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# REVIEW OF FIRE EXTINGUISH TECHINQUE

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**Abstract -** *In industry, in most cases, fire burning is because of Electrical wiring short Circuiting or chemical reactions, burn the surrounding Property and machinery. The Fire incident is a severe disaster that can potentially cause Human injuries, property damage, and permanent disability in Humans, or some cases the affected victim loses their life. To avoid this, we used the Fire Extinguisher system (Sprinkler line system) that is Extinguish the fire but not effectively. By using smart Fire Extinguisher technology, we can reduce (Extinguishing) fire Properly & effectively. In this paper we discussed about fire extinguisher, their existing techniques*

***Key Words*: fire, short Circuiting, injuries, disability, Sprinkler, extinguisher, damage.**

## 1. INTRODUCTION

Fire sprinkler systems are now extensively used worldwide at commercial buildings as well as homes, schools and apartment buildings for fire protection. In 2011 Wales, UK became the first country in the world where fire sprinklers are compulsory in all new homes. In South Korea, high rise apartment buildings with more than 11 floors have been enforced to install fire sprinkler systems since 2009.

One of the most important safety aspects of a building is having all necessary fire protection measures in place. The building must have a clearly marked emergency exit route that will safely guide people out of the building [1]. However, other measures should also be taken to extinguish or contain the fire as much as possible within structural possibilities. There are some common Fire Extinguishing Methods : Removing oxygen from the system, using water, using a fire extinguisher, Using sprinkler lines.

Fire extinguishers are one such means used in emergencies to extinguish or control small fires. A fire extinguisher usually consists of a cylindrical pressure vessel containing a dispensable agent to extinguish the fire. For fire sprinkler system is an active fire protection measure, consisting of a water supply system, providing adequate pressure and flow rate to a water distribution piping system, onto which fire sprinklers are connected.

In most of India, fire sprinklers are now required as safety equipment for specific occupations, including newly built hospitals, schools, hotels, and other public facilities, subject to local construction codes and enforcement.

Type of fire (which are classified by letters) the extinguisher is designed for depending on the fuel that has caused the fire. Shown in table No. 1.

### 1.1. Types Of Fire

**Table -1:** Types of Fire

| Class | Materials |
|---|---|
| Class A | Solid materials such as wood, paper, cloth and some plastics |
| Class B | Liquids or gases such as alcohol, ether, gasoline, grease |
| Class C | Appliances, electronics and wiring Electrical hazards |
| Class D | Metallic substances such as sodium, titanium, zirconium, magnesium |

## 2.APPROACH

Taking this categorization into account, we can better understand the types of available fire extinguishers and the fire extinguishing agents they contain. The most common extinguishing agents include:

**Water:** the water is used as a quenching Material in Fire Extinguisher System, suitable for class A type fires where the no electrical Grid and their appliances. Water isn't appropriate for fires involving liquid fuels like gasoline or oil as a result of it's denser than those liquids; as a result, it would be impossible to put out the fire since the fuel would stay on top of the water.

**Foam:** We have seen that the firefighters spray foam during emergency drills. The foam is utilized for both class A type and B type fires. It is hazardous when there is electricity present, much like the prior example.

**Dust:** It is utilized in all buildings and is the most typical kind. It is appropriate for Type A, Type B, and Type C fires. It comes in powder form, so it can be used in the where the Electrical grid (Power Station, Substation, Electrical Room) is present. It is the most recommended extinguisher for houses, offices any other type of building.

**CO2 extinguishers:** CO2 is a non – flammable Gas and thus cannot conduct electricity. This kind of fire extinguisher is appropriate for Type A, Type B, and Type C fires. When other extinguishers would harm the sensitive ingredients present, this one is typically employed.

## 3. FIRE SAFETY STANDARD COLOUR

**Table -2:** Standard Color Code for Tube.

| Temperature | $^0$C | 68 | 79 | 93 | 141 | 227 | 260 |
|---|---|---|---|---|---|---|---|
| Temperature | $^0$F | 155 | 174 | 200 | 286 | 440 | 500 |
| Color of tube | | | | | | | |

## 4. OPERATIONAL INFORMATION

1. **Sprinkler System (Existing System):** A sprinkler systems are a simple but essential active part of fire protection systems in residential and commercial buildings. The system consists of sprinkler heads, flow switches, pressure switches, pipe work, valves, water storage tanks, control valve sets, and fire pumps. There is no human involvement in the system's autonomous operation.

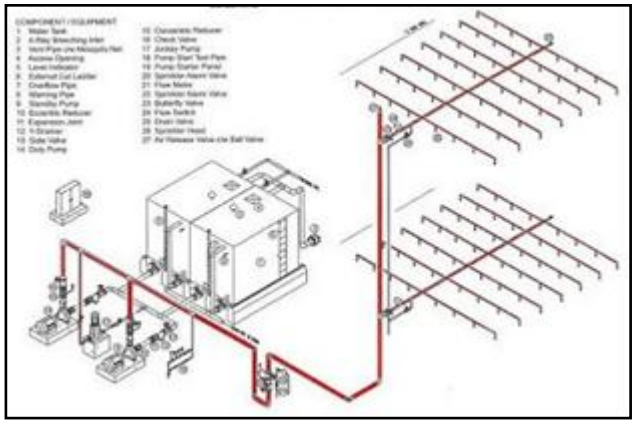

**Fig -1:** Typical Sprinkler System.

There is a glass bulb or a fusible link within each sprinkler head. A small amount of vapor and a liquid are present in the bulb. The fusible link heads and the liquid both expand when heated. When the temperature reaches a specific point, usually 68 degrees Celsius, the liquid expands and the bulb or fusible connection breaks, releasing water directly into the fire's center.

- **Types Fire sprinkler**

    1. **wet pipe**
    2. **dry pipe**
    3. **deluge**
    4. **pre-action**

1. **Wet Pipe :** This sprinkler system is the most common type in residential buildings, where cold water is stored under pressure in pipes and released from the sprinkler head as soon as a specified heat level is reached.

2. **Dry pipe :** In this case, the sprinkler system takes some time to activate and is used in unheated/empty buildings where pipes can freeze and burst. Nitrogen gas or compressed air is stored in water storage tanks or pipes connected to the mains. When activated by fire, the tube contracts and water flows through the tube to the sprinkler head.

3. **Deluge:** Systems are typically used in areas where rapid fire damage is a major concern, such as: Warehouses and high-rise buildings. With these systems, the nozzle is always open. They are triggered by an alarm that opens the water drain valve.

4. **Pre-Action:** These sprinkler systems are typically a combination of wet and dry pipe systems used in areas with high risk of flooding. Water is not stored in the pipes until a fire is detected when water is supplied to the sprinkler head. Response time is as fast as standard wet pipe sprinkler systems. There is also an automatic watering system, which is effective in large areas such as offices and shopping malls.

2. **Thermite Robot :** The Fire Extinguisher robot is a special kind of robot that is specifically designed to Extinguish fire. It is equipped with a fire extinguisher and a water hose, and it is also able to move around on its own. When the fire extinguisher robot is turned on, its sensors detect the presence of a fire. It is equipped with a fire extinguisher and a water tank ( in same cases foam also used ).

**Fig 2**: Thermite Robot System.

The robot then moves towards the fire and sprays it with extinguishing water or foam. The bubbles extinguish the fire and the robot returns to its original position. The robot is control with a remote control and with a camera.. The robot's fire extinguisher and water tank are controlled by a remote control.

The camera is used to identify the location of the fire. The robot then uses the fire extinguisher to extinguish the fire. The robot can be used to extinguish small fires, and it can also be used to assist fire-fighters in larger fires.

## 5. CONCLUSION

The fire detection systems proposed in this paper served fire stopping with no care of the responsiveness. Thus, this study considers the existing system and efficient and effective fire detection system can be improve by using IOT technology, gas, temperature, and smoke sensors to collect the data accurately and rapidly. The proposed system still needs further enhancements. Therefore, one direction of improvement is to integrate machine learning into the system to predict fire risk based on data collected from various sources.

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