

IOT BASED SMART AUTOMATED SAFETY MONITORING SYSTEM FOR CHEMICAL INDUSTRY

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Abstract : This project illustrates a precarious industrial environment monitoring and control for this monitoring information concerning safety and security. The proposed system uses a combination sensor network node with a system architecture and concept implementation, which are described mainly for an industrial safety monitoring scenario. The information is gathered by the deployed sensor network with focus on four main conditions: temperature, fire, gas leakage and Air pollution. This Project also enables an easy to use user interface and the accessibility of data through standards-based web server technologies. It is the most effective and most economical means of equipment safety monitoring.

INTRODUCTION

The environmental care has become one of the prime concerns for almost every country in the last decades. Even though the number of industrial accident has been increasing in the last few decades, the current scenarios in the industry have not improved. They tend to be more a dangerous environment rather than a safe one even with a wide range of modern technologies. Recently the current industries have been demanding sophisticated instrumentation for monitoring and control of environmental risk parameters in the danger-prone areas. Human safety and property losses are the essential to maintain a balance between industry and industrial environments. Five main components are the reasons for an accident to occur: the fire, gas leakage, radiation, over voltage and high temperature. An industrial accident usually occurs individually to the above mentioned factors or as the result of their combined effects. In this paper propose, combining the virtual monitoring technology with hazardous risk management together, a wireless multi-sensory monitoring system of hazardous site environment. Wireless sensor network architecture is adopted and based on virtual instrument technology, Virtual instrumentation environment. In this project we propose a combination of the real time monitoring technology with the sensors to keep a time to time track of the various factors which are recognised to cause an accident on site. In addition to this, internets of things wireless sensor network architecture are adopted. The function of real-time monitoring is to provide remote-distance hazardous parameters information, display the data, analyze, identify when the parameters cross threshold, and provide warning in case of an accident. A wide range of industrial IOT applications have been developed and deployed in recent years. In an effort to understand the development of IOT in Industries

LPG LEAKAGE DETECTOR USING ARDUINO WITH SMS ALERT AND SOUND ALARM

LPG leakages are a mutual hindrance in household and manufacturing nowadays. It is very life threatening if you will not distinguish and modified right away. The idea behind our project is to give a solution by power cut the gas provision as soon as a gas leakage is perceived apart from activating the sounding alarm. In addition to this, the authorized person will receive a message informing him about the leakage with the increase of natural gas productions in the last 10 years: Philippines gas industry has really taken its toll. However, the Bureau of Fire Protection prompted the society to yield preventive and security measures against defective electrical cabling and dissolved petroleum gas leaks regardless of fire alarming incidents in the first half of 2017.

PROPOSED SYSTEM

The proposed system uses a combination sensor network with a system architecture and concept implementation, which are described mainly for an industrial safety monitoring scenario. The information is gathered by the deployed sensor network with focus on five main conditions: temperature, fire, gas leakage and Air pollution. This paper also enables an

easy to use user interface and the accessibility of data through standards-based web server technologies.

INTRODUCTON FOR IOT

The IOT concept was coined by a member of the Radio Frequency Identification (RFID) development community in 1999, and it has recently become more relevant to the practical world largely because of the growth of mobile devices, embedded and ubiquitous communication, cloud computing and data analytics. A world where billions of objects can sense, communicate and share information, all interconnected over public or private Internet Protocol (IP) networks. These interconnected objects have data regularly collected, analyzed and used to initiate action, providing a wealth of intelligence for planning, management and decision making. This is the world of the Internet of Things.

GAS SENSOR

The analog Smoke/LPG/CO Gas Sensor (MQ2) module utilizes an MQ-2 as the sensitive component and has a protection resistor and an adjustable resistor on board. The MQ-2 gas sensor is sensitive to LPG, i-butane, propane, methane, alcohol, Hydrogen and smoke. It could be used in gas leakage detecting equipment in family and industry. The resistance of the sensitive component changes as the concentration of the target gas changes.

FIRE SENSOR

A sensor which is most sensitive to a normal light is known as a flame sensor. That's why this sensor module is used in flame alarms. This sensor detects flame otherwise wavelength within the range of 760 nm – 1100 nm from the light source. This sensor can be easily damaged to high temperature. So this sensor can be placed at a certain distance from the flame. The flame detection can be done from a 100cm distance and the detection angle will be 600. The output of this sensor is an analog signal or digital signal. These sensors are used in fire fighting robots like as a flame alarm.

TEMPERATURE SENSOR

Suitable temperature is one of the most important conditions inside underground mines. It is important for coal mine worker to have proper temperature to work safely and effectively inside the mines. During working hour due to drilling or blasting inside mines, new surfaces are get opened up which may cause increase or decrease in temperature, so it is very much important to monitor temperature inside the mines. Lots of technologies have been developed for temperature measurement. Thermocouple, RTD, Thermistor, LM series sensors etc. Can be used to measure the temperature changes inside the mines. A temperature sensor is an electronic device that measures the temperature of its environment and converts the input data into electronic data to record, monitor, or signal temperature changes. There are many different types of temperature sensors. Some temperature sensors require direct contact with the physical object that is being monitored (contact temperature sensors), while others indirectly measure the temperature of an object (non-contact temperature sensors).

WORKING

The system comprises of a base station and a Wireless sensor node. An microcontroller acts as a base station. Temperature, Fire, AIR Pollution and gas leakage sensors with associated signal conditioners attached to ATMEL 32 bit controller. Fig. 1 shows the block diagram of the system. In this project we are measuring the vital parameters. Any leakage of poisonous gases can be detected and if temperature is increased beyond certain limit it will intimate the concerned person. Similarly, if fire accidents occur then it will intimate to the owner through GSM which commonly called IOT protocol along with a message through Cloud server. If Gas leakage occurs we can on the power to the Exhaust fan. In addition to this we use a buzzer and a display for intimating the other workers about the accidents.

CONCLUSION

Our project was to provide a safe environment for the workers several industrial accident like fire and gas, Temperature etc. the incidents of unauthorized access can be resolved using our system. A simple system to improve the standards is developed. It is a real time monitor able system developed with simple hardware which simplifies the possibility of error free security system. This IOT system can be easily implemented with maximum reliability and high security with low cost, It is a special enhancement.

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