

LPG Leak Detector using GSM Technology

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Abstract— Now a days the home safety detection system plays the important role for the security of people. Since today's condition all the people from the home goes to work on daily bases, it make impossible to have check on the appliances available at home specially LPG gas cylinder, wired circuits, Etc. whereas in industrial system it also make difficult for the employees to keep the track of every second so to work on this problem, In this paper the system is develop which is able to keep the track on numerous home appliances like LPG gas cylinder, CNG vehicles etc. This system uses MQ6 gas sensing element to discover flammable gas run and we used Arduino microcontroller for controlling the system along with LCD display and GSM Module which send the alert message if the gas leakage will take place. This makes easy for both the commercial as well as domestic sector to keep the track on problem faced on daily bases. This system effectively track the problems arises in day to day life.

Keywords: LPG, MQ6 gas sensor, CNG, GSM

I. INTRODUCTION

Inflammable gases are widely used in industry, heating systems, home appliances and vehicles]. This includes combustible gases like Liquefied Petroleum Gas (LPG), propane, ethane, butane, methane, ethylene etc. also referred to as propane or butane are normally stored in pressurized cylinders in liquid form and vaporize at normal temperatures. A leakage can ignite and cause explosion. Therefore, the leakage detection of gases has gained more interest in recent years especially in fields of safety, industry, environment, and emission control. A conventional gas leakage system uses on-the-spot alarms as a warning to point the leakage. The disadvantage of the conventional leakage system is that it becomes ineffective in the absence of first response team on-site. This may delay the preventive actions causing damage to life and environment. Therefore, there is a need for a system to find the outflow and send the knowledge to the first response team through wireless system. A leakage detection system that initiates a warning SMS will be more effective in the absence of people on-site. Moreover, the leakage wake-up message may be sent to fireside station yet. Gas leakage find or designed with Arduino microcontroller to detect and send information through GSM is presented Alternatively, an MQ6 gas sensor can be used in the detection system to detect several flammable gases creating them ideal for use in a variety of environments. MQ6 gas sensor clearly have many advantages as far as the high-performance systems are concerned wherever smoothing filters are needed to clean the gas sensor data. In this paper, we propose a leakage detection system that uses MQ6 gas sensor to detect the leakage with a alert message using GSM module initiating feature to the first response team. LPG is used to test the system.

II. PROPOSED SYSTEM

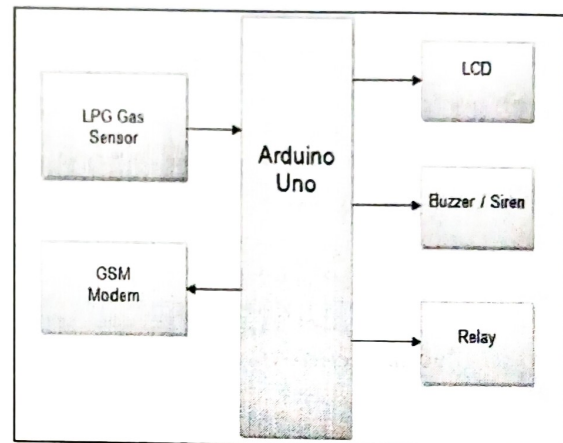


Fig. 1. Block Diagram of LPG gas detector using GSM.

III. WORKING PRINCIPLES

A. LPG Sensor:

LPG Sensor detects the leakage and gives analog output in mV. We feed the mV output signal to Amplifier. Amplifier is nothing but an Instrument Amplifier used to amplify the low signal. To convert that analog output in digital we use here ADC which is directly interfaced with microcontroller. To display the Leakage in PPM we use seven segment displays. One alarm is also provided there to connect any hooter or buzzer. It is used to give alert in case of any high leakage through SMS. So by using this device user able prevent fire accident due to LPG.

B. Warm up Time

The sensor needs 10 minutes of warm up time after first power is applied. After 10 minutes you can take its readings. During warm up time the output analog voltage would go up from 4.5V to 0.5V in variation down gradually. During this warm up time the sensor reading should be ignored.

C. Using the Sensor

The sensor needs 5V to operate, Give regulated +5V DC supply, the sensor will take around 180mA supply. The sensor will heat a little bit since it has internal heater that heats the sensing element.

Bluetooth Based Home Automation using Arduino

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Abstract— The word automation is automatic control of operating devices with minimal or reduced human efforts. Influence of wireless technology is growing day by day. In today's world, wireless technology doing significant role in the automation. It means automation makes technology free from human interruption. Home automation is one of the technology emerging these days. To make it more effective and efficient, cost is reduced by low cost communication technology like Bluetooth, Wi-Fi. Bluetooth is wireless technology to use in home automation. It is no operational cost technique, common in use and working in range up to 100 meters. Bluetooth which is mainly used for data exchange, add new features to smartphones. With help of android application we are able to connect and control household appliances and provide security to handicapped, old people. The idea of paper is to control home appliances like lights, fan. It also provides home security and emergency alerts to be activated. It is possible to save energy by auto off lights at night time. Smoke detector can detect smoke or gas leak condition, causing alerts to user on their smartphone. Our home automation works smartly by providing increased quality of life, and comforts to users. Technology is a never ending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. This paper presents the design and implementation of a low cost but yet flexible and secure cell phone based home automation system. The design is based on a stand alone Arduino BT board and the home appliances are connected to the input/ output ports of this board via relays. The communication between the cell phone and the Arduino BT board is wireless. This system is designed to be low cost and scalable allowing variety of devices to be controlled with minimum changes to its core. Password protection is being used to only allow authorised users from accessing the appliances at home.

Key words: Bluetooth Wireless Technology, Smartphones, Home Automation System, Arduino Uno, Android, Bluetooth Module, Temperature Sensor, Smoke Detection

I. INTRODUCTION

Home automation is the usage of information technology and computer for controlling home appliances and various other devices. It can be simple control of a light bulb to a complex network based on computer or microcontroller which can have varying levels of automation and intelligence. It means that one can control devices from any corner of the world. The term can be used for isolated programmable devices, like thermostats and sprinkler systems, but it more specifically explains or focuses on places or homes where almost everything like lights, devices, electrical outlets, heating and cooling systems can be controlled over a network. Study of applications of IT (information technology) to create intelligent home topography is known as Domotics. It can be used in home security systems which include the alarm

system, and all of the smoke detectors, doors, windows, locks, surveillance cameras and any other sensors which are linked to it. Gas leak, fire alarm, carbon monoxide, or water leaks can also be included as detection systems. It is prominently used for reasons of security, ease, and energy efficiency. Its popularity recently has recently increased because of much higher affordability and simplicity through tablet connectivity and Smartphone. The idea about the "Internet of Things" is the recent hot topic of debate under HAS.

Home Automation Systems can be implemented by two ways i.e. Wired or Wireless Technology. Wired HAS (Home Automation Systems): In a wired HAS structure's existing electrical wiring and cable are used to connect all the devices. The signal is carried by the electrical wires, so they are called as power line systems. These types of systems are said to be unsuccessful in large homes and areas as the signal gets weaken travelling through long stretches of wire so phase couplers are required to maintain strong transmission which increases the cost of the system.

Automation is a technique, method, or system of operating or controlling a process by electronic devices with reducing human involvement to a minimum. The fundamental of building an automation system for an office or home is increasing day-by-day with numerous benefits. Industrialist and researchers are working to build efficient and affordability automatic systems to monitor and control different machines like lights, fans, AC based on the requirement. Automation makes not only an efficient but also an economical use of the electricity and water and reduces much of the wastage. Automation is another important application of wireless technologies like Bluetooth. It is the monitoring of the energy consumption and the Controlling the environment in buildings, schools, offices and museums by using different types of sensors that control lights, temperature. To make it more operative and efficient, cost is reduced by low cost communication technology like Bluetooth.

Bluetooth is nice technology to use in home automation. This technology allows to the users instantaneous connections of voice and information between several devices in real time. The way of transmission used assures protection against interferences and safety in the sending of information in arrange up to 100 meters. Building upon this theme; we propose a home automation system based on Bluetooth technology available in Android smartphones.

Implemented design are considering few issues for smart home automation. They are: Easy setup, Easy to control and monitor, Low cost and efficient communication. Our paper presents Bluetooth based centrally controlled home automation system using smartphones and Arduino Uno board. Such a system will enable users to have control over lights, fan in his home with Bluetooth. All that the user needs

Solar Power Fencing System using GSM Technology

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Abstract— Asian country, with very vast agricultural lands has completely different crops. But few crops are destroyed due to animals that's why a protection is needed to avoid wasting the crops from animal. Solar Fencing Perimeter Protection is the need of modern-day to the growing security threat in denying, detection whereas having the inbuilt capability to serve as deterrent. In this project, we design and implement Fencing Perimeter Protection for agriculture. . It works on Solar Energy with backup facility to run uninterruptedly during the nights as well as cloudy days. When any object is touched by fencing then immediately controller sends the message to the authorized person through the GSM modem, and it is interfaced with the controller. At the same time buzzer and light will on. . Solar Powered Fence is scientific Fen.

Keywords: GSM Modem, Sensor, Fence, Agriculture

I. INTRODUCTION

In the world, the economy of many countries is dependent upon agriculture. In spite of economic development agriculture is the backbone of the economy. Agriculture is the main stay of economy. It contributes to the gross domestic product. Agriculture meets food requirements of the people and produces several raw materials for industries. But because of animal interference in agricultural lands, there will be huge loss of crops. Crop will be totally getting destroyed. There will be large amount of loss of farmer. To avoid these financial losses it is very important to protect agricultural field or farms from animal. To overcome this problem, in our proposed work we shall design a system to prevent the entry of animals into the farm. Main purpose this is to develop prohibitive fencing to the farm, to avoid losses due to animals. These prohibitive fencing protect the crop from damaging that indirectly increase yield of the crop. The develop system will not harmful and injurious to animal as well as human beings. Solar energy can be utilized to energize such fence arrangement. Solar power has been chosen for this application due to which the dependency on the conventional power supply can be reduced and problem of energy crisis can also be overcome. In comparison with the non-renewable energies such as coal, gasoline and oil, solar power is becoming increasingly popular as it produces no pollution and requires minimum maintenance. The energy from the sun is free and it also has the advantage of reducing the power losses when converting the energy. An energizer converts 120-volt electrical power or power from a battery into high voltage, short duration electrical pulses. These electrical pulses typically range from 2000 to 20,000 volts with durations of 1/1000 to 3/10,000 of a second. These short duration pulses may cause avoidance behaviour but are not harmful to the animal. The power circuit (60Hz) carries 120-volt electrical power from a service panel to the energizer. The primary function of the grounding system is to conduct

fault current and quickly operate protective devices The second circuit is between the energizer and the fence. The low voltage power coming into the energizer is converted to very short duration electrical pulses. The energizer pulse flows out through the high voltage lead-out from the energizer to the fence only if an animal or something else touches the wire to complete the circuit back through the earth. Once the current is in the earth it flows to an earth-return rod and earth return wire back to the energizer. Then alarm activated and it produce high frequency sound and gsm sends text message on your mobile somewhere near on you

II. PROPOSED SYSTEM

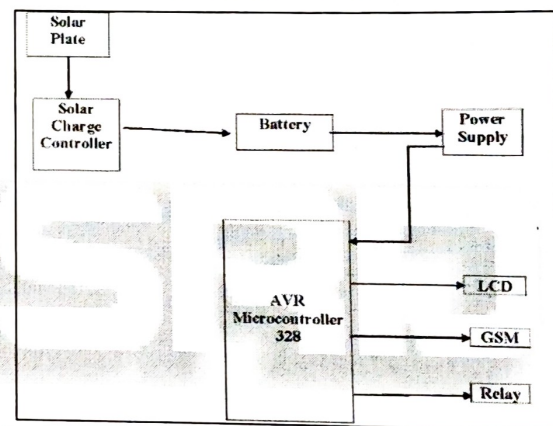


Fig. 1: Block Diagram of solar fencing system using GSM The solar energy (light) is converted into D.C electricity by using the solar panel. Battery is connected to the solar panel. Further stored in the rechargeable battery. The output of battery is 12 volt. The one of the supply of battery is connected to the GSM. & second is connected to the flipunit. When we give 12 volt to the circuit that time switch is ON-OFF, then we converted supply voltage regulator from 12v to 5v and we give it to the AVR Microcontroller 328. Microcontroller is connected to the 16 MHz crystal oscillator. Capacitor is also connected to the microcontroller. For operated relay we used there BDA139 transistor.

For relay transistor worked as a driver, we provide 12v to the relay. The voltage regulator is connected to the relay. Then 6v output of voltage regulator is supply to the capacitor. Which is worked do as a filter. Then it gives output to the 2L4 MOSFET. It is connected to the MOSFET Ferrite transformer. Which is used for convert voltage from 6v to 1000v then it is converted voltage doubler circuit from 1000v to 4000v. There we used four diode, from this four diode each diode is generating 1000v. Then we give output to the zero crossing circuit. We used there Optocoupler circuit, further the output of optocoupler passing through the IC LM358. Then two transistors are connected across to IC. After that we take one zero cross supply over. There are three connections