"BUILDING MONITORING USING WIRELESS SYSTEM"

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Abstract- *Building monitoring using wireless system requires less manual power. Wireless sensor network (WSN) refers to a group of various sensors for monitoring and detecting building parameters and collected all data at base location of building. The wireless system is proposed for monitoring buildings are subjected to monitor the parameters such as water tank level, gas leakage detection, fire detection. This will consists of PIC controller as a control device. It will also consists of a sensor network made up of various types of sensors. Bluetooth module will act as a wireless network.*

Key words: Bluetooth, PIC, Sensors, LCD display, Buzzer

1.   INTRODUCTION-

Building monitoring system (BMS) is total automated process therefore it is also called as building automated system (BAS). This system is totally provides security background for the building. In this project we have developed a system whose working is based on the Wireless Sensor Network, which will provide the energy efficient working of the system. For monitoring physical and environmental conditions wireless sensor networks consisting of spatially distributed sensors are used. Building monitoring using WSN is used to monitor the building parameters using Bluetooth. Parameters are like tank level, LPG gas leakage, fire detection and supply failure. The system will continuously monitor the parameter and send to Bluetooth module. Using Bluetooth as a wireless system we can monitor the building parameters. In this paper we are considering four parameters e.g. tank level, LPG gas leakage, Fire hazards. For detecting level we are using LOW level and HIGH level sensors. LPG gas leakage detector we are using MQ6 LPG sensor, for fire detector we are using fire sensor. And for power supply failure we are using PT sensor. There is also one Buzzer used to announce the unsafe condition.

2. OBJECTIVES-

The main objective of the project to built cost effective and efficient wireless monitoring system for building applications by using level sensor, gas sensor, fire sensor, power supply sensor. To understand the benefit of wireless network. Wireless sensor network will provide energy efficient working of the building monitoring system. To aware peoples about the security risks. Primarily this system is designed for wide ranging and controlling applications. To reduce manual power totally automation system is provided. In this paper uses sensors and Bluetooth to carry out the message of hazard to owner of building and the security agency to their mobile phones which will provide quick prevention of hazard.

3. BLOCK DIAGRAM-
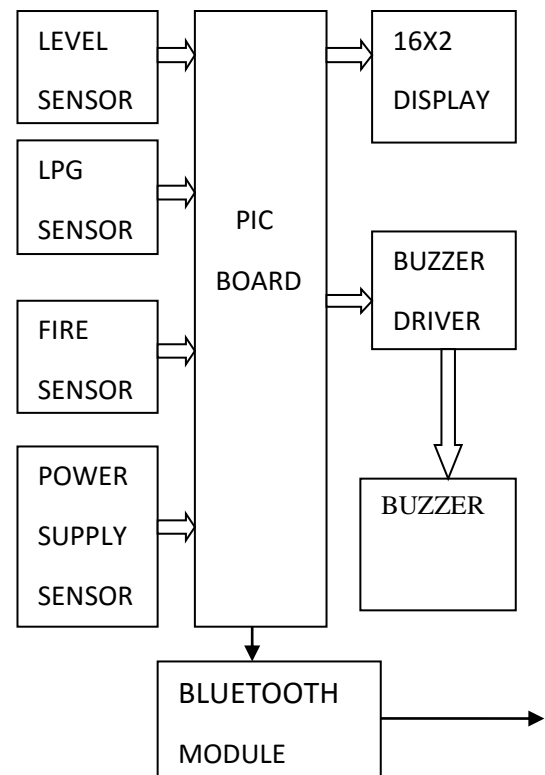
3.1 Block diagram description-

3.1.1. PICMicrocontroller16F877-

Only 35 single word instructions to learn. All single-cycle instructions except for program branches, which are two-cycle. An operating speed is DC – 20 MHz clock input. Up to 8K x 14 words of Flash Program Memory, up to 368 x 8 bytes of Data Memory (RAM) and up to 256 x 8 bytes of EEPROM Data Memory Pin. Parallel Slave Port

(PSP) is 8 bits wide with external RD, WR and CS controls (40/44-pin only). A Brown-out detection circuitry for Brown-out Reset (BOR).

3.1.2. Level Sensor-

This block senses the high level and low level. For sensing the high level and low level special level sensors are used. When level is sensed the block gives a binary 1 as a output and level is not sensed it gives binary 0 as a output.

3.1.3. LPG Sensor-

We used MQ6 LPG gas sensor in gas leakage detecting equipment for detecting of LPG gases. The sensor does not get trigger with the noise of alcohol, cooking fumes and cigarette smoke.

3.1.4. Fire Sensor-

If fire is not detected then output of the fire sensor is logic 1.When fire is detected then output of the fire sensor is logic 0. This fire sensor is connected to the PIC board as a input.

3.1.5. 16 X 2 LCD-

In this project we are using 16 X 2 intelligent LCD display to display the tank level and message regarding hazard which is occurred in the building.

3.1.6. Transistor as a Buzzer Driver-

Output of PIC is not sufficient to drive the buzzer directly. Therefore to drive the Buzzer we use transistor as a switch. When its base voltage is less than 0.7 volts, transistor is OFF, therefore Buzzer is also OFF.

3.1.7. Bluetooth module-

For the communication between mobile phone and microcontroller Bluetooth module(HC-05) is used. HC-05 is low power 1.8V operation and is easy to use with Bluetooth SPP (serial port protocol). Serial port Bluetooth module have a Bluetooth 2.0+EDR (enhanced data rate), 3Mbps modulation with complete 2.4GHZ radio transceiver and baseband. Using Bluetooth profile and android platform architecture different type of Bluetooth applications can be developed.

4. Working of system:

The building monitoring system (BMS) is basically based on the 'Wireless Sensor Network'. This system consists of the main four parts which are microcontroller part, power supply, timer, counter. The input part is consists

of the sensor network and the output part Bluetooth module and there is also one buzzer at the output. The sensor network is made up of level sensor, fire sensor and gas sensor. The level sensor is used for detecting the water level in the tank as low level and high level. The gas sensor is used for detecting gas leakage. Fire sensor is used for detecting the fire. The buzzer is used here for announcing the unsafe condition. Here, 16 x 2 LCD display is used in this system for display the message in 2 lines which will give 16 characters. The sensor network is used for detecting the problem which will be given as input to the LCD display and Bluetooth module. The buzzer will also act as an output device which is used for announcing the unsafe condition due to which the people will get the information about the problem is occurred. LCD display will display the message which gives information about the address where the hazard is occurred. System will continuously monitor the parameter and send to the Bluetooth module. Bluetooth will acts as a transmitter as well as receiver which will receive the status of all the sensors and send it to watchman cabin. Watchman will send the message to the preventing agency for prevention of problem where problem is occurred.

5.RESULT-

This is result of system. When low level and high level of water tank is sensed by low level and high level sensor respectively, then hydraulic pump becomes automatically on and off according to condition and the message is displayed on LCD display. Similarly fire is detected by fire sensor and buzzer remains on continuously. When gas is detected by LPG Gas sensor, buzzer is on but it will not remains continuously on.

6. CONCLUSION-

In this paper we provided the brief information regarding the building monitoring system using wireless sensor network. There are many existing systems which

will provide security for the building applications. But those methods are very time consuming. In this project we provided a use of wireless sensor network with an emphasis on building and environmental monitoring applications. We outlined the challenges open problems in our society and got the perfect solution on it to reduce such kind of problems. It proposed to reduce the energy consumption and human efforts. As the wireless sensor network is preferred so the working of the system is energy efficient and requires less manual power. We hope that it can become a very useful system for building monitoring.

ACKNOWLEDGEMENT-

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