Wireless Sculpture In Subterranean Mining

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Abstract: *The underground environment is a harsh and hazardous workplace for plant and personnel. It is damp, dusty and hot, there is a risk of roof and rock falling and the atmosphere can be potentially explosive.In this project, new wireless sensor network architecture is introduced for surveillance and security monitoring of underground mines and confined areas.The sensed signal are transmitted by RF module and indicated through LED and a voice playback module.The main difference between monitoring and environmental data measurement is related to data routing. In the first case, the sensor is continuously measuring but the node transmits only data when an abnormal condition is detected. This has a significant impact on the optimal network architecture. Because of the importance of these applications, we can use networks with a small numbers of expensive sensors.*

Index Terms: *Data measurement, Monitoring, Survillence, Underground mines,Wireless.*

I. Introduction

Sensor networks provide a promising infrastructure for gathering information about parameters of the physical world. Such networks have many applications in military and civilian environments. For the applications of monitoring, the network must be configured so that the nodes are also reporting the status of adjacent nodes.A module of MEMS based sensors are used for underground environment monitoring and automating progressing of measurement data through digital wireless communication technique is proposed with high accuracy smooth control and reliability.A micro controller is used for collecting data and making decision , based on which the mine worker is informed through voice system as well as alarm.The voice system with both microphone and speaker transformes into digital signal and effectively communicate wirelessly with ground control center computer.

II. Objective

To design and implement automated security monitoring underground mining system by using PIC and Wireless system to enhance comfortable and safe working and to avoid accidents providing a good alternative for the independent life of older and differently challenged persons.

III. Existing System

Circuit diagrams is to be designed, electrical components specified and installed, and wiring lists created. Electricians would then wire the components necessary to perform a specific task.
If an error is made, the wires had to be reconnected correctly. A change in function or system expansion required extensive component changes and rewiring.

IV. Proposed System

It is reliable and I/O ports can be expanded without supporting components and protocol.The programs can be easily debugged. Monitoring and controlling the process from remote place is possible.Wireless sensor network consist through joining of several sensor nodes which have included communication and sensing capabilities.
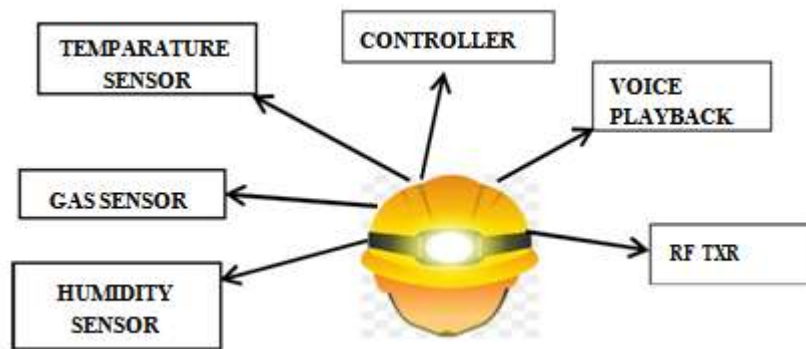
Wireless sensor network consist of large number of sensor nodes in mesh topology.Wireless sensor network performs the data collection from more than one environment parameters by single sensor nodes.So that the supervisors can interprets the data or take immediate neccessary action.This network provides the neccesssary real time environment condition.Therefore it will be definitely reduce the frequency of disaster occurs in mines due to sensitive parameters and which improved the performance of survillence and safety system for underground coal mines. In this project trans receiver is used to transmit and receive the physical parameter from uncontrolledenvironment. 'The control and monitoring module, will display the normal and abnormal condition in the voice unit. Here the Transceiver receives all the information from the other four modules about the temperature, vibration, gas and soil through which we'll be able to monitor & control these parameters.Next about the other modules, a sensor is connected with the microcontroller these sensors for temperature (LM35),gas named MQ2 senses and the microcontroller in turn connected with the comparator circuit (LM324) which is normally display in order to vary the parameter levels and to control.The micro controller is also connected with RF Transceiver which transmits the information sensed by the sensors various RF modules are available but we use RF manufactured by Max Stream which can be used within 10meter distances and these are collected through the receiver module that is placed in the control and monitoring part.

V. Result
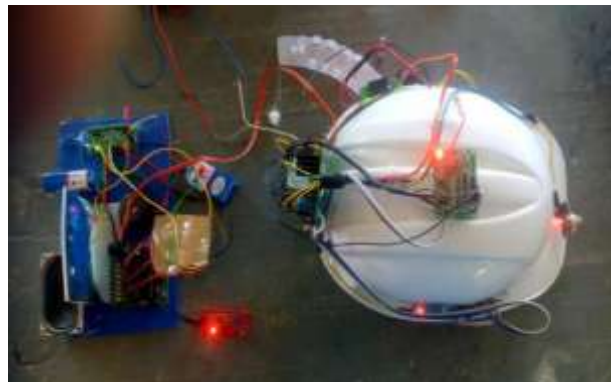
VI. Applications

Low-cost wireless embedded control applications.

Ideal for remote monitoring of equipment, devices, assets.

Simple data logging applications.

Control of meshed devices.

Wireless I/O control.

Extend existing manufacturing and process control system reliably.

VII.   Conclusion

RF has the potential to unify method of data communication for sensors, acutators , applicances, asset tracking devices and so on. It can potentially creates a whole new ecosystem of interconnected home applicances, light and climate control system, and security and sensor sub –networks. Hence in our project we have controlled and monitored three parameter using RF specification. RF and the underlying IEEE 802.15.4 standard promise low-cost, low-power and reliable wireless network technology. The wireless sensor network solution will enable the emergence of a mass market.

VIII.   Future Scope

Here in this project we have just used the specification of the RF module.The module that we have used here has various applications availability that can be utilized and also the protocol can be applied in future for the building and industrial automation The module that we have used provides us the distance up to By connecting the system with the internet we can see the data through all over the world. By connecting the system with the GSM system we Can see the data in our mobile also.

Reference

[1].   Ali, A., Rousan, A.R., Mohandes, M.A., "*GSM-Based Wireless Home Appliances Monitoring & Control System*", International Conference on Information and Communication Technologies, 19-23 April 2004, pp.237 – 238.

[2].   Bayer, S.E., Ertunç, H.M., "*Intelligent home automation and mine safety*",3rd Automation Symposium and Exhibition, Pamukkale University,Denizli, Turkey, pages 6-10, 11-12 November 2005.

[3].   Bayındır, R., Kundakoglu, H., Yıldırım, S., Bekiroglu, E., "*Remote Control Application based on Internet and GSM*", 5th Internation Advanced Technology Symposium (IATS'09), 13-15 May 2009,Karabük, Turkey

[4].   Gedikpınar, M., Cavas, M., "*Intelligent Home Automation System Based on PIC16F84* ", Journal of Automation (In Turkish), February2005, 168-171.

[5].   Han, I., Park, H.S., Jeong, Y.K., Park, K.R., "*Zigbee and Wifi based mine safety*", IEEE Transactions on Consumer Electronics, vol. 52, no.1, pp. 104-109, 2006.

[6].   Koyuncu, B., "*mine survillence by bluetooth*", IEEE   Transactions on Consumer Electronics, volume 41(1),201-209, 1995.

[7].   J.-I. Lindström,, "*From R&D to market products-abnormal detection using sensor*," in Assistive Technology—Added Value to the Quality of Life, C. Marinˇcek, C. Bühler, H. Knops,

[8].   Wong, E., "*A Phone-Based Remote Control For mine and control room Automation*", IEEE Transaction On Consumer Electronics, Volume 40,No. 1, 28-34, 1994.

[9].   Wang, T., Li, Y., Gao, H., "*Security Monitoring Using Wireless Sensor Networks*", 7th World Congress on Intelligent Control and Automation, 25-27 June 2008, Chongqing, China, 7686-7691.

[10]   S. Warren and R. Craft, "*Mining sector development and environment project*," in Proc. 1st Joint BMES/EMBS Conf., Atlanta, GA, 1999, p. 677