chances of accidents are higher and reliable operation is required. Since, the operation is automatic; error due to manual operation is prevented.

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