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IOT Based Industrial Home Monitoring Using ATmega 328

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ABSTRACT:The objective of this paper is to design and implement a device for people to identify the,gas leakage, temperature, Light intensity. Hearing loss presents lots of challenges every day. This system also provide a great help for those people who are unaware about people who is at the door? This system consists Raspberry pi and Global system for mobile communication (GSM), server, Internet of things (IOT), Alert system. . This system is a simple, easy to install, microcontroller based circuit to monitor and also record the values of temperature, relative humidity and sunlight of the natural environment that are continuously.

KEYWORDS: Raspberry pi, Camera, GSM, Vibrator, Wearable device, At mega 328, LPG sensor, LM 35 (Temperature sensor), LDR.

I.INTRODUCTION

In this project we are using sensors to determine the gas leakage, Temperature, Light intensity etc. Nowadays Gas leakage is a serious problem in household, gas vehicles and industries. Gas leakage leads to various accidents resulting financial loss as well as human injuries. In context with these issues, the proposed design is able to detect and monitoring gas leakage. The system detects gas leakage and alerts the subscriber through alarm and display unit.In the transmitter section, Raspberry Pi, Doorbell, Global system for mobile (GSM) and Bluetooth are exits. Whereas the receiver section consists wearable device, Laptop or LCD screen, smart watch and vibrator to alert the receiver. The transmitter sends visitor image along with date and time to the receiver. This system is a simple, easy to install, microcontroller based circuit to monitor and also record the values of temperature, relative humidity and sunlight of the natural environment that are continuously updated and controlled in order computing them to achieve optimum plant growth and yield,but the limitation of operating speed ,channel, memory[2].

II.RELATED WORK

The rapid growth in communication technologies and Internet of Things have enabled the physical to continuously connected with computational elements forms smart environment.[3] A Hearing Robot using visual communication signals is designed by K.L. Koay in 2013.A monitoring system is built by taking the advantage of the GPRS network and ZigBee technology to support the people having hearing disability. The Raspberry Pi is connected with display via HDMI and input connected with mouse and keyboard. The camera is plugged into the CSI connector on Raspberry pi board. In wearable device, LCD is connected with raspberry pi to display the message or user's mobile phone is used.

III.SYSTEM DEVELOPMENT

The figure1shows block diagram of Industrial home monitoring system using At mega 328. This system consists Raspberry pi, camera, alert system, wearable device, IOT, sensors, LDR, LM 35, LPG sensor.
From using these website we can continuous monitor and control the home appliances devices like bulbs and fan. Also monitor the Continuous variable values of different sensors like smoke, temperature and Light intensity inside the industrial home with date and time. These data are getting from the webserver, which are continuous stored in the server form the controller.

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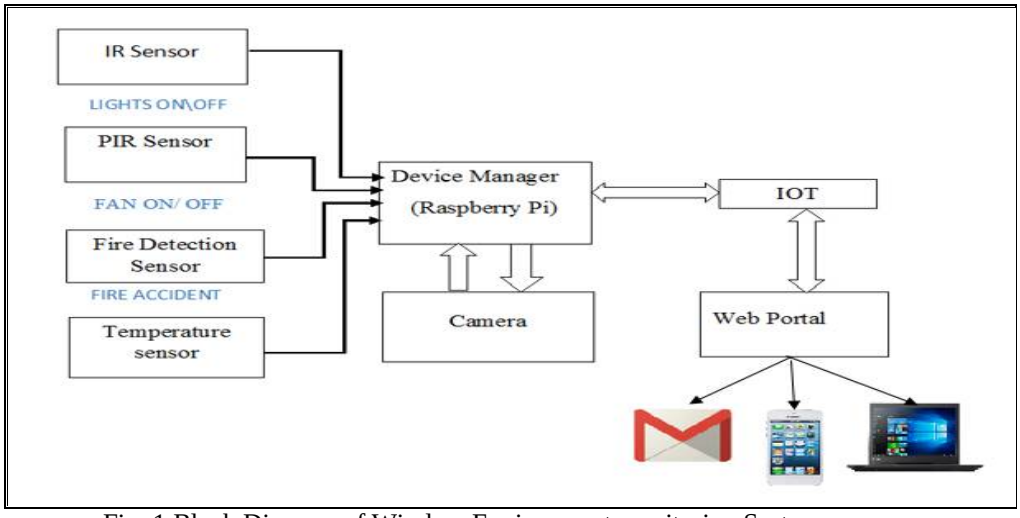

Fig: 1 Block Diagram of Wireless Environment monitoring System

1. Raspberry pi:

The Raspberry pi is a series of credit-sized single-board computers developed n UK. Raspberry pi includes an ARM117JZF-S 700 MHz processor and Bluetooth will be built into the board for first time.
The Raspberry Pi 3 runs at 1.2 GHz whereas Pi 2 runs at 900 MHz .The Raspberry pi consists on chip processor which consume 3W power. The Raspberry pi does not have any on board storage. The operating system loaded SD card which is inserted on SD card slot on Raspberry pi.

2. The Internet of Things (IOT):

The Internet of Things (IOT) is system consisting of networks of sensors whose purpose is to interconnect all things. IOT is one of the largest sources of collecting large amount of data. As earlier more than 50 billion devices will be connected with each other using IOT. It connect the devices embedded in various systems to the internet. This connectivity help to capture more data from more places and then they can be controlled from anywhere. The key objective of the IOT based smart environment are cost reduction, proactive maintenance, utilization improvement and minimal user interaction. [4] IOT has limited capabilities of processing power and storage also consequential issues like performance, reliability, privacy and security. [5] IOT has various application in each sectors like smart city, smart home, smart buildings, smart cars, agriculture, military, healthcare, surveillance etc.
Sometime there are false alarm caused due to some reasons when there is really someone at the door, then he is in a state of tremendous excitement. [6]
MQ-2 gas sensor has high sensitivity to Natural gas, Methane and could be used to detect both Methane and Propane. The sensor could be used to detect different combustible gas especially Methane, it's low cost and suitable for different application. Sensitive material of MQ-2 gas sensor is SnO2 having lower conductivity in clean air. When the target combustible gas exist the sensors conductivity increases higher along with the gas concentration rising. These components are used in gas leakage detecting equipment's in family and industry, are suitable for detecting of LPG gas, smoke.

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3. Gas sensor MQ2 :

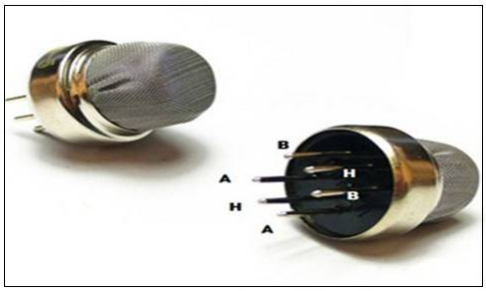

Fig: 2 Gas sensor MQ2

4. Technical Specifications:

- High sensitivity
- High sensitivity to Natural gas Methane
- Fast response
- Wide detection range
- Stable performance
- long life, low cost

5. LDR sensor:

- It is a passive electronic component which has a resistance that varies depending of the light intensity
- The resistance is very high in darkness (Typically MΩ)
- But when there is light that falls on the LDR, the resistance is falling down to a few KΩ and used to detect intensity of light.

IV.PERFORMANCE ANALYSIS

The system performance tested by alert message of visitor's arrival along with image is received. All the components for this system like raspberry pi, camera are interfaced properly and image is received on wearable device using IOT.As the size of captured image increases then the time required for transferring image from door system to the wearable device is also increases Hardware Performance.
The system analysis consist of used sensor specification, graphical representation of gases present in atmosphere and actual database of sensor readings.

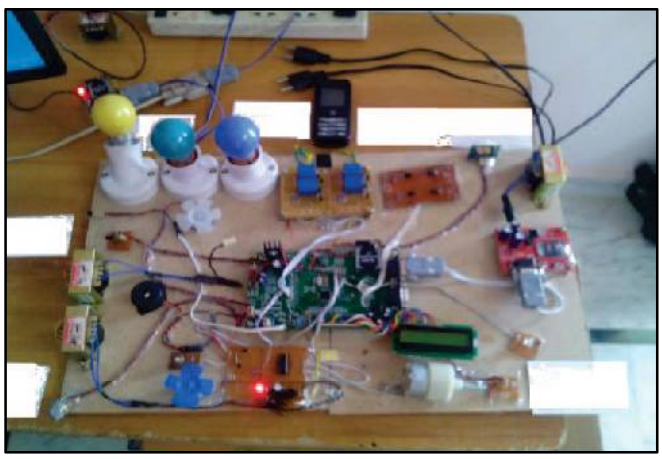

Fig: 3 Industrial Home Monitoring using Atmega 328

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1.Sensor Specification:

i] Temperature Sensor (LM35)

The LM35 series are precision integrated-circuit temperature device with an output voltage linearly proportional to the centigrade temperature.

Supply voltage: –0.2 to 35 V
Output voltage: –1 to 6 V
Output current:–10 mA max.

Choose R1 = –VS / 50 µA
VOUT = 1500 mV at 150°C
VOUT = 250 mV at 25°C
VOUT = –550 mV at –55°C

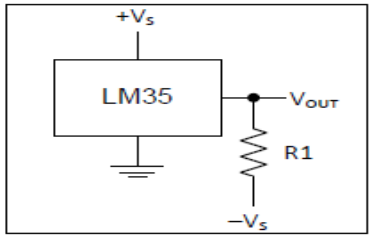

Fig: 4 Temperature Sensor (LM35)

2. Sensor output on screen:

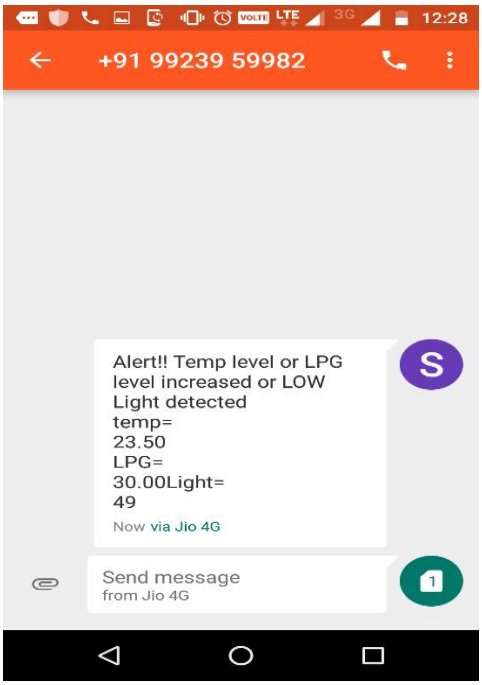

Fig: 6 Screenshot of Sensors outputs

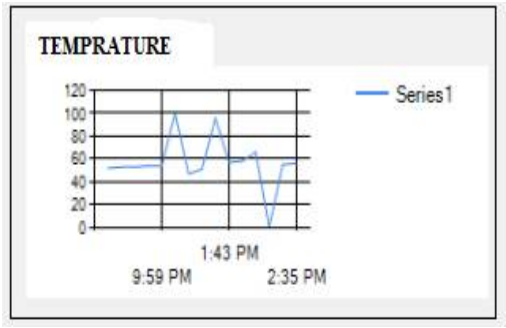

Fig: 5 Graphical Representation of Environmental Temperature

Table 1: Reading of LPG :

Time	LPG
14:22	042
16:56	027
17:49	027
10:06	026

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3. Output on Email :

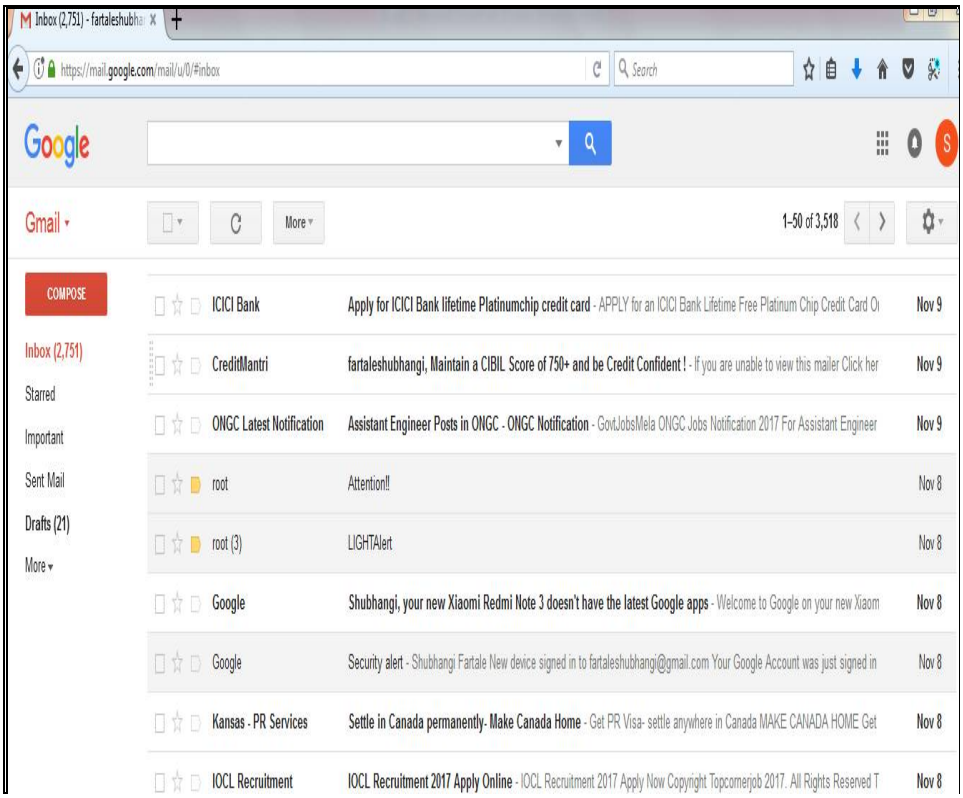

Fig: 7 Screenshot of output on email

V.CONCLUSION

Implementation of the IOT based Industrial home automation system using At mega 328 is done.From using these website we can continuous monitor and control the home appliances devices like bulbs and fan. Also monitor the Continuous variable values of different sensors like smoke, temperature and Light intensity inside the industrial home with date and time. These data are getting from the webserver, which are continuous stored in the server form the controller.

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