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IOT BASED INDUSTRY PROTECTION USING ARDINO

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ABSTRACT
Nowadays, many accidents occur in every aspect of life. Therefore, security is very important in busin ess life. The research paper has now published a new industrial protection system based on Arduino U NO microcontroller with various sensors and IoT network. Using Arduino UNO, this innovative, IoT-based gas industry protection system will detect gas leaks, fire, smoke and high pressure. Monitor oil c oncentration and temperature on IoT platform via WiFi modules. Prevent business collapse and save m any lives. In this protection, a buzzer signal is given when gas or smoke reaches a certain level. Here I oT is used to communicate with devices to send and receive required information and data over the int ernet. Therefore, it can be controlled and monitored anytime and anywhere from a computer, mobile p hone or any smart device. The combination of electronics and computer programming is the focus of t his work.

Keywords: security, fire, smoke, gas detectors, Internet of Things

1. Introduction

Maintenance is more important in daily life. Pollution, strong chemicals or temperature increase etc. M any accidents may occur in the industry due to To overcome these issues, IoTbased protection is neede d. Through this IoT platform we can monitor the new environment on mobile devices or laptops. Indus trial protection is a system with advanced automatic systems to control air leakage and temperature, va rious devices for monitoring and securing equipment related to doors and windows (as well as alarms a nd alarms) and many other functions. The system seems "smart" because its computer can handle man y aspects of daily life. It is equipped with various sensors that collect information about the current stat us of the work.

1.1. Contribution of the Article

I In this article, we conduct a study on the analysis of relevant data to determine the security of Interne t of Thingsbased defense enterprises. Management research aims to provide an overview of the researc h field and then provide a design for research and research selection. An important part of a qualitative literature review involves determining the research methods used and selecting relevant studies to dra w useful conclusions about the topic. In this article we present an overview and continued evolution of oil output produced by research to date.

1.2. Outline of the Article

The structure of this article is as follows. Chapter 2 briefly touches upon the relevant activities and hig hlights the need for a comprehensive review. Chapter 3 describes the research method used. Chapter 4

presents the implementation of the research phase and the results obtained. Section 5 concludes the arti cle.

1.3. Related work

To the best of our knowledge, recent work has focused on analyzing IoT security with an emphasis on protecting issues. We can control the oil and temperature through the IoT platform. Another recent stu dy focused on overall Industry 4.0 system architecture and found an increase in security-focused architectural strategies.

1.4. Research Analysis

In this section, we present the research that will be used to analyze data on IoT security policies, which will continue the study no. We adopted the research methodology detailed by Petersen et al. and use e xamples to explain our methods. In the following subsections, we describe the research questions, rese arch strategy, study selection, and practical considerations.

2. The current system

uses safety analysis based on the detection of emissions and ingress of gases in the industry, and it is re commended to follow the analysis work based on the Internet of Things. Safety and security is one of t he basic needs of people since youth. However, today it needs to be updated with rapidly changing tec hnology to ensure widespread security, distance, reliability and instant operation. Using wireless techn ology for security and control in automation systems has attractive advantages as well as consumer ben efits in terms of business-based security.

3. The proposed method

It is lowcost compared to the existing method we established to measure sensors and build an IoT platf orm and then monitor the sensor data. The WiFi module sends data to IoT and shares it on the platform . When the MQ9 and MQ2 values reach a low value, the piezoelectric buzzer will sound and the oil co ncentration will be displayed on the LCD, and then the oil leak will be closed by correction. Excess oil will prevent the Dallas thermometer (DS18B20) from measuring temperature. When the temperature r ises to a certain point, the fan will start to turn on, and when the temperature drops to a certain point, th e fan will turn off.

4. Application and results

Since commercial sensors are no more accurate than highcost sensors, we use it in addition to our addit ional IoT platform using an Arduino UNO microcontroller and sensor calibration white We focused on designing a real training model that would first detect gas and alarm, then the valve would close and d isplay the warning message on the LCD screen. The buzzer will alarm when the oil reaches the limit or amount. The valve used is in the gas pipeline. Since it is a model, the valve is not connected to the oil flow line.

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4.1 Hardware Requirements

âœ Arduino

ââ MQ-2 Gas Sensor

III DS18B20 Sensor

III MQ-9 Gas Sensor

III ESP8266 Wi-Fi Module

III 16x2 LCD Screen

™ Piezoelectric Buzzer

™ Power Supply

In this hardware implementation we use the Arduino Uno controller and connect several fuel gauges (mq9, mq2) to detect gas leaks in the fuel industry and use the DS18B20 temperature sensor to measure the temperature in the industry. The program was added to the controller to measure the change of gas in the air in industry. Since it was a model, we tested it by spraying some perfume next to it and burni ng the smoke. Repeat this for all other gas sensors.

4.2 Configuring Arduino UNO using MQ-2, MQ-9

An oil sensor is a device that detects the presence of one or more types of oil. Gases in the environmen t. These sensors have many applications, such as security in oil refineries, commercial facilities, and ev en homes. These sensors can detect carbon monoxide, pollutants, pollutants and more. There are many methods for oil detection, the most commonly used are electrochemical sensors. Sensors measure the c oncentration of a particular oil by reacting chemically to heat and measuring the resulting electrical cur rent. We need to calibrate the module before using it. This sensormeasures gas concentration as resista nce ratio. This ratio includes R0 (sensor resistance at 1000 ppm LPG concentration) and Rs (sensor int ernal resistance as a function of gas concentration). In fresh air, load the following process after prehea ting and wait 15 minutes until it reaches R0.

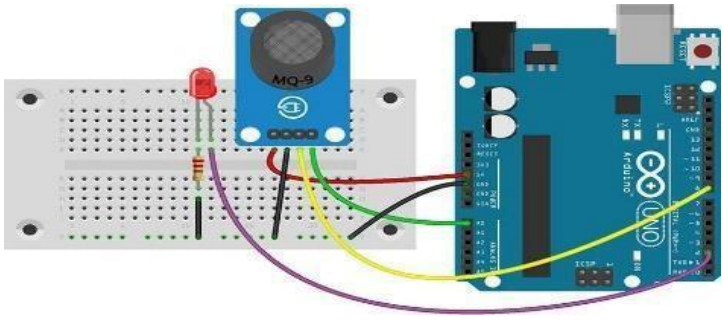

Fig 4.2.1 MQ9 Gas sensor

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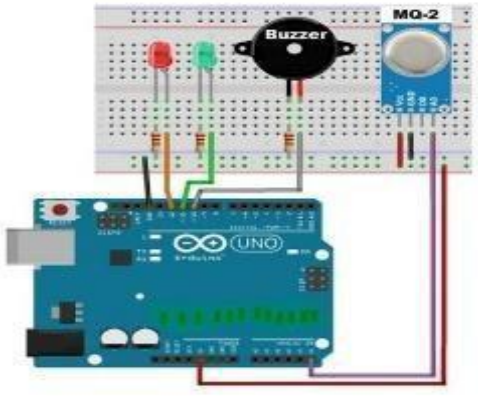

Fig 4.2.2 MQ2 Gas sensor

4.3 Configuring DS18B20 using Arduino UNO

After uploading the code the temperature will be displayed on the LCD and measured in Celsius. It has been found that when the temperature near the sensor changes, the web server's reading also changes.

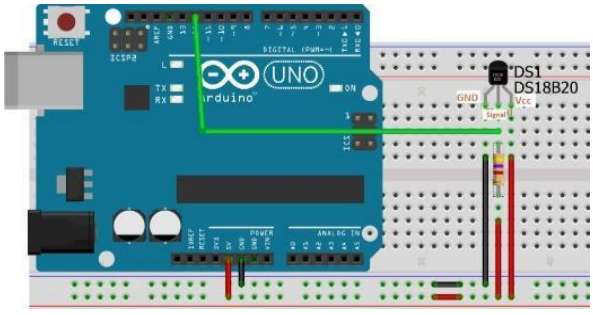

Fig 4.2.1 DS18B20N

4.4 Configuring ESP-8266 with Arduino UNO and UBIDOTS

We've created a simple payment method that you can use to send data to/from Ubidots on your device.

After connecting the controller and Wi-Fi module to Ubidots, sensor values

can be viewed on the Ubidots control panel.

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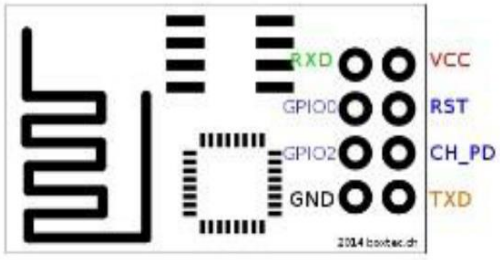

Fig 4.3.1 ESP8266

4.5 Software Requirements

- Arduino IDE
- UBIDOTS

4.6 Software Implementation

The ESP8266 provides a complete and standalone Wi-Fi networking solution that allows it to manage applications or completely offload the Wi-Fi connection work from other application processors. In this example, the ESP8266 is used as a Wi-Fi adapter to add wireless Internet access to a microcontroller-based module via the UART interface. In this case we use Arduino UNO.

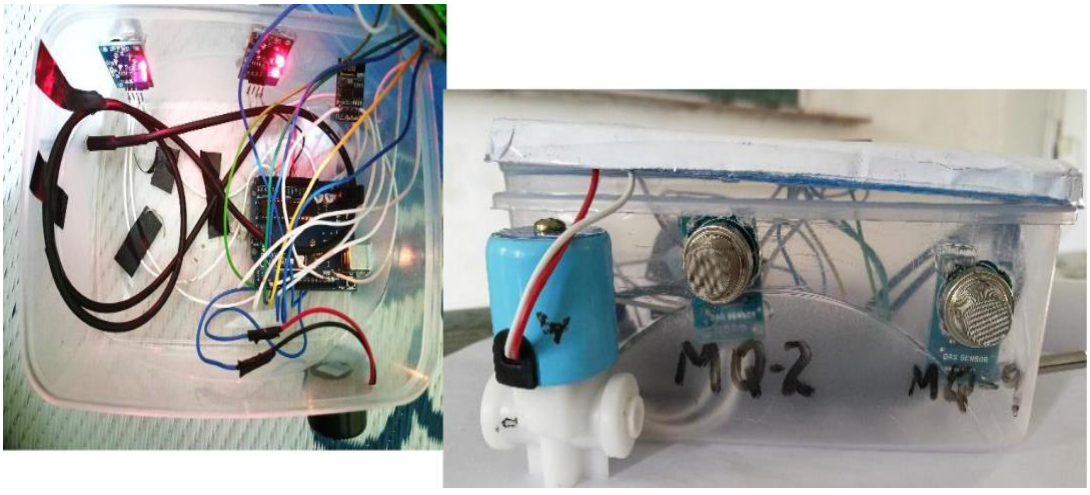

Fig 4.6.1 Hardware model

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4.7.Analysis:

Table 1 – Gas Concentration Measurement of MQ2

Sensor	Alcohol	Methane	Butane	LPG and propane
Mq2	100ppm-2000ppm	5000ppm-20000ppm	300ppm-5000ppm	200ppm-5000ppm

4.8 Result:

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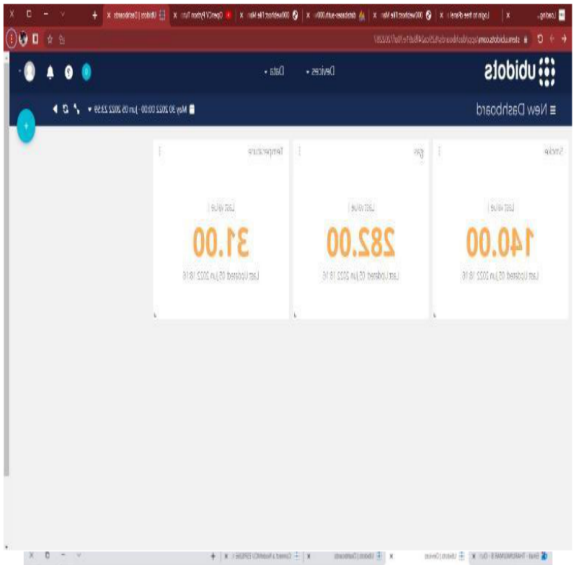
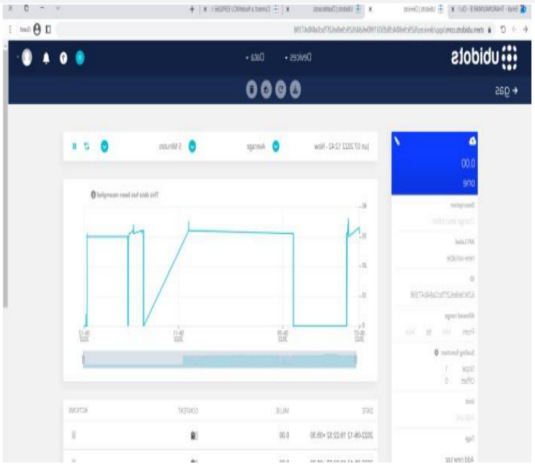
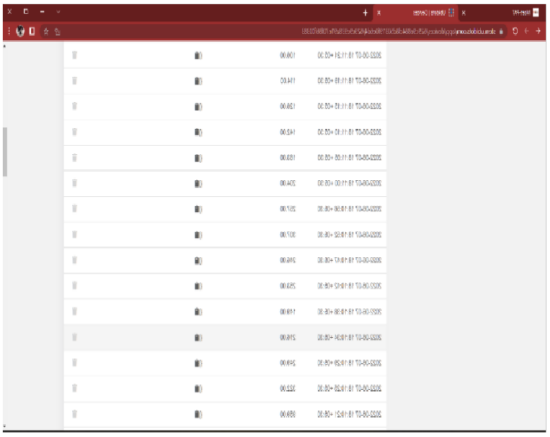
Fig 4.8.1 LCD Display







5. Conclusion

We conclude that this project enables the voltage difference between sensors MQ2, MQ9 to i dentify the gas concentration corresponding to the zero level. This training data is fed into U BIDOTS, resulting in a useful model dataset. When the numerical value appears on the LCD, it shows the corresponding value. The project also points out that lower prices can offset high er prices and produce fewer fake products.

6. Future Scope

In the future expansion, lighting monitoring will be connected to the project and security cam eras will be installed to monitor the system for instant control display in various situations an d environments. Therefore, it is possible to improve the project by taking into account the pre vious environment, monitoring frequency and other environmental data such as hydraulic imp act, smoke, pollution. It is also important to prepare information obtained from various enviro nmental sources for practical use in future studies. It will also be useful to analyze vehicle em issions by integrating mobile sensors into the vehicle and benefit from the development mode l in this project

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