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Debris and Eutrophication Control for Industrial Environmental Monitor in Pan to Control Shut the Industries

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ABSTRACT: We have been developing wireless personal area network (WPAN) by grouping each and every individual water meter. A group of industries are monitored, so we go for networking. If any abnormal occurs, the server unit will send SMS to the authorized person. also shutdown the industry The system consists of multiple sensors of water quality testing, single-chip microcontroller data acquisition module, information transmission module, monitoring center and other accessories. Various parameters of water quality, air quality and soil quality are automatically detected under the control of single chip microcontroller all day. The single chip gets the data, and then processes and analyzes them. The system has realized the automation of quality monitoring, intelligence of data analyzing and networking of information transferring. It is characterized by advantages of shortcut, accuracy and using manpower and material resources sparingly.

I. INTRODUCTION

To monitor and maintain clean environment , the government has the department and they will maintain the environment .Clean and green . Here if any location has some unconditional parameters like , water pollution and air pollution. The only possible to way to inform the department is manual and where human errors or neglects may occurs . Which lead to pollution out of control. Round the clock monitor and maintains is not possible. We have been developing wireless personal area network (WPAN) by grouping each and every individual water meter. A group of industries are monitored, so we go for networking. If any abnormal occurs, the server unit will send SMS to the authorized person.

II. EXISTING METHOD

All processing industries generate waste. The quantities generated and their potential impacts depend on many factors, including the level of industrial development, the way in which wastes are managed, the existing state of the local environment and the capacity of the receiving media. The gases & fumes generated in the system are effectively controlled by the Pollution control Equipment's. The amount of Lead content emitted with these gases is being collected at every stage of pollution control equipment.

In many developing countries the bulk of domestic and industrial Co₂ is emitted. To care our environment and thus by our health we should keep our environment. The traditional method of water quality testing is to collect samples manually and then send them to laboratory for analysis. However, it has been unable to meet the demands of water quality monitoring today. For that we need to appoint staffs to follow the industrial activities and also that not good method due to the absence of reliability.

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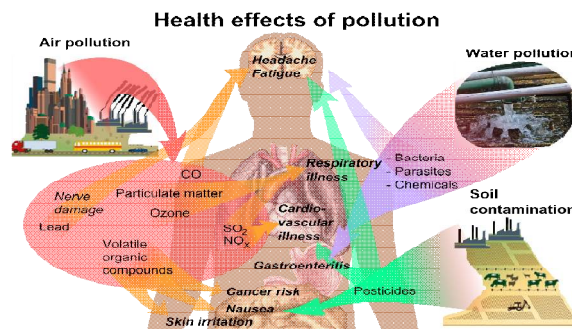
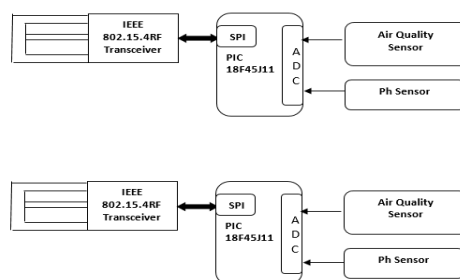


Figure 1

III. PROPOSED METHOD

In our system each and every individual water meter is been grouped by an individual network called **Wireless Personal Area Network (WPAN)**. A group of industries are monitored, so we go for networking. If any abnormal occurs, the server unit will send the SMS to the authorized person. The system consists of multiple sensors of water quality testing, single-chip microcontroller data acquisition module, information transmission module, monitoring center and other accessories. Various parameters of water quality, air quality and soil quality are automatically detected under the control of single chip microcontroller all day. The single chip gets the data, and then processes and analyzes them. It is convenient for management to take corresponding measures timely and be able to detect real-time situation of quality remotely. The system has realized the automation of quality monitoring, intelligence of data analyzing and networking of information transferring. It is characterized by advantages of shortcut, accuracy and using manpower and material resources sparingly.

IV. SYSTEM OVERVIEW



Proposed Industries Block Diagram

Figure 2

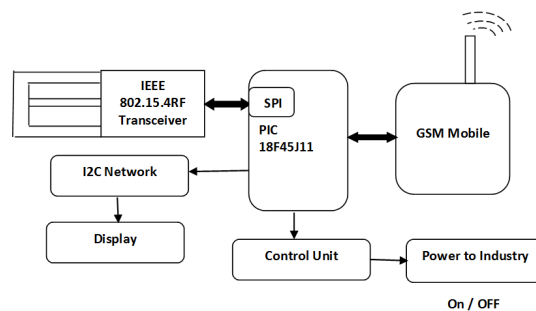
In our system each and every individual water meter is been grouped by an individual network called **Wireless Personal Area Network (WPAN)**. A group of industries are monitored, If any abnormal occurs, the server unit will send the SMS to the authorized person and also shutdown the industry. microcontroller - PIC 18f45j11is the microcontroller used in the project. It is used in the portable unit. The controller has peripheral features like inbuilt ADC, required to get the signals from the various sensors. PH ELECTRODES- In chemistry, pH is a numeric scale used to specify the acidity or alkalinity of an

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aqueous solution. It is the negative of the logarithm to base 10 of the activity of the hydrogen ion. Solutions with a pH less than 7 are acidic and solutions with a pH greater than 7 are alkaline or basic. MIWI MODULE- Wireless Transceiver used in the project. Relay- To control power to industry, when the abnormal occurs. MQ2 / MQ7- To find Co₂. GSM – GSM is used when any abnormal occurs, the server unit will send the SMS to the authorized person.



Proposed Server and Control Block Diagram
Figure 3

V. TECHNOLOGIES

Microcontroller – Peripheral Interface Controller (PIC) is microcontroller developed by Microchip, PIC microcontroller is fast and easy to implement program when we compare other microcontrollers like 8051. The ease of programming and easy to interfacing with other peripherals PIC became successful microcontroller.

GSM Modem-The GSM Modem is a device which is very similar in function to a conventional mobile phone. Like a mobile phone it can be used for making voice calls over any GSM network, and also send and receive SMS. The primary difference between a mobile phone and a GSM modem is in the nature of the user interface. A SIM900/300 is required for the GSM module. Relay control unit are used to shutdown the industry power. The overall cost of the board should not be too costly as the system is being aimed for low cost.



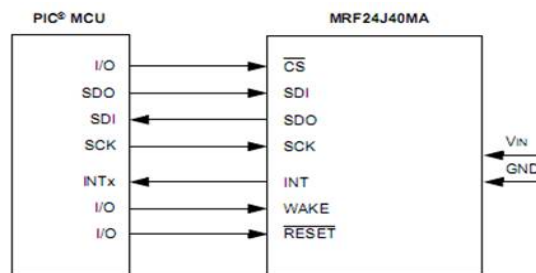
Figure 4

MIWI p2p wireless protocol -The MiWi P2P protocol modifies the IEEE 802.15.4 specification's Media Access Control (MAC) layer by adding commands that simplify the handshaking process. It simplifies link disconnection and channel hopping by providing supplementary MAC commands. However, application-specific decisions, such as when to perform energy detect scan or when to jump channels, are not defined in the protocol. Those issues are left to the application developer.

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Microcontroller To MRF24J40MA Interface
Figure 5

Power Module -The power module mainly uses three kinds of voltage: 5V is input voltage, which is converted into other voltages through the DC-DC, or LDO 1.8V is embedded core voltage 3.3V is most of the chip operating voltage.

Ph Sensor -In the process world, pH is an important parameter to be measured and controlled. The pH of a solution indicates how acidic or basic (alkaline) it is. The pH term translates the values of the hydrogen ion concentration which ordinarily ranges between about 1 and 10×10^{-14} gram-equivalents per litre - into numbers between 0 and 14.

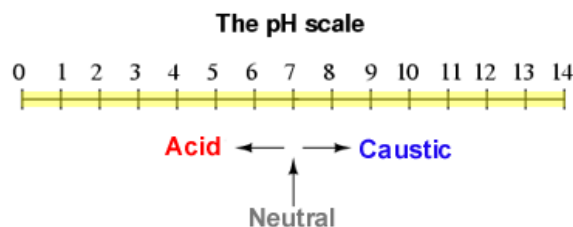


Figure 6

Smoke Detector - A smoke detector is a device that detects smoke and issues an alarm to alert nearby people that there is a potential fire. A household smoke detector will typically be mounted in a disk-shaped plastic enclosure about 150 millimetres (5.9 in) in diameter and 25 millimetres (0.98 in) thick, but the shape can vary by manufacturer.

I²C protocol - I²C is a multi-master serial computer bus invented by Philips that is used to attach low-speed peripherals to a motherboard, embedded system, or cell phone. The name stands for Inter-Integrated Circuit and is pronounced *I-squared-C* and also, incorrectly, *I-two-C*.

LCD - A liquid crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. LCDs are used in a wide range of applications including computer monitors, televisions, instrument panels, aircraft cockpit displays, and signage.

VI. SOFTWARE IMPLEMENTATION

Software Libraries Used PIC18F Device Driver Library, Sensors: ADC device drivers, IEEE 802.15.4 Wireless Protocol Stack, MRF24J40MA Microchip Wireless MiWi via SPIC protocol.

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Software Tools Use Programming Language is Embedded C Development Tool are MPLAB IDE 8.56v ,Compiler C18 .

Proteus It is software for microprocessor simulation schematic capture, and printed circuit board design. It is developed by lab center Electronics.

VII.IMPLEMENTATION

We have been developing **Wireless Personal Area Network (WPAN)** by grouping each system. A group of industries are monitored. A group of industries are monitored, i.e. their air quality and ph sensor are measured through MQ2 sensor and ph sensor. Then the detected abnormal values are sent to authorized person via SMS through remote control the particular industry power is shutdown. These results have been shown in snapshot.

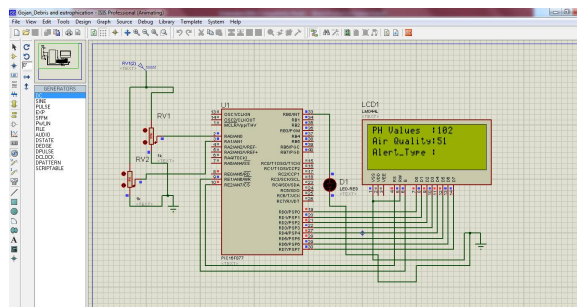


Figure 7 Both Ph & Air Quality Sensor are Normal (Ph <120 & Air < 60)

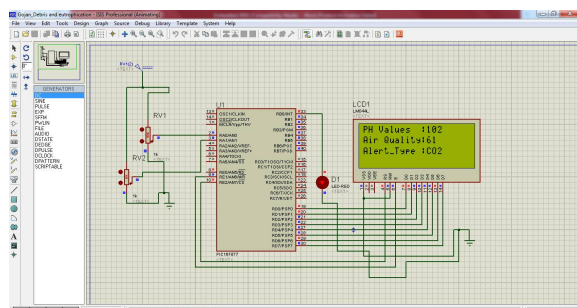


Figure 8 Air Quality Sensor crosses the Limit value (>60)

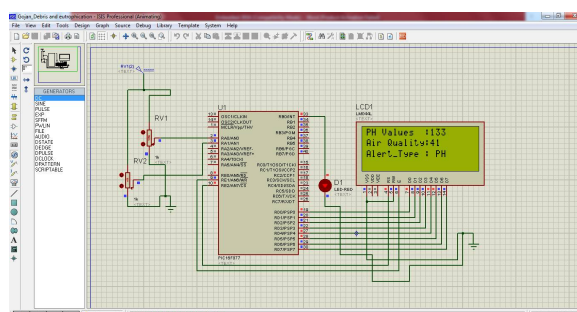


Figure 9 Ph Sensor crosses the Limit value (>120)

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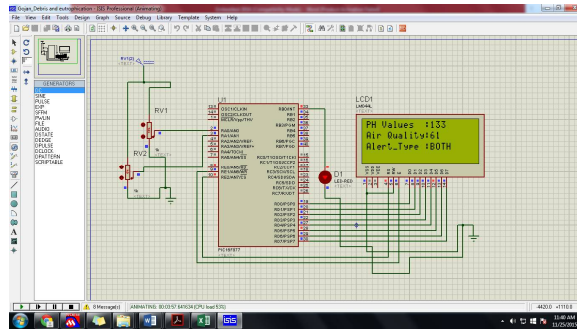
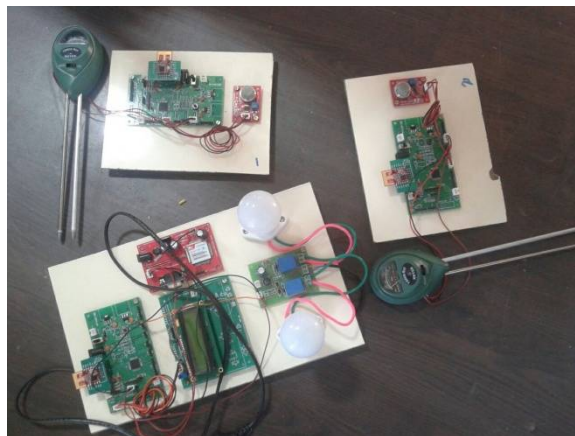


Figure 10 Both Ph & Air Quality Sensor crosses Limits (Ph >120 & Air >60)



VIII. CONCLUSION

In this paper, we have shown the each system is been grouped by an individual network called **Wireless Personal Area Network** (WPAN). A group of industries are monitored, If any abnormal change in ambient of industries i.e change in air and water quality of industries with help of sensors the abnormal in industries are observed with help of MIWI modem the message will be sent to sever unit and to the authorized person by GSM modem then from server unit with the control unit the particular industries power is shutdown.

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