

# Fire Extinguisher System

ISSN 2395-1621

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## ABSTRACT

The fire safety is very essential for everyone in order to save lives as well as property. Presently we use fire fighting robots and CO<sub>2</sub> for extinguishing fire which is less efficient, low speed and not so effective work. Where an IOT based smart fire extinguisher is a smart approach towards fire safety. In the process flame sensor is used to detect presence of fire and nodeMCU is there which receives the data from flame sensor, processes it and notifies user on mobile application. User is given 1 minute to take action otherwise system will itself fire up the extinguisher ball which will explode and extinguish the fire.

Keywords— flame sensor, controller, elide ball, buzzer

## ARTICLE INFO

### Article History

Received: 8<sup>th</sup> March 2020

Received in revised form :

8<sup>th</sup> March 2020

Accepted: 10<sup>th</sup> March 2020

Published online :

11<sup>th</sup> March 2020

## I. INTRODUCTION

In 21<sup>st</sup> century home alerting system is widely distributed around all over the world. There can be any asset like robbery, fire etc. for the home alerting system.

A fire extinguisher is a qualitative protection to control any emergency situation. It could not be used for out of control fire. Typically it consists of a cylinder which can be held in hand and a pressure vessel. There are also fire extinguishers with non-cylindrical pressure vessels. But they are less common.

A fire extinguisher was used firstly in England in 1723. Fire extinguishers are usually fitted in every floor of building at an easily accessible location.

## II. LITERATURE SURVEY

The most widespread fire extinguisher of any type was a bucket of water or a bucket full of sand stored next to the store or on the front porch.

Fire extinguishers have been a major part for fire damage prevention. The first modern fire extinguisher was invented by British captain George William in 1888. Internationally there are several classification methods for hand-held fire extinguishers, each classification is useful in fighting fires with a particular group of fuel.

[1] Fire emergency situations can occur in modern architecture and can damage people's lives and properties and cause huge losses. This paper discusses automatic fire alarm, its composition and working principle. This paper discusses the overall structure of a fire alarm system, fire extinguishers, fire detectors. When a fire occurs, this extinguisher technology will help to rescue from the fire quickly, which can reduce the greater degree of people's lives and property losses.

The alarm system is a noticeable advantage in this system. But this system doesn't deal with actual fire or contribute to extinguishing fire.

[2] Devastating fire is a strong interest in home monitoring system.

Fire detection and its information utilisation using image processing and information technology can be great hope to devast fire. The system detects fire from the knowledge of physical fire behaviour and warn people before getting into hazardous state. The system alerts the registered people by sending notification.

This system manages to notify users physically distant from the actual location of fire. But this system doesn't actually put out fires so this isn't an extinguisher system.

[3] In the paper the major element of fire moment like surrounding heat, flame, smoke and gases level are discussed. Also the reasons & controlling parameters of fire in commercial & residential building are discussed. The primary goal of fire sensing system is to detect early fire with less false positives. A fast fire sensing requires sensors having low response time that can detect fire in its incipient stage.

This system is more accurate and sophisticated than previous systems but again the extinguishing part is not dealt in here.

[4] In this paper computer simulation is used to improve the method to be adequate for fire detection. In this they design the fire detection system in fire fighting robot. If the fire accident is true the robot can find fire source using proposed method by fire detection system & move to fire source to fight fire using fire extinguish technology.

This system detects and deals with the fire, but has larger response time.

[5] Fire fighting robot is designed to be an unnamed ground vehicle, implement for finding and fighting the fire. Few types of robots vehicles are fighting at the home fire and fighting forest fire. In this research robot is capable of detecting flames with the help of Co<sub>2</sub>. This system prevents human interaction with actual fire but still requires manual controller. Which can be automated and system can be more efficient.

### III. SUMMARY OF LITERATURE SURVEY

All the above IEEE papers have implemented a smart fire extinguisher system based on environmental factors. We are proposing a system which will work as a smart fire extinguisher system by comparing the room temperature to detect the fire using fire sensors(flame sensors).

It will detect the fire & will send the notification to the user and registered people on mobile devices and fire station automatically, based on fire situation.

### IV. METHODOLOGY

Flame sensors are used to detect rise in temperature or presence of fire. The data acquired from such sensor is processed by using controller.

The buzzers are used to inform people about the situation and then set off the fire by using the fire extinguisher system.

The smart fire extinguisher system uses elide fire ball which has greater range of coverage up to 54 sq. ft. the elide fire ball contains powdered fire extinguishing material.

The system is fully automated. It can detect temperature within range of 50 to 600 degree Celsius. The response time of the system is quicker.

### V. WORKING

A network of heat sensor will be implemented so that maximum area in the fire extinguisher system range will be covered.

The node MCU will get readings from sensor network and will compare it with given standard value if the value is less than given buffer value then the process will go back to comparing upcoming reading and if the readings are above the given permissible temperature then it will set off buzzers. So that the people round would evacuate the location simultaneously the fire extinguisher circuit containing elide fire ball will be activated and the fire ball will explode, spreading powdered fire extinguisher across 54 sq. ft. around the system which will put out the fire and save lives and prevent any possible damage.

### VI. FEATURES

- 1) Successful detection of fire.
- 2) Instant buzzer activation.
- 3) Quick activation of triggering circuit.
- 4) Fast response time.

## VII. CONCLUSION

This paper proposes a fire extinguisher system based on IOT, which will prevent the damage of property and save lives as well. The system uses an application to get in contact with user as well as fire department, in case of fire is detected buzzer will turn on and elide ball will explode and simultaneously fire department is notified.

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