

INDUSTRIAL APPLICATIONS LIKE ENVIRONMENTAL CONTROL SYSTEM BY USING GSM

Mr.R.Vinay Kumar¹, Mrs. GUTTULA NALINI ²

¹Associate Professor, International School of Technology and Sciences for Women,
Rajanagaram, Andhra Pradesh-533294.

²Associate Professor, International School of Technology and Sciences for Women,
Rajanagaram, Andhra Pradesh-533294.

ABSTRACT:

This paper describes the design of a simple low cost GSM based security monitoring system using GSM technique. The security monitoring system using GSM undergoes analog to digital converter and with GSM Modem the message is send to mobile. ADC is used because Arduino works with digital inputs. GSM modem can be used at the transmitter side, the user sends an SMS to the GSM modem using. The fire sensor is an integrated circuit sensor that can be used to detect the fire. The fire sensor is connected to Arduino and varying fire condition is sent to GSM modem, which is simultaneously performs the operation of sending message to a particular SIM number. GSM technology provides users with high quality signal, giving them access to high quality digital communication. GSM network operators can provide their customers with cheaper text messaging options. The approach to industrial automation and security system design is almost standardized nowadays. We have tried to increase these standards by combining new design techniques and developed a low cost industrial automated security systems. Everyone wants to be as much as secure as possible. The design of simple hardware circuit enables every user to use this wireless industrial security system with vibration sensor, Motion sensor, Fire sensor, Door sensor and Main fuse Failure Detector at Industries.

Keywords: *GSM, GPS, Switch, Buzzer.*

1. INTRODUCTION:

Security is the main concern for every industry. Every industry wants to work in safe and secured that are beneficial for the Employes and specially for their production process say for

raw materials in the industry. Every industry want their workers to keep safe and secured from various incidents like accidents caused due to Fire detector or accidents due to fire in their go down or their machinery department. Industry

security is the most significant one for every industry owner. To get the absolute peace of mind whether you are at industry or out of industry you must ensure that your industry is installed with the perfect industry security monitoring system. This GSM Bases industrial security system can be used to provide security system for home, industrial, office, School, Collages using GSM technique. Security systems are certain electronic devices which are used to detect intrusions in industry. The basic components of a industry automation security system are motion detectors, fire detectors and motion detector. It is cheaper and maintained easily than any other security device. All the sensors are activated on the Security system. Whenever systems experiences a abnormal condition in the industry like any fire/smoke occurs in the industry and any intrusion into the industry the Security system alerts the security personnel as well as the owner of the industry by sending SMS alerts to the users of the industry. The system operates with the help of sensors installed in this system.

2. LITERATURE SURVEY

Rozita Teymourzadeh, Salah Addin Ahmed, Kok Wai Chan, and Mok Vee Hoong suggested Smart GSM Based Home Automation System. This research work investigates the potential of 'Full Home

Control', which is the aim of the house Automation Systems in near future. The implementation of the house automation technology using Global System for Mobile Communication (GSM) modem to manage home appliances like security system via SMS, light conditional system. The proposed research work is targeting functionality of the GSM protocol, which allows the user to manage the target system faraway from residential using frequency bandwidths. The concept of AT commands and serial communication has been applied towards development of the smart GSM-based home automation system. Home owners are going to be ready to receive feedback status of any home appliances in check whether switched on or off remotely from their mobile phones. PIC16F887 microcontroller with the mixing of GSM provides the smart automated house system with the specified baud of 9600 bps. The proposed prototype of GSM based home automation system was implemented and tested with maximum of 4 loads and shows the accuracy of $\geq 98\%$

Arbab Waheed Ahmad , Naeem Jan, Saeed Iqbal and Chankil Lee proposed Implementation of ZigBeeGSM based Home

Security Monitoring and Remote Control system. Home security and control is one among the essential needs of mankind from youth. But today it's to be updated with the rapidly changing technology to make sure vast coverage, remote, reliability, and real time operation. Deploying wireless technologies for security and control in home automation systems offers attractive benefits along side user friendly interface. In this paper, implementation of a completely unique security and system for home automation is presented. The proposed system consists of an impact console interfaced with different sensors using ZigBee. Suspected activities are conveyed to user through SMS or Call using GSM technology. Upon reply, the user can control his premises again through GSM-ZigBee combination. Besides, traditional burglar alarm enhances security just in case of no acknowledgment from remote user. This system offers a coffee cost, low power consumption and user friendly way of a reliable portable monitoring and control of the secured environment. Using the concept of Serial communication and mobile phone ATcommands the software is programmed using C language. The design has been implemented within the hardware using

ZigBee EM357 Module, Atmega128 MCU (microcontroller unit) and Sony Ericsson T290i mobile set. Index Terms: ZigBee, MCU (Microcontroller), GSM, Home Security and Automation.

P. Satya Ravi Teja, A. Sai Srikar, V. Kushal, K. Srinivasan proposed Photosensitive Security System for Theft Detection and Control using GSM technology. The proposed system consists of an LDR sensor which acts as an electronic eye for detecting the theft, and signaling procedure supported SMS using GSM (Global Systems for Mobile communications) technology. The GSM based communication helps the owner and anxious authorities to require necessary and timely action so as to stop the theft. The LDR (Light Dependent Resistor) circuit is interfaced employing a relay circuit with an Arduino microcontroller board. Efficacy of the proposed system are often seen in its immediate intimation regarding the incident. The proposed designed system is very effective and inexpensive. Index Terms— Arduino microcontroller, LDR, GSM module 300, Security system, Photosensitive. A. Alheraish are designed by Design and Implementation

of Home Automation System. M2M Wireless communication of varied machines and devices in mobile networks could even be a fast growing business and application area in industry, customer services, maintenance business, and security and banking areas. This paper presents design and implementation of remote system by means of GSM cellular communication network. The design integrates the device to be controlled, the microcontroller, and therefore the GSM module in order that it are often used for a good range of applications. Detailed description and implementation of every design element are presented. To verify the operation of the M2M design, two home applications are practically tested using PC-based environment.

3. METHODOLOGY

This work is focused on, utilizing the interdisciplinary advances in different engineering fields, to suggest a new design form with modified capabilities of an efficient, real time, reliable and realizable, at low cost, industrial environment monitoring system. The suggested design is intended to monitor, track, assess and register pollution's sources parameters and conditions in industrial manufacturing factory, to result in ensuring acceptable quality of

factory's environment, maintain safety of personnel, Material and Machinery and finally to result in more optimized factory operation. The system design is developed by utilizing commonly available hardware and specially designed modules. The state and value of various environmental pollution sources and conditions, in real time, are continuously read and monitored. The acquired data are broadcasted wirelessly from all sensor modules, to main control unit, which will process the acquired data, calculate the climatic indices, and take correction actions.

The majority applications of pollution monitoring systems are in industries. The control of the parameters which causes pollution and deteriorates the industrial and natural environment pattern is a great challenge and has received interest from industries especially in Petro chemical industries, Paper making industries, Water treatment industries and Sugar manufacturing industries. The main objective of our project is to design an efficient and robust system to control the parameters causing pollution and to minimize the effect of these parameters without affecting the plant or natural environment. The proposed methodology is to model a system to read and monitor pollution parameters and to inform pollution control authorities when any of these factors goes higher than industry standards.

Results explanation:

We are using voltage convert adapter to convert 230 voltage AC supply to 12V DC supply and it is used for Relay. Further we have used IC LM2576D2TR4-5g for converting 12 voltage DC to 5 Voltage. Which is used for GSM Model, 5 voltage conversion 3.3 voltage for Arduino using IC LN1117

Fire Sensor (Smoke Detector):- We are using 2351e smoke sensor. It is connected to Arduino Pin no 27. In fire Sensor pin no 3 is an output pin.

Required supply:- 12 volt. When a fire accident occurs the two resistors which are in series detect the smoke and the signal is passed to arduino (pin no 27). Arduino activates all three relay which are further connected to buzzer (Pin no 26), LED (Pin no 25), DC Pump (Pin no 24). Arduino sends the signal to GSM model through Pin no 9 and Pin 10 and sends a message to end user.

Motion Sensor:- We have used Dual element PIR motion sensor.

Detection Range: - 15mtr. **Detection Angle:** - 110 Degree.

Power supply: - 10 -15 voltage. Motion sensor is connected to pin no: 28 of Arduino. Motion sensor is basically used for security purpose in industry level sensors can be used under almost all environmental and climatic conditions. Motion detect the motion and pass the signal to arduino.

Arduino activates the relay which are further connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 send the signal to GSM model through Pin no 9 and Pin 10 and send a message to end user.

Door Sensor:- Door Sensor work by using magnets and a magnetic sensitive switch. A magnet is placed in the top corner of the door and the switch is placed in the door frame, exactly opposite to the magnet. When the door is closed, the switch takes rest i.e switch and the magnet path is closed. When the door opens, this unstable magnetic field is disrupted, closing the switch and at that instant the signal is passed to arduino. Arduino activates the relay which are further connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 sends the signal to GSM model through Pin no 9 and Pin 10 and sends a message to end user.

Vibration sensor:- In industry level every machine is placed in a platform for smooth and balance working. There may be a situation occur when the platform becomes unstable and the machine starts vibrating. If the situation continues. These vibrations may damage the internal parts of the machine. To avoid these problems vibration sensors are used. Vibration sensors sense the vibration, which are out of limit and send the signal to arduino through pin no 5. Arduino activates the relays which are further

connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 sends the signal

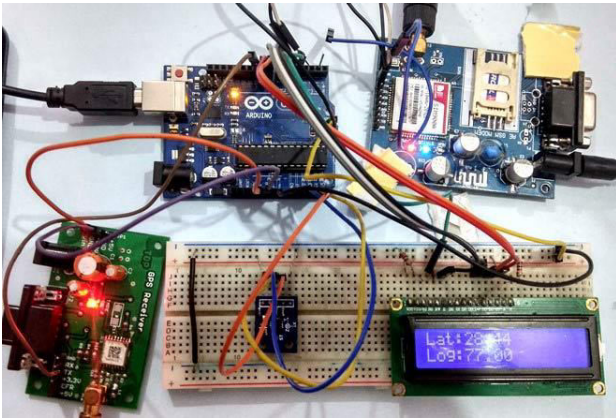


Fig. Hardware kit image.

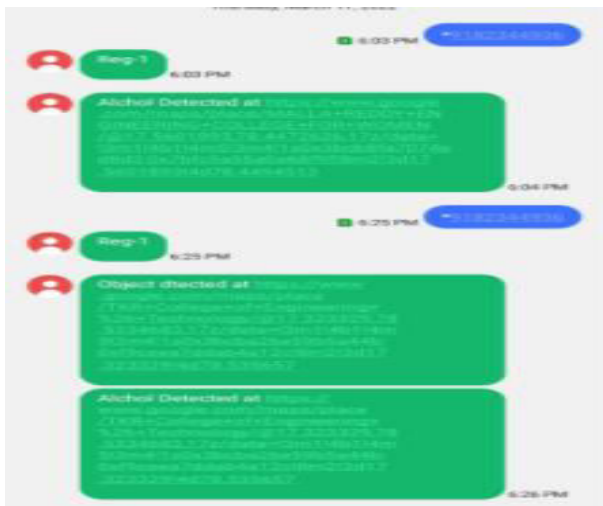


Fig.2. Output results with location.

The main agenda of our project was to provide a safe environment for the workers several industrial accident like fire and vibration and 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 system can be easily implemented with maximum reliability and high security with low cost, It is a special enhancement.

FUTURE SCOPE

Voice announcement system can be added to indicate Status of a device. If we can add voice announcement system with the buzzer so if there are hazardous parameters then that problem is easily detected then accordingly respective voice message will be announced. We can automatically switch off the extinguisher which we were doing it manually.

REFERENCES

- [1] R. Ganiga, Rohit Maurya, Archana Nanade,"Accident detection system using Piezo Disk Sensor", International Journal of science, Engineering and Technology Research(IJSETR) volume6,Issue3,March 2017,ISSN 2278-7798.
- [2].Hemjit Sawant, Jindong Tan, Qingyan Yang Qizhi Wang," Using Bluetooth and Sensor networks for intelligent transport systems", In proceeding of Intelligent Transport System; 2004
- [3].Helia Mamdouhi, Sabira Khatun, Javed Zarrin," Bluetooth Wireless monitoring, Managing and Control for inter vehicle in vehicular adhoc networks", Journal of computer Science, Science Publication; 2009

- [4].Jules White, Brian Dougherty, Adam Albright, Douglas C,” Using Smartphone to Detect Car Accidents and Provide Situational awareness to emergency responders chirs Thompson”, Mobile Wireless Middleware, Operating system and Application;2010
- [5].Khyati Shah, Vile Parle, Swati Bairagi,Vile Parle “Accident Detection and Conveyor System using GSM and GPS Module” International journal of Computer Applications (0975-8887) .
- [6].Pooja Shindalkar, Aasiya Fatema Shaikh, Chaitanya Mate, “Arduino Based Vehicle Accident Detection System”, International journal of Innovative Research in Computer and Communication Engineering (An 3297:2007 certified organization) Vol.5, Issue 4.
- [7].E.Krishna Priya, P.Manju, V.Mythra, “IoT Based Vehicle Tracking and Accident Detection System” International journal of Innovative Research in Computer and Communication Engineering, (An ISO 3297:2007 Certified organization) Vol.5,Issue 3.
- [8]. Tanushree Dalai, "Emergency Alert and Service for Automotives for India", International Journal of Advanced Trends in Computer Science and Engineering (IJATCSE) Mysore India, vol. 2, no. 5, pp. 08-12, 2013.
- [9]. Manuel Fogue, Piedad Garrido, Francisco J. Martinez, JuanCarlos Cano, Carlos T. Calafate, and Pietro Manzoni (2012) “Assistance through Communication Technologies and Vehicle”, IEEE vehicular technology magazine.
- [10]. PL Needham, Collision prevention: The role of an accident data recorder. Automated Emergency Call for Road Accident, European Commission Press G. Singh and H. Song, Using Hidden Markov Models in Vehicular crash detection, IEEE Transactions.