LITERATURE SURVEY

1)TOPIC: IOT BASED INDUSTRIAL MONITORING SYSTEM

AUTHOR: Hemlata Yadav, Naomi Oyiza, Sarfaraz Hassan,Dr. Suman Lata, K. Jaya Chitra.

ABSTRACT:
Modernization and automation are sweeping the globe, with IoT-based industrial monitoring solutions at the forefront. The importance of assessing the state of the industry is vital to the safety and efficiency of the products. The goal of this study is to create an IoT-based industrial monitoring system with intelligent sensors. Because of the integration of big data, the Blynk app can be used to monitor status from anywhere on the planet. Data analysis has been streamlined, allowing for easier IoT monitoring. The proposed technology could be beneficial to manufacturing industries. Adding technology to any kind of manufacturing industry will assure the safety and well-being of the people as well as prevent accidents. Using automation technology reduces the chances of loss and accidents in the machinery world.
Arduino is used to control various sensors (using smoke and temperature sensors) providing complete control over the industry. The system feeds signals from several sensors, such as the smoke, temperature, and humidity sensors, to the Arduino Mega microcontroller. The data is subsequently sent to the IoT module via the microcontroller (ESP8266). The ESP8266 is a chip that allows microcontrollers to connect to a Wi-Fi network, establish TCP/IP connections, and deliver data. The biggest disadvantage of ESP8266 module is of having only one analog pin ,dealing with two or more analog inputs is not possible. The implementation is not only for safety reasons, but it also has the potential to increase industry yields.

2) TOPIC: Embedded IoT-based Monitoring Utility for Safety Management and Access Control

AUTHOR: Wejie-Okachi, Ugwechi et al.

ABSTRACT:
In an industrial workplace, the safety of human lives and properties are key functions of the Health, Safety and Environment (HSE) department. In this work, an industrial automation monitoring system based on IoT was designed and implemented to assist in access control and safety management in a storage facility of an Industrial plant. The monitoring utility detects the alcohol levels of employees before they enter the facility. It further continuously checks the

environment for Liquefied Petroleum Gas (LPG) leakage and any possibilities for a fire outbreak, then sends out real-time alert/alarm notifications to the HSE department, fire office, security units and other authorized personnel through the industry's website and a dedicated GSM line. The system's sensor modules, consisting of alcohol, LPG and fire sensors, measure the parameters and sends the relevant data to the microcontrollers for processing. The NodeMCU activates the IoT-based alert mode by sending the processed data. While sending out the alert, it also activates the fire suppression system via the sprinkler circuit. With this the industrial storage facility urgently carried out necessary actions that prevented and minimized workplace hazards .
Alcohol is commonly abused before and after work hours such that it contributes to road traffic accidents of high fatality estimated at 21.4% per 100,000 people. The impact of alcohol consumption is not limited to during work hours, but also before and after work hours. Apart from accidents, other common effects of alcohol consumption include death, disability, impaired concentration, slow reaction time, slow decision making, reduced coordination, low productivity and worker performance etc .Therefore, it is the responsibility of employers to initiate physical and computerized measures that enhance employees' safety within and outside the workplace. The various reports were used as data to conduct safety measures, facility's access control, employees' training schools and for the improvement of the entire facility. Due to this monitoring agent and associated utility, the HSE department reported a 90% drop in injuries and other safety issues related to LPG leakage, fire, and intoxicated employees showing up at work. The industry was able to improve its safety management and access control in its storage facility.

3) TOPIC: Integrating IoT technologies for an "intelligent" safety management in the process industry

AUTHOR: Gnoni, Maria Grazia, Paolo Angelo Bragatto, Maria Francesca Milazzo, and Roberto Setola.

ABSTRACT:
IoT (Internet of Things) technologies are wide spreading in several industrial sector due to a combination of increasing technical performance together with decreasing purchase prices: thus, new tools are been evaluated for adoption in new fields of application, like safety at work. In recent years, several projects and prototypes as well as industrial solutions have been developed using IOT technologies especially to dynamically managing safety levels at complex workplaces. The aim of this study is to describe a prototype system where the

so called Smart Objects (SOs) - integrating different IoT technologies- interact in a working environment through a digital platform for managing different type of hazards – e.g. involving safety of plants as well as workers - usually influencing safety levels especially in process industry. The main goal of this technologies is to add “features” to objects aiming to provide automatic information to people interacting with these objects. The fields of application of the proposed system vary from tracking periodic mandatory maintenance and analyzing aging of equipment, processing or containing hazardous materials, to remote tracking of hazardous conditions of workers.
The IoT based prototype system integrates different technologies for managing, in a holistic way, industrial and occupational risk at establishments, where the Seveso Directive for the prevention of major hazards is enforced.Building a prototype system costs money in terms of development time and possibly hardware. Excessive focus on one part of the product - When a lot of time is spent on one specific part of the prototype, other parts of the product might end up being neglected.

4) TOPIC: A Novel Environmental Monitoring Strategy for Industrial Safety and Disaster Prevention Management Applications

AUTHOR: Zong-Yi Yang, Chih-Wei Chou, Wei-Cheng Lin, Wei-Chun Chenand Chi-Min Shu.

ABSTRACT:
Building an industrial safety and disaster prevention management (ISDPM) system can effectively prevent unforeseen industrial accidents, such as fires, explosions, releases of hazardous chemicals, and leaks of poisonous gases. To prevent disasters caused by the smoldering and spontaneous combustion of hazardous wastes in a hazardous waste storage area, we proposed a novel intelligent environmental monitoring system (IEMS) for ISDPM applications. The proposed IEMS based on the integration of a monitoring sensor network, remote central database server, desktop/laptop/mobile network, and smart user interface has the ability to smartly and automatically help users prevent disasters from occurring. Through using network connections, all of the devices were able to perform real-time actual data transmission directly. Therefore, users could select a communication product from anywhere at any time to scrutinize the details of the overall current ambient environmental information, including surveillance images, thermal images, gas concentrations, air quality, temperature, and humidity.

In addition to security risks, the inherent nature of WSNs introduces practical issues with their deployment. These sensor networks are comprised of low-energy and low-range devices - they need to be inexpensive because there are frequently so many of them deployed in the same network. The monitoring capabilities of an IEMS can effectively prevent disaster occurrences and maintain inherent safety if the IEMS has been appropriately equipped with specialized devices associated with the application field. A novel IEMS architecture and a customizable approach along with several EMMs that were selected to meet the overall safety requirements. By virtue of the superior environmental monitoring equipment comprising several EMMs, the remote central database server, and the smart user interface, the proposed customizable IEMS could achieve remote real-time Smart Auto monitoring, recording, managing, and control. The results obtained with the proposed IEMS in practical field tests suggest its high suitability for use in a wide range of industries.

5) TOPIC: IoT-Based Indicator for Industrial Accident Risks

AUTHOR: Teixeira, Igor TT, and Frank Herman Behrens

ABSTRACT:

The manufacturing industry is one of the most dangerous in terms of work safety. Among different kinds of accidents in industrial environments, the biggest causes involving humans are related to machines and equipment used for manufacturing. Although there are standards and regulations for machines' safe operation, some specific criteria could only be identified by specialists and managers in Environment, Health, and Safety (EHS). The internet of things (IoT) is a fundamental technology for Industry 4.0, bringing many benefits for automation and process control. Despite the increasing automation leading to a decrease in manual work, there is still a considerable presence of employees subject to accident risks. This work proposes the use of physical variables collected on machines in a production line to create a safety risk indicator. Considering that these variables are available in IoT-based monitoring systems, a method of analyzing accident risks based on multi-variable graphs obtained from the normalization of the monitored variables is proposed. This risk display method is believed to assist in safety analyzes by operators and specialists in a Safety Management System (SMS).

This can be the biggest disadvantage of IoT as people are losing their privacy by adopting and using these smart devices in their lives. As technology has advanced, the data of any user can be found using the Internet. This has left a

space for the hackers to find their prey quickly and easily.IoT is facing serious security issues that prove fatal and alarmingforthe public and administration who have adopted the technology. The hackers have got access to the smart devices and are changing their instructions.The algorithms are not producing accurate results. Sometimes it might be possible that the data given to the sensor is not accurate. So, if the data is not accurate, the results will be wrong. The result is an inaccurate analysis. So, it is a big challenge for IoT to get the proper analytical tools to overcome these inaccuracies.

6) TOPIC: Air Pollution Monitoring and Alarming System via Internet of Things

AUTHOR: Nakpong, Nuttapun, and Nopphagaw Thongbai

ABSTRACT:
Internet of Things (IoT) is a network of smart sensors that can control and monitor things from anywhere over wireless communication and internet. Therefore, this research aims to propose air pollution monitoring and the alarming system powered by the internet of things technology. The smart box has been developed as a prototype to measure the level of air quality, dust, temperature, and humidity. It comprises of two important units including a microcontroller and related sensors. Data from sensors is collected and sent to the IoT cloud server over a wireless network. The Blynk mobile application is used to monitor and display real-time related data through the digital dashboard. Moreover, Blynk application is selected as a real-time notification system to the user provided that air pollution is greater than the standard level.

Since smart dust devices are miniature sensors, they can record anything that they are programmed to record. As they are so small, they are difficult to detect. The imagination can run wild regarding the negative privacy implications when smart dust falls into the wrong hands. And the major disadvantage of Temperature and Humidity Sensor is, it is sensitive to dewing and certain aggressive substances.