

A SURVEY PAPER ON HAZARDOUS AREA MONITORING FOR INDUSTRIAL PLANT POWERED BY IOT

INTRODUCTION:

Internet of Things (IoT) presents a general concept for the ability of network devices to sense and collect data from the world around us, and then share that data across the Internet where it can be processed and utilized for various practical purposes in different aspects of life.

The reach of IoT based systems in industrial areas is still limited, but it has huge potential. In this project, we create an IoT based hazard monitoring system specifically suited to requirements of mining, refining and manufacturing industries.

The system actively records, processes and analyzes the temperature of surroundings, which is a prime safety parameter in areas where molten metal is processed, manufacturing is done or welds are made. Also, it keeps track of high levels of dangerous gases present in the environment (LPG/Natural Gas).

If a parameter is violated, the system sends an immediate notification to a set of preset list of users on their smartphones, and continues logging and monitoring data for further analysis to suggest improvements in the safety regulations of the industry.

The sensors used in this prototype model can be modified with industry requirements (for example more robust temperature sensor may be required in very harsh conditions) whenever the need arises.

LITERATURE SURVEY:

IoT

is a platform which has varied applications in day-to-day life ranging from domestic to industrial. The system we are going to implement aims to provide a low cost, low maintenance and robust architecture for analyzing hazardous situations in heavy industries. Various papers published in the field of IoT have touched different aspects of this project.

Remote Temperature Monitoring Using LoRa
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Android user via C2DM service presents a WAN prototype for remote room temperature monitoring, which can be used for fire safety operations, via an Android platform. The proposed system provides an Android user interface for registered user to access the current temperature and a flash/beep message in case of fire. This paper influenced our work in selecting the platform for alerting the user and connecting it with central controller.

Online Analysis And Fault Diagnosis System for Distribution Transformers Using IOT is about design and implementation of embedded system to monitor and record key parameters of a distribution transformer like load currents, oil level, oil quality and ambient temperature. This paper provided insights about applications of IoT based system in industrial environments, and how multiple sensors are unified together.

Real Time Monitoring of CO₂ Emissions in Vehicles Using Cognitive IOT aims to reduce the green house effect by real time monitoring and controlling of CO₂ emission caused due to vehicles and industries using cognitive IOT. This paper gives insights about the domain of Cognitive IoT, which can be implemented as an extension of our project.

Review on Temperature and Humidity Sensing using IoT highlights some of the advantages of working with a Raspberry Pi, which helped us to implement a network, running scripts and graphical visualization of data.

IoT based Data Logger system for weather monitoring using Wireless sensor networks deals with monitoring and controlling the environmental conditions like temperature and CO₂ level with sensors and sends the information to the web page. This is similar to the web interface we have implemented.

Industrial Temperature Monitoring and Control System Through Ethernet LAN in which, temperature sensor measures the temperature and produce corresponding analog signal which is further processed by the central micro controller. The wired approach is less efficient in industrial areas, and thus we were motivated to implement a wireless system.

CONCLUSION:

Currently, IoT is present and gaining more traction in a lot of fields, and one of the most important field is industrial applications. There are a huge number of ways in which industries can make use of IoT to improve working conditions, efficiency, cutting costs and improving the overall growth of the sector. However, hazard monitoring and mitigation is often overlooked in industrial areas.

Therefore, this project specifically aims to make use of IoT to actively monitor and analyze various factors in a typical heavy industrial zone like temperature and levels of gases in the environment. If the above parameters exceed the recommended safe values, the system can track the same and issue alerts. Also, the data generated in real time can provide important information about how smoothly the work is going on in different zones.

This system can be deployed in many industrial areas like mining, underground factories, metal refineries, automatic welding factories and even heavy parts production lines. It will help to provide a safe and efficient working environment in such areas, while also opening new paths to improve the safety parameters of these places.

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