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FIRE PROTECTION SYSTEM USING IOT

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ABSTRACT

Fires are a constant problem in large factories, warehouses, and industrial production facilities. In addition, causing financial losses, improper firefighting techniques could have catastrophic effects and even result in a significant loss of life.

Installing a Fire Monitor, often called a deluge cannon, is the best course of action in these circumstances. Large fires can be put out with fire monitors, which are high-capacity water jets that are aimable and controllable. Fire monitors are fixed and immovable, in contrast to fire extinguishers.

This fire monitor uses a variety of heat sensors to identify any changes in the surrounding temperature and notify the user of them. This fire monitor features an integrated camera and RF control, unlike standard fire monitor systems that require a human operator to adjust the water jet's direction and aim. thereby permitting the user to control it from a secure distance. Through the integration of automation, wireless connectivity, and intuitive controls, this system provides a dependable and effective fire safety solution. Its capacity to provide consistent fire suppression from all angles guarantees that no space is left exposed, thus raising the bar for fire safety. This initiative, which aims to lower fire-related hazards, protect property, and save lives, shows how current technology may be used to address important safety issues. A significant advancement in the intelligence, efficacy, and manageability of fire safety systems is the 360-degree mobile-controlled and Bluetooth-enabled fire protection system.

Keywords: Design, Fabrication, 360-Degree Fire Protection System, Bluetooth, Remote.

I. INTRODUCTION

Three elements—fuel, heat, and oxygen—combine chemically quickly to produce heat and flame in a fire. Automated fire monitor and controller systems are essentially a type of electronic gadget that can be programmed to detect fire threats or attacks in their environment. This project was carried out to develop and build a fire monitoring, prevention, and control system for various locations in an effort to do away with the conventional techniques of preventing fires in places that involve human interaction. Sensors are used to intelligently identify any potential fire disaster in a market shop. An alert is then set off to sound a siren in the event of a fire, and a firefighting mechanism is used to prevent the spread of the virus. Sprinkler systems and spray nozzles are two common names for automated firefighting systems. However, tank farms, petroleum loading terminals, airplane hangars, thermal power plants, manufacturing sites, recycling plants, and waste incineration plants have all been protected against fire for a number of years by automated firefighting systems with remote-controlled monitors.

A fire monitoring and control system uses a variety of sensors, such as a heat sensor, to track changes in the environment related to combustion in order to identify the presence of a fire.

II. METHODOLOGY

Crucial accuracy in fabrication requires the cutting, manipulating, and assembling of accessories to create the requested structures. Cutting, bending, and assembling are three fundamental processes that determine how mature a fabrication association is, even if many of them use different approaches.

Chopping

In the fabrication process, cutting comes first. The essence manufacturing corporation must cut one or more parts of raw essence in order to create a new essence structure or product. Regardless of whether it's a sword, aluminum, iron, or any other common essential, special equipment are still required to cut it. Although some

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essence fabrication companies employ firebugs to cut essence, others use numerical control (CNC) equipment that uses spotlights or water spurts.

Bending

After cutting raw metal, metal fabrication companies have to bend it. Again, after metal has been cut, there are many ways to bend it. Some companies that specialize in metal fabrication pound the metal sheets or pieces into the proper shape. Power pounding and hand hammering are the two types of hammering. But recently, many metal fabrication companies have begun using press brakes to bend their metal. This massive piece of industrial machinery automatically presses metal sheets and pieces into a preset shape when it is turned on. Essentially, it clamps the metal between a punch die to press it into the desired shape.

Putting Together

Assembling is the third and last step in the metal production process. This procedure entails putting the metal sheet or parts together to create the intended final result, as the name implies. Although welding is usually used for assembly, there may be additional procedures involved. For instance, metal manufacturing businesses might use glue, screws, or other fasteners, and crimp seams in addition to welding. The business will complete the product after assembling the metal before exporting and selling it to its clients. One of the main drivers of the nation's continuously expanding manufacturing sector is metal fabrication. Metal fabrication firms must rely on a three-step procedure that includes cutting, bending, and assembling, despite the fact that they use many machines and processes.

III. MODELING AND ANALYSIS

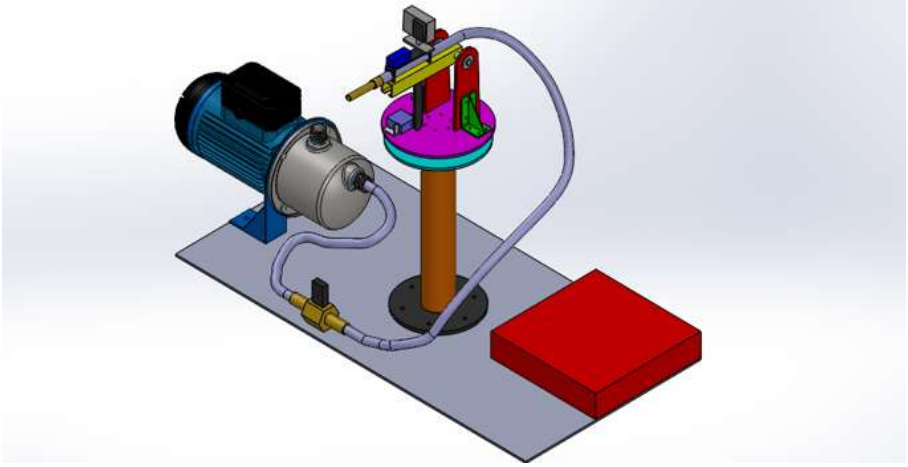

Figure 1: 3D view of Fire protection system

IV. RESULTS AND DISCUSSION

Future developments in drive engineering, sensor technology, and control technology hold enormous promise for both detecting fires in their early stages and using monitors to battle them locally and with minimal resources. Additionally, attention needs to be paid to the tools used by firefighters worldwide to combat fires. The extinguishing agent flow in real operations is modified to meet the fire incident's specifications. Applying this process to automated firefighting systems is made possible by the availability of remote-controlled monitors and nozzles that allow the extinguishing chemical flow rate to be changed without interfering with the operation. The apparent contradiction that "less extinguishing agent leads to a higher level of fire protection" may actually come to pass if the methods and knowledge gained from actual firefighting are successfully applied to automated firefighting systems. The system's ability to detect and put out fires was demonstrated through testing in a variety of scenarios and conditions. The device offered 360-degree fire protection by covering all directions. The system's adaptable design made it possible to alter it to fit particular requirements and uses, making it a flexible fire safety solution. In comparison to conventional fire protection systems, the system was also found to be more affordable, opening it up to a wider range of residential and commercial applications. One major benefit of the system was its capacity to increase building safety and security, protecting people and property from the destructive impacts of flames.

V. CONCLUSION

Even though fire has always been a bad thing, technical advancements have made it easier to combat. Firefighters put their lives at danger to get to the fire scene as soon as possible in order to protect property and save lives. To carry out automated fire control in the navy, there have been several efforts to create robots that battle flames on board ships. Furthermore, there are other methods for extinguishing a fire, but it is still safer to apply this idea consistently to minimize the number of firemen needed, lowering the possibility of fatalities and serious injuries. This paper outlines an approach to the issue of combating fires with the support of Bluetooth controlled 360-degree rotating fire protection system.To lesson the likelihood of bodily harm and death threats by reducing the involvement of firefighters. We compare our prototype to the current technology by implementing wireless and sensor technologies. The technology used to fight fires today are entirely manual. In the future, we will use wireless technologies to manage flames. To sum up, the "360 Degree Fire Protection System" offers a viable way to prevent fires in both business and residential settings. It is a dependable and effective option for increased safety and security because of its swift fire detection and extinguishment capabilities, 360-degree coverage, and adaptable design. To guarantee the system's sustained effectiveness in providing fire protection, its limitations must be addressed.

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