

# Wireless Data Monitoring Using Zigbee & GPRS

Nikam Suryakant S<sup>1</sup> Sawant Suhas S<sup>2</sup> Sutar Dabeer A<sup>3</sup>

<sup>1,2,3</sup>Department of Electronics & Telecommunication

<sup>1,2,3</sup>Dr. Daulatrao Aher College of Engineering, Karad, Shivaji University, Kolhapur, India

**Abstract**— Development of a system for monitoring the real-time data in the industries with the help of wireless transmission-reception protocol (Zigbee) And put it on the internet for ease of operation. Formerly, this real-time data was monitored by the technician from the work spot and should note down, while doing this there were risk of accidents for the technicians. The project is based on wireless transmission protocol and internet so there is no need to check the data from the site; it will be sent wirelessly to the either control room or to internet; depends. The paper consists of three parts; overall system design.

**Key words:** GPRS, Zigbee, Sensors

## I. INTRODUCTION

In industrial sector, there is need for monitoring the various parameters regarding the conditions of workplace because it becomes very hazardous at many times to the life of the technician. The conditions can become worse at the workplace so it is necessary to monitor the parameters. Consider, a sugar factory where at its production room the various parameters of environment have to monitored in real-time from time to time .If the parameters increases or decrease above or below respectively, the predefined level it can be dangerous for the factory and its workers. This thing is same in like nuclear industries, chemical industries mines, pharmaceutical company, etc. We can consider the conditions in the mine areas for rescue of the miners. In the same time there are many technology that can be used to monitor the parameters in the control room but in our project we are going to monitor the data using wireless system and that data we can monitor on the World Wide Web via GPRS.

## II. ABOUT ZIGBEE TECHNOLOGY

Zigbee has IEEE 802.15.4. Wireless sensors are automated and are operated unattended; they are adaptive to real-time. This technology not only reduce the overall monitoring system cost in term of facilities setup and labor cost, but always provide flexibility in system in term of distance or location. So these systems are widely used in military, hospitals, home and other commercial areas. Considering, these features, the ZigBee became the new standard intended for low cost devices in automation, computer peripherals and home controls. ZigBee protocol performs well at industrial environments the fundamental design and implementation.



Fig.1: Zigbee

## III. ABOUT GPRS TECHNOLOGY;

GPRS means General Packet Radio Service; it is used for data communication or we can say for using internet. In our system the data which is to be monitored is displayed on the internet using this module.

## IV. ABOUT MONITORING THE DATA:

In this section the proposed system is shown below.

### A. Block Diagram

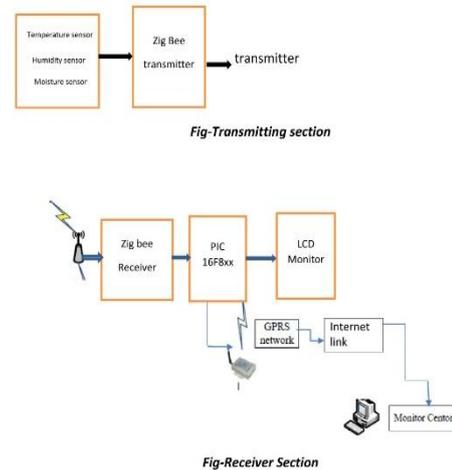


Fig.2: Block Diagram

### B. Block Diagram Description:

In this system we are using various sensors for real time data measurement or monitoring. Sensors are like transducer which convert physical quantity into electric signals. They sense this signal and give it to the controller; it just do transmission via wireless transmission protocol that is ZigBee; it transmit the data. The range of Zigbee depend on the manufacturer.

At the receiver section, a ZigBee is used for the reception which receives from transmitter and give the incoming signal to the pic controller at bit rate 250kb/s. Pic controller as has a inbuilt ADC it converts the analog signal into digital and can compare this signals with predefined level store in its program, if the value from sensors increase or decrease above or below the predefined values pic can transmit this real time changes over max 232 serial communication to the GPRS module. Every device has its own API (Application Program interface) which is used to interface so we can write program for transmission of that electric quantity at the HTTP or www domain. If we write a program in JAVA language for displaying that sensors variation on internet in REAL time and we can monitor every small changes in that environment.

#### V. HARDWARE DESIGN:

The monitoring system can be divided into two parts: transmitter part and receiver part. The transmitter sections consists of various sensors like temperature, pressure & humidity; and a Zigbee. The receiver section can be seen in the block diagram. It consists of a Zigbee receiver, PIC microcontroller, GPRS module, Display.

#### VI. SOFTWARE DESIGN:

##### A. *Embedded C:*

C language can be used instead of assembly language for reducing complexity.

##### B. *Keil 4.0:*

Keil 4.0 development tool supports every level of embedded software standards. It solve problems occurring in embedded.

##### C. *Flash Magic:*

This tool is used to program the microcontroller.

#### VII. CONCLUSION:

With the help of this study, a real-time data monitoring system with Zigbee protocol is achieved and tested successfully. The system developed is capable to monitor data wirelessly and upload the data on internet by using GPRS module. The most parameters are temperature, humidity, pressure ; all of these real time data values can be transferred to the host computer, displayed on the interface, represented graphically; monitoring the basic parameters of the real time data examined and achieved in various ways. The 'ZigBee' technology is a new wireless protocol used for the communication. This protocol is widely used various areas for its better reliability, low power consuming profile, excellent capability, high flexibility and low cost. So it's significant to embed the ZigBee protocol into the WSN system that widely applied now in every area. The system achieved can be used for industrial applications. Can minimize the risks of accidental events. In future modifications can be done in order to control the increasing parameters. For keeping eye on the conditions, there is no need to be present in the control room

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