

Wireless Based on Perfunctory Fire Detection and Liberate system

M.Yuvaraju¹,A.Naraina²,K.Deepika³

¹Assistant Professor,Department of EEE,Anna University Regional Campus,Coimbatore,Tamilnadu,India
rajaucbe@gmail.com

²Assistant Professor,Department of EEE,Anna University Regional Campus,Coimbatore,Tamilnadu,India
narainagoa@gmail.com

³PG Scholar,Department of EEE,Anna University Regional Campus,Coimbatore,Tamilnadu,India
deepikaksk94@gmail.com

Abstract-The usage of train transport is enormous in our real time life and alike time the occurrence of fire accident is immense. Since, the fire disaster is betiding to inevitable accidents and man-made problems. This paper will focus on detect and control the fire accident and liberate operation for perfunctory in train. Using a various sensors like temperature and gas sensor to unceasingly monitoring in each compartments and passing the information through Global System for Mobile Communication (GSM). The automatic sprinkler system to reduce the fire and surveillance camera to monitoring the human actions during fire accidents as well as hostile defection. The message passing to driver and nearby fire station, the necessary help is arrived at the site. The main objective of this system is to save human life and also government property.

Keywords: Automatic Sprinkler System, Temperature sensor, Gas Sensor, Surveillance Camera, GSM

1. INTRODUCTION

Today train transport is foremost part in our life, but similarly the fire accident also occurs. The major reasons for occurrence of fire is making fire and using easily burning parameter, smoking, carrying gas cylinders and kerosene, petrol, short circuit in wires. This type of careless mistakes to making a fire. This type of fire due to occur large amount of loss and human lives. So, these papers introduce perfunctorily detecting fire and release process system. Using this machinery to diminish the fire accident during running train. The independent of this project is to design the safeguard beside the fire in trains and it through with the relief of embedded technology.

In surviving system only alert for during fire and reduce fire using sprinkler system. But, there is nothing to help human and also surveillance human activities and expensive one. The proposed method using a Wireless Sensor Networks (WSNs), using various sensors like

temperature and gas sensor to continuously monitoring the values. When, the fire is detected the information passing through the driver to control the spreading of fire. The surveillance camera used to monitoring the human activities and automatic sprinkler system to reduce the fire. The safety systems help to find the fire area and detect the human in prohibited areas.

2. LITERATURE REVIEW

The consumer using a fire alarm more often times. But the alarm has only to detect the fire and betoken the necessary persons. The peoples want to more efficient extinguisher one during fire accident.

2.1. Fire Alarm Device

The alarm using like buzzer. The alarm to betoken the sound automatically, which tells there is a critical or emergency situation in that place. The temperature and gas sensor has passing the information for its normal value, the alarm is low conditions. If the temperature and gas value is exceeded, the microcontroller activates the alarm to high condition. So, alarm bring the sounds and to warning the people, when fire is detected.

2.2. Automatic Sprinkler System

The fire Extinguisher using water by direct application a flames and smoke which causes refrigeration of offered process and prevents ignition of contiguous combustibles. Initial flame growth stage is most effectively easy to control the fire. Properly chosen a sprinkler system will detect the fire to initiate the alarm and reduce the fire within few minutes. Where result has less damage and fire is controlled.

2.3. Fire Detection Sensors

The fire detection sensors like temperature and gas sensor using this proposed system. The temperature sensor to monitoring the temperature level and passing the information. The gas sensor has detected the gas value and passing the information. If the temperature and gas value exceeded to passing the information to driver, when fire is detected. If both sensor is monitoring each compartment and updating values frequently to personal computer (PC).

2.4. Surveillance Camera

Wireless security cameras are closed circuit small screen cameras, which transfer a video and audio signal to wireless receiver through a radio frequency. Most wireless cameras need to at least one cable or wire for power. Sometimes, cameras are battery power making a camera for wire free one. It is a substance actual widespread among modern security consumers due to the low cost and easy to handle, flexible and mounting option. It is impossible to install in standard wired cameras.

2.5. GSM

GSM means Global System for Mobile Communication. It is transmitting mobile voice and data services. Compared to others GSM is low cost and high quality speech, support for new services. It provides the information for location, train number and compartment for driver and as well as fire station during fire accident.

3. PROCESS OVERVIEW

Now days, securing one's own dom and life's versus fire are becoming more important. An effective method used to monitoring as reduce to self standing and own dom loss due to fire disasters. Perfunctory fire alarm system is generally deployed in those sites in recent years. Many fire detectors report their information to control the Centre of a building. In existing method fire alarm system classified in hard wired, uses many cables to connect one to another. Users find it slovenly and inconvenience to handle wires. This system cost effective and installation is complicated. So, the users are satisfied for simple fire alarm system that monitors and alerts in case of emergency.

In this proposed system have to developed perfunctory fire detection and liberate operation based on WSNs. Using a various sensors like gas and temperature to continuously monitoring and update the value to PC. The surveillance camera to detect the human activities and automatic sprinkler system used to reduce the fire loss,

when fire is detected the information passing through the engine driver and nearby fire station through GSM.

4. METHODOLOGY

This forth put work to implement fire detection and rescue application perfunctory. In order to implement an early extinguishing of fire detection and liberate operation. If alert the passenger and all information passing to necessary unit.

4.1. Architecture of Fire Detection

The Architecture of the fire detection system used to gadget automation. The proposed system spontaneous fire detection in rail coaches is premeditated and developed to undertake the numerous task in hostile environment.

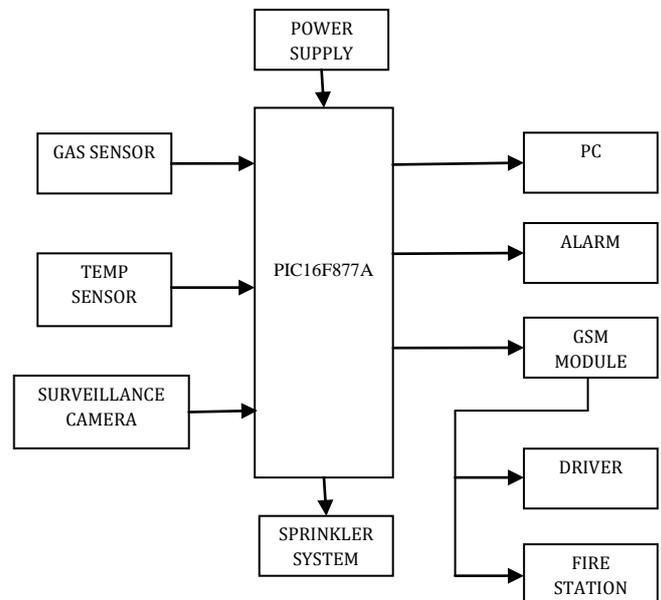


Fig-1: Block Diagram of Perfunctory Fire Detection and Liberate Operation system

Fig-1 show the block diagram of perfunctory fire detection and liberate operation system. It is used a Peripheral Interface Controller (PIC) and GSM technology to implement the perfunctory fire detection system liberate system. This method using a major Process in fire extinguisher system following as,

- First process has fire detection sensors like temperature and gas sensor to monitoring the value and passed through microcontroller and updates the value to PC. If one sensor has high value there is no

intimation of fire. Both temperature and gas sensor value exceeded the information passing through driver when the fire is detected.

- Second process is automatic sprinkler system used to prevent function of fire. Automatically to process the sprinkler system to reduce the fire.
- Third process is surveillance camera to monitoring the human action and necessary alert to passengers.
- Fourth process is GSM to passing the information to driver to stop the train to spreading the fire and also send the message to nearby fire station, necessary help is arrived at site.

4.2. Working Flow Development

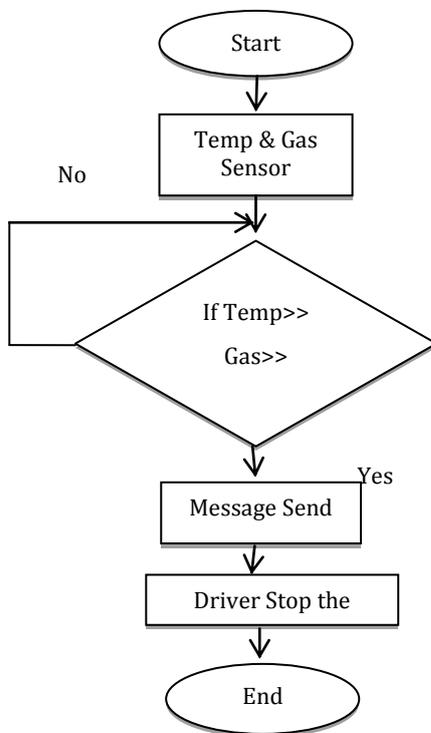


Fig-2: Flow Chart for Perfumctory Fire Detection and Liberate System

5.RESULTS

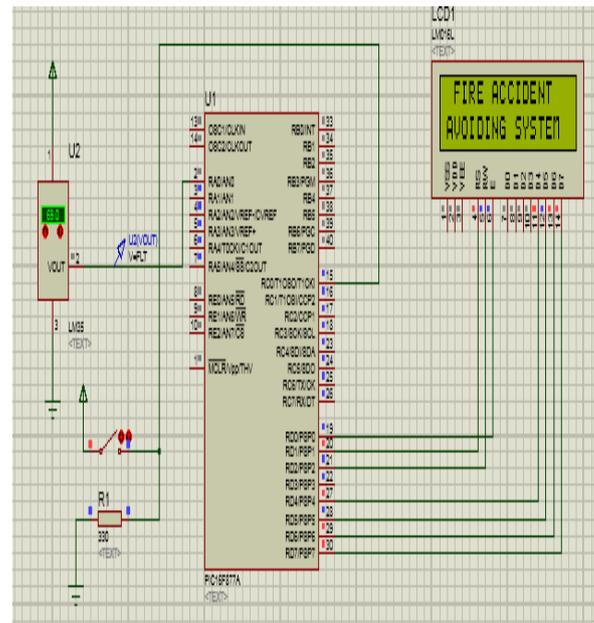


Fig-3: Design of Fire Avoiding System

Figure 3 shows schematic diagram of fire avoiding system to provide proteus software and the results are provided here.

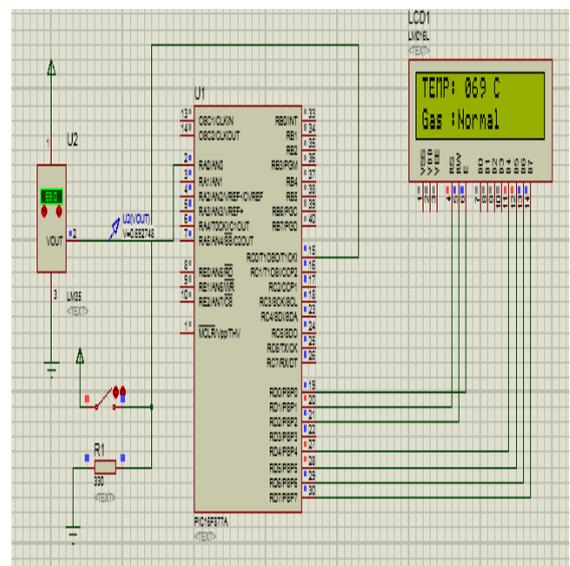


Fig-4: Temperature and Gas Normal Condition

Fig-4 shows temperature and gas is normal condition. The temperature has used as sensor and gas sensor act as switch. If both value is normal condition and safe passengers.

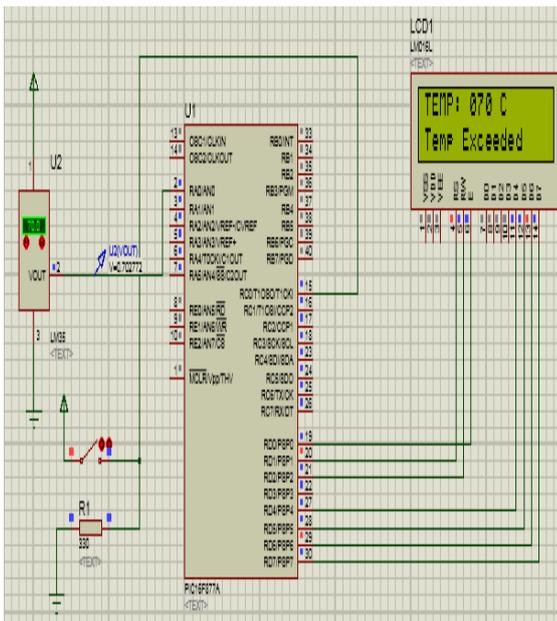


Fig-5: Temperature Exceeded

Fig-5 shows if the condition has possible only the temperature value exceeded. The temperature and gas value monitored if temperature value high to indicating temperature is exceeded. Simultaneously the both temperature and gas sensor sense values updated. The temperature value is normal condition and the gas is abnormal condition. So, the message passing to driver gas is abnormal condition.

Fig-7 shows Temperature value is updated frequently. If both value is abnormal condition when the fire is detected. So the information passing through driver and as well as nearby station the necessary help is arrived at site.

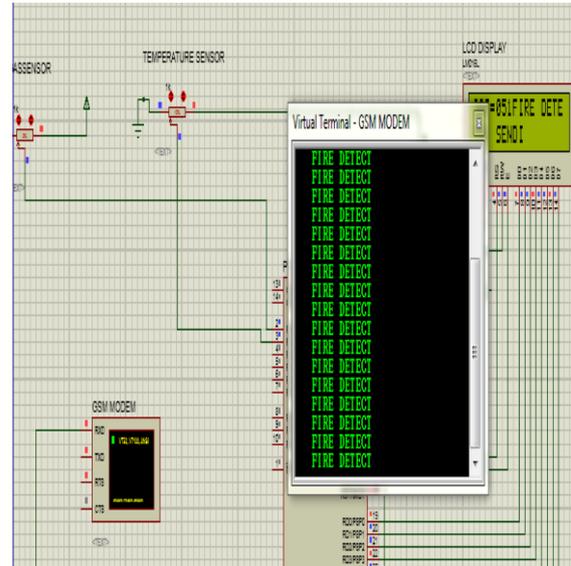


Fig-8: Display the fire detect message

Fig-8 shows the train under fire condition the message passed by location, compartment number, train number to driver and nearby station through wireless network. Using GSM to convey the information for essential unit. It can provide the helping unit for fire locality area. To display the information about fire recognition is helping to reduce the fire loss and property loss.

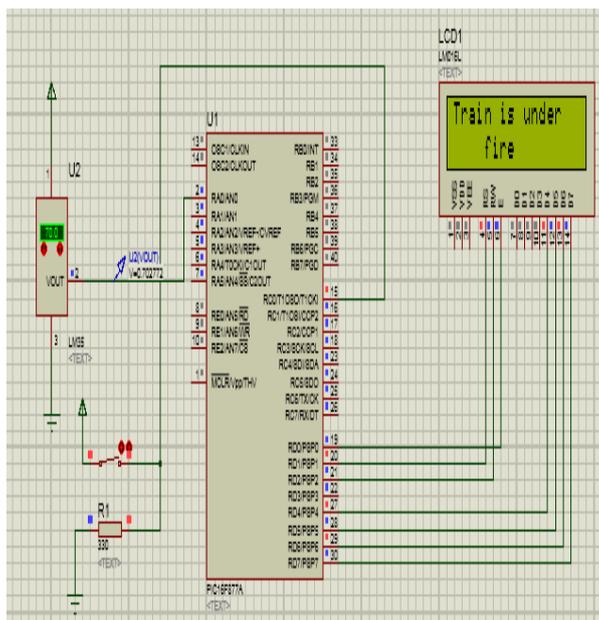


Fig-7: Train under Fire Condition

6. CONCLUSION

Perfunctory fire detection based on WSN used a developed protocol. The proposed system provides early extinguishing of fire disaster to those damages to reduce. The safety and security system achieved through this system. To monitoring and control the information for safety system and to surveillance Centre. This system used to detect the human in prohibited areas. The main objective of this system is to implement the fire detection and rescue activities for perfunctory and used surveillance camera to control the passenger and message momentary through GSM. The necessary help is arrived at the site and save human lives and properties.

ACKNOWLEDGEMENT

We thank to everyone who participate in our paper work. We extend our heartfelt thanks to Department of Electrical and Electronics Engineering in Anna University Regional Campus, Coimbatore. The authors would like to thank to mysterious reviewers for their worthy remarks and insinuates.

REFERENCES

- [1] Yen-sup lima, Jaehyerk choi, Scongho cho, Chong-kwon kim and youg woo lee, "A Fire Detection and Rescue Support Framework with Wireless Sensor Networks", in 2007 International Conference on Convergence Information Technology.
- [2] Lei Zhang and Gaofeng Wong, "Design and Implementation of Automatic Fire Alarm System Based on Wireless Sensor Networks", in Proceedings of the 2009 International Symposium on Information Processing(ISIP'09), Volume 9, pp.410-413, August 2009.
- [3] Zhenke Yang, Leon J.M.Rothkranz, "Automatic Aggression Detection Inside Trains, in International Conference on Systems Man and Cybernetics(SMC), ISSN 1062-922X@IEEE October 2010.
- [4] V.Jelicic, M.Magno, G.Paci, D.Brunelli, L.Benini, "Design Characterization and Management of a Wireless Sensor Network for Smart Gas Monitoring", in 4th IEEE Int. Workshop on Adv. In Sensors and Interfaces (IWASI), pp.115-120, 2011.
- [5] Pichai Ramasamy, Praveen Kumar, Sarath Kumar and Raghu Raman, "Avoidance of Fire Accident on Running Train Using Wireless Sensor Networks", in International Journal of Information and Computation Technology, ISSN 0974-2239 Volume 3, member 6(2013).pp.583-592.
- [6] Manoj Kumar Tgagi, Bangalore Raviteja, "The Implementation of Automatic Fire Rescuing and Information System in a Train Using Zigbee and Sensors Network", International Journal of Computer Trends and Technology(IJCTT)-Volume issues-May 2013.
- [7] Santhosi Shingririkonda and K.Vanisree, "Development of an Automated Rescue System", in International Journal of Engineering Trends and Technology(IJETT), Volume 4, Issue 8, August 2013.
- [8] Srajan Saxena, "Accident Identification with Automatic Ambulance Rescue System", in International Journal of Scientific and Engineering Research, Volume 5, Issue 9, September-2014.
- [9] S.Ramesh, "Rail Parameters Monitoring for the Fire Safety System in the Compartments Using Automation Technology", Global Journal of Scientific and Electronics Engineering Research, Volume 14, Issue 3 Version 1.0-2014.
- [10] Kalpana Sharma, Jagdish Kumawat, Saurabh Maheswarei, Neeti Jain, "Railway Security System Based on Wireless Sensor Networks: State of the Art", in International Journal of Computer Applications (1975-8887), Volume 96- No 25, June 2014.
- [11] Ko Yin, Junchang Jiang, "Application of Fire Monitoring and Personal Evacuation in Subway Station Based on Wireless Sensor Network", in IEEE 2014.
- [12] Govindarajan K, Parvez Ahmed F, Thulasi Ram S, Devika T, "A Novel Approach of Train Prevention System From Collision Using AVR Microcontroller", in International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering, Volume 2, Issue 2, February 2014.
- [13] Ramprasath P S, Sairam K, Sivaraman N, Prof D.Shanthi Chelliah, "Rapid Fire Intimation System for Railways Using Wireless Sensor Network", in International Journal of Advanced Research in Electronics and Communication Engineering(IJAREE), Volume 11, Issue 3, March 2015.
- [14] Muhammad Shlih Ahmad Azmil, Norusuzila ya,acob, Khairul Nizar, Susi Serio Samin, "Wireless Fire Detection Monitoring System for Fire and Rescue Application", in 2015 IEEE 11th International Colloquium on Signal Processing and its Applications(CSPA 2015).
- [15] P.Poobalan, N.Naresh, G.Rajesh, B.Maheswaren, Aswin Vinod, "GPS and GSM Based Accident Location Indicator and Rescue System", in Journal of the International Association of Advanced Technology and Science (JIAATS), Volume 16, March 2015.