Fire Rescue System for Railway

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Abstract : Railroads contain a huge foundation and are a significant method of transportation in numerous nations. Railroads are the life savers of a nation. The railroads have become another methods for transportation inferable from their limit, speed, and unwavering quality, being intently connected with traveler and merchandise transportation; they have high hazard related with them regarding human lives and cost of resources. The poor upkeep of the railroads can prompt mishaps. New advancements for railroads and better security measures are acquainted time with time yet at the same time mishaps do happen. In this manner, a legitimate procedure is required for support also, review of tracks. In the fast moving world, nobody is ready to look what's happening around them. Even when an accident occurs nobody cares about it. So we have implemented a solution for this problem by developing an enhanced fire rescue system for reducing the number of victims in case of train fire accidents**.**

IndexTerms - **Embedded System, GPS, GSM, Microcontroller, Sensors.**

I. INTRODUCTION

The trains are moderate vehicles utilized for transporting individuals and products. The interest for railroad administration, have reliably expanding over the most recent two decades. Thus, increasingly severe security necessities for railroad flagging, control and framework are required. Same as railroad administration, as of late, remote innovation have likewise progressed quickly. For the most part, individuals lean toward the train venture for longer separation as it is less expensive. Since enlistment of train for open transportation, the flame mishaps are not provided food truly by the Indian Railways. The notification indicating "Don't smoke", "Don't convey inflammable material" are the main prudent alerts about the flame in every compartment. In any case, due to disappointment in routine upkeep framework or by the exercises of illicit social components, the fire mishaps in train happen often. These flame mishaps are among the most genuine debacles to human lives and the property of government. The anticipation of flame in trains has turned into a genuine concern. This task gives answer for this issue.

Breaks in railway lines are lines and are still one of the greatest reasons for train wrecking. The most widely recognized break is a split in the crown of the rail that structures an inexact 70° point with the skyline line. This imperfection, due to its unconventional shape, is known as the kidney imperfection .Breaks in rail may shift from a restricted break to the detachment of a some portion of a rail. Now and again, the break occurs inside the rail during its assembling procedure. To recognize these deserts, the ultrasonic technique is utilized: ultrasonic waves are infused into the rails by extraordinary transducers. This high-vitality sign is sent in two ways at foreordained interims. The transmitted sign is proliferated in the rail and is gotten by recipients. The adjacent transmitters send ultrasonic waves with the equivalent recurrence yet with various periods. Along these lines, the collectors will probably perceive the heading (left or ideal) from which they get the sign. On the off chance that there is a break or on the other hand scrape in the rail, the adequacy of the waves gotten by beneficiaries will be diminished and a caution sign will be sounded.

Some of the main source for occurrence of fire accidents in train:
1. Carrying stoves, gas cylinders, kerosene oil, petrol, fireworks etc. in passenger compartments.
2. Making fire/using fire near paper, wood, petrol or such other inflammable articles.
3. Lighted match sticks, cigarette ends carelessly thrown.
4. Short circuit in electrical wirings.
5. Using naked light during authority token delivery to the driver, shunting of inflammable loads, sealing of inflammable wagons.

II. PROBLEM STATEMENT

Now a day's percentage of railway accidents has increased tremendously. So to avoid defects in railways we had implemented a system which will detect the live location of railway and will send message to main station.
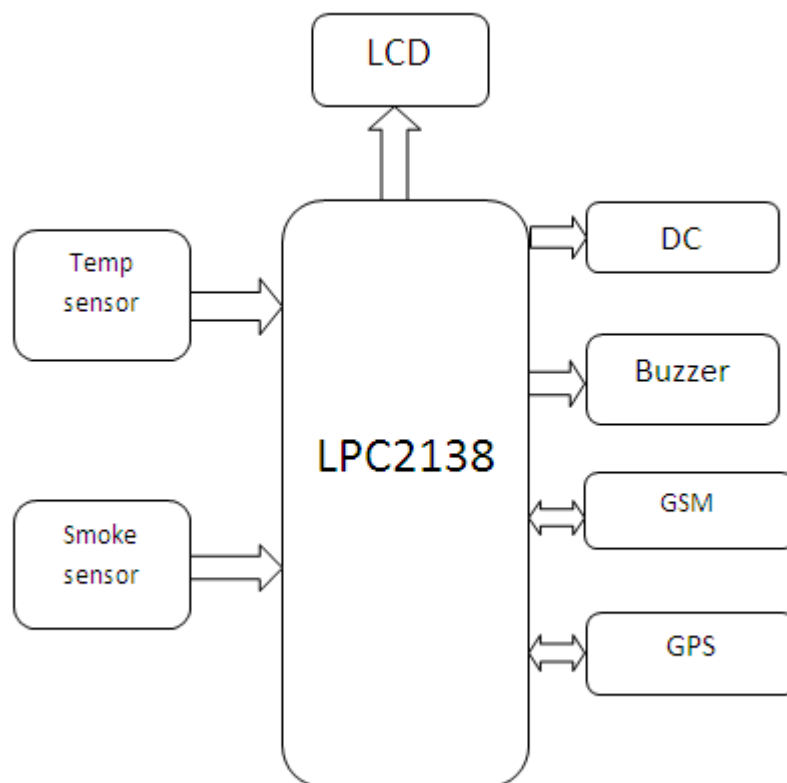
III. PROPOSED SYSTEM

Fig1: Block Diagram for train engine unit

Each compartment will contain three sensors, a water sprinkler and a separator mechanism. A fire sensor is placed inside every couch of train. When a fire is detected whose temperature is above some particular value, then a signal is sent to the train control system which detaches the couch which caught fire and stops the train. Three sensors will be mounted in each compartment, one at the start of the compartment, one at the middle of the compartment and one at the end of the compartment. Whenever one of the sensors will sense the fire, the micro controller will activate the buzzer to alert the passengers about the fire accident.

If the fire spreads and the second sensor senses the fire, the micro controller will activate the water sprinkler to provide water in the compartment to control the fire from spreading further in the compartment. The main function of the water sprinkler is for sprinkling the water. In this system when the sensors get activated it produces power to the motor and the water is released through the water sprinklers. The water will be sprinkled in all directions to extinguish the fire. Two sprinklers will be used in the compartment mounted on opposite walls of the compartment. Each will rotate in 180 degree to provide water in every part of the compartment.

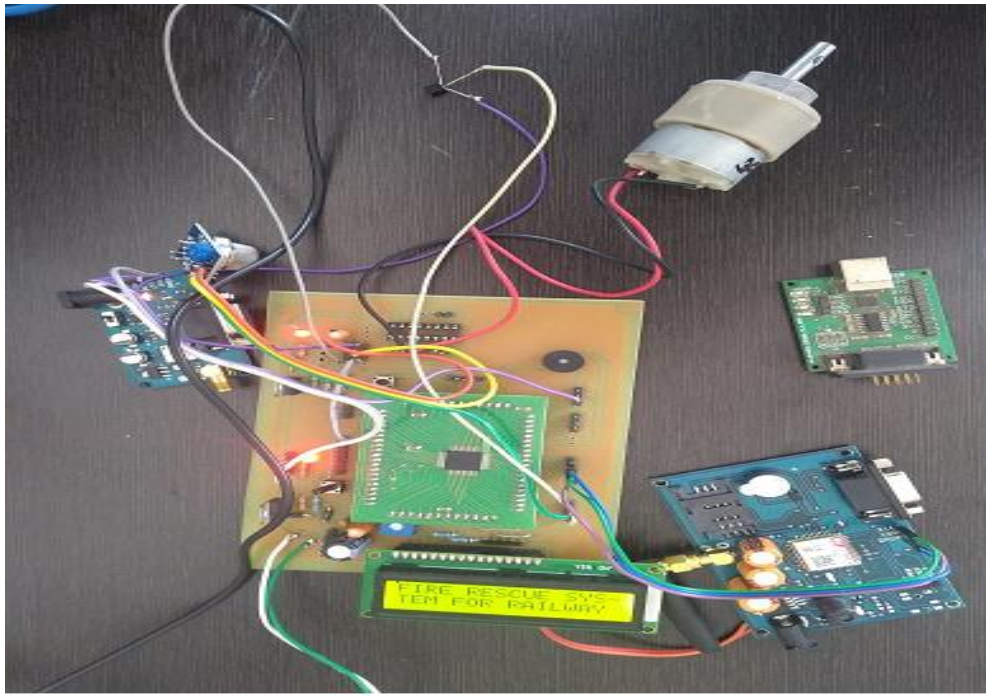## IV. RESULTS AND DISCUSSION

Fig2. Designed System

Initially, when the temperature rises above 47 degree the buzzer turns ON and the temperature is continuously displayed on the LCD.GPS tracks the position and system send the message regarding the accident using GSM. RF module is used for wireless communication. When the temperature rises above 47 degree the buzzer turns ON and the temperature is continuously displayed on the LCD. If the 2nd sensor senses further rise in temperature, water sprinkler is used to control the fire.

4.1: ADVANTAGES

- Cost Effective
- Damage to the Train can be avoided.
- Help can be provided as early as possible so that minimum loss of Life takes place.

4.1: APPLICATIONS

- Fire alarming system
- Control of fire accidents

V. CONCLUSION

A fire rescue system is developed to decrease the damage caused by fire accidents in train. Web server is used to inform the people so that help will be provided as early as possible and also the previous and next station will be informed about the accident occurred using GSM.

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