IoT BASED INDUSTRIAL AUTOMATION

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Abstract : IOT or internet of things is a technology that makes use of control systems such as computers to control the physical devices over the internet. Here we propose efficient industry automation system that allows user to efficiently control industry appliances/machines over the internet. We use 3 loads as industrial appliances or machines. Along with this, basic electrical loads will be interfaced to a microcontroller which will automatically turn on and off based on the parameters sensed by the individual sensors, thus, preventing unnecessary wastage of power. The proposed project also employs a monitoring system which monitors various parameters that are vital in an industry to avoid major accidents and send these monitored information to twitter accounts. A security system is also interfaced in this industrial automation system to alert the user about any fire breakout, or intruders by sending an SMS to the Twitter account.

IndexTerms - Arduino UNO, Wi-Fi Module, Temperature sensor, Gas sensor, PIR sensor, Flame detector, Relays

I. INTRODUCTION

Since today is the generation of smart phones, people prefer smart work. Same goes with the industries. The term automation has led to a great change in the world of industries. Some industries are fully automated while other are partially automated. In short automation has become an important term, whether at home or the industries. Our project focuses on the industrial automation. The machines can be controlled manually from long distance as well.

The AVR family microcontroller is used by our system for processing all user commands. For the connection to the internet and to receive the user commands a Wi-Fi modem is used. WIFI modem receives the commands which are sent through the internet. The received information is decoded by the Wi-Fi modem and passed to the microcontroller. The microcontroller then takes necessary actions as per user's commands.

Automation is one of the increasing need with in industries as well as for domestic applications. Automation reduces the human efforts by replacing the human efforts by system which are self-operated, The Internet is one way of the growing platform for automation, through which new advancements are made through which on can easily monitor as well control the system using internet. As we are making use of Internet the system becomes secured and live data monitoring is also possible using IoT system.

II. OBJECTIVE

- To develop a system which will automatically monitor the industrial applications and take intelligent Decision using concept of IoT. And also design the system to take intelligent Decision and Control Devices.

- Our project focuses on Industrial Automation. The machines can be controlled remotely from long distance as well.

III. METHODOLOGY

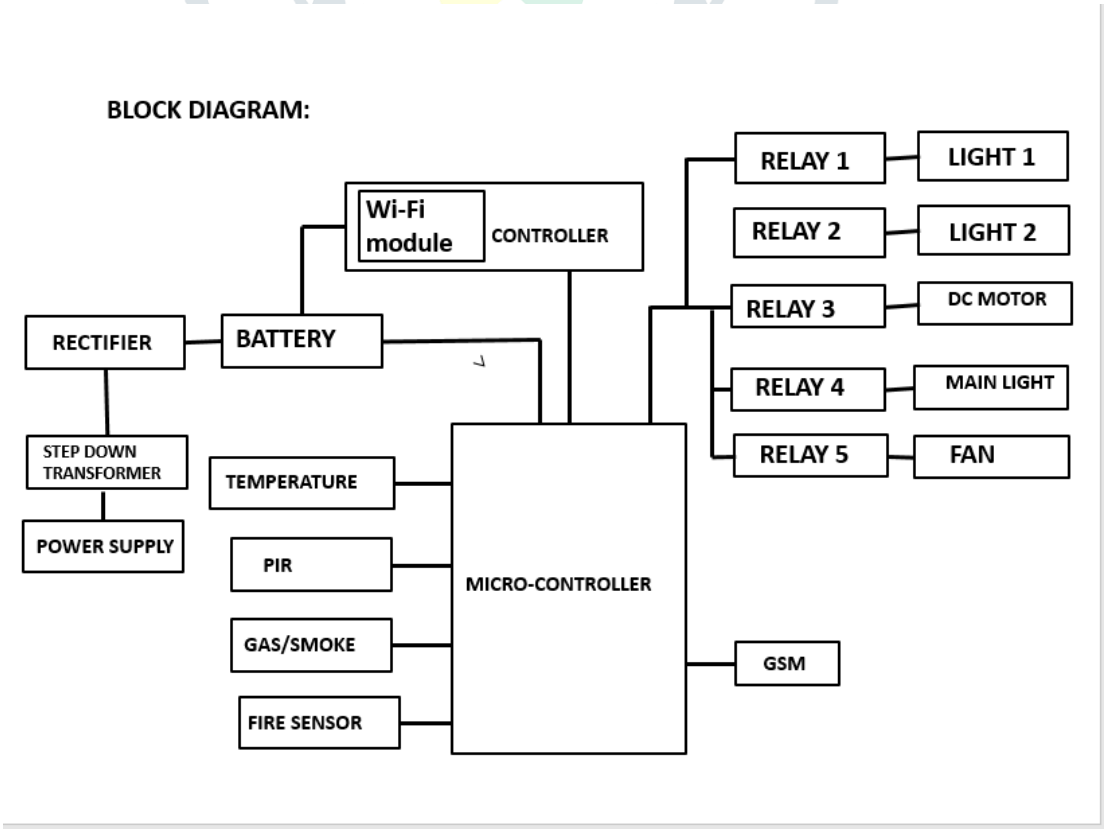
The Wi-Fi enabled controller receives control inputs from the user's smartphone over Wi-Fi which is processed by the controller and signals are passed to the respective relay based in the input received to control the operation of the loads.

The main lighting and HVAC system is represented using the second light load and a fan respectively light will turn on only in the presence of a human being and a fan which turns on, only if the temperature of the room crosses a predefined threshold value. This system saves power as the loads will not be used unnecessarily.

The room temperature and humidity will be continuously monitored, and the status of the loads which are automatically controlled by the sensors will be sent wirelessly to the user's smartphone.

The Gas/Smoke sensor detects for any harmful gas leakage and the fire sensor detects any fire which may breakout in the industries. In such emergencies the system will automatically send an SMS to the concerned authority via GSM module.

IV. BLOCK DIAGRAM



V. OUTCOME OF PROJECT

Previously Bluetooth and RF (Radio Frequency) technologies were limited to short distance. The operator had to be in the range of the Bluetooth connectivity or in the Radio Frequency area.

Solution to the short distance communication is the IoT based industry automation. Here we can have controlling as well as monitoring from anywhere in the world.

VI. APPLICATIONS

This type of IoT based industrial automation can be put to use in various types of applications as follows:

1. In industry and Office we can implement sensors in wide area over the machines and instruments. Control and Monitor circumstances by using concepts of Artificial Intelligence and IoT.

2. In hospitals and Labs we can plot sensors on patient's body and Doctor can check current status on his android phone and also take necessary actions and decisions.

3. In home we can implement sensors to household appliances and monitor and control with the help of Artificial intelligence.

4. Easy to implement in any industrial environment.

5. The system is based on relays, any type of load can easily be interfaced

VII. CONCLUSION

Now a days we need everything computerized. Earlier we can only monitor the situations with the help of cameras. In industries to reduce manual overhead we have implemented Internet of Things (IoT) in Industry to monitor as well as to inform the responsible person to take appropriate measures. In this project we have introduced advance era for industrial management system and security to make human life more easy and safe. This project deals with problem faced by peoples in day to day life, main Moto of this project is to make things less complex and available in low prices.

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