

# Industrial Appliances Control Using Android Mobile & Bluetooth Technology

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## Abstract:

AS the world is becoming more technologically advanced, industrial automation becoming more popular. Android is open source software, manufacturers can modify the operating system for a particular application. This becomes a cheap and feasible alternative for the manufacturer, as hiring a software company to do it. The Android platform supports the Bluetooth network stack, which allows a device to wirelessly exchange data with other Bluetooth devices. The application framework provides access to the Bluetooth functionality through the Android Bluetooth. This paper is mainly focused on the implementation of a prototype system for industrial appliances control like the speed of DC motor, heating coil and light intensity using Android mobile & Bluetooth technology

*Keywords* —PIC microcontroller, Bluetooth module, DC motor, Hall Effect sensor, temperature sensor, LDR, Android mobile phone

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## I. INTRODUCTION

This project is a combination of embedded system and Android mobile technology. Bluetooth modules are more reliable, secure and low power modules and these modules do not require line of sight also. This can use mobile Bluetooth by developing some applications or we can use normal USB Bluetooth dongles by connecting to PC. A Bluetooth application should be installed on android mobile handset to control various industrial appliances. User can send commands using that application. The Bluetooth device connected to the circuit sends code for respective command sent by user. Now a day, smart phones are becoming more powerful with reinforced processors, larger storage capabilities, richer entertainment functions and more communication methods. Bluetooth, which is mainly used for data exchange, add new features to 34 Deepashri K M smart phones. Bluetooth Technology, created by telecom vendor Ericsson in 1994, shows its advantage by integrating with smart phones. It has changed how people use digital devices

at home or office, and has transferred traditional wired digital devices into wireless devices. A host Bluetooth device is capable of communicating with up to seven Bluetooth modules at the same time through one link. Bluetooth technology and other similar techniques, the concept of Small scale industry automation has offered better opportunity in convenience, comfort and security which include centralized control of lighting, heating and control the speed of DC motor. With dramatic increase in Smartphone users, Smartphone have gradually turned into an all-purpose portable device and provided people for their daily use. In recent years, an open-source platform Android has been widely used in Smartphone. Android has a complete software package consisting of an operating system, middleware layer, and core applications

## II. PROPOSED SYSTEM

1. To control the speed and direction of DC motor using wireless Bluetooth Technology

2. To control temperature.
3. Along with control of light intensity, it also gives feedback for temperature rise.

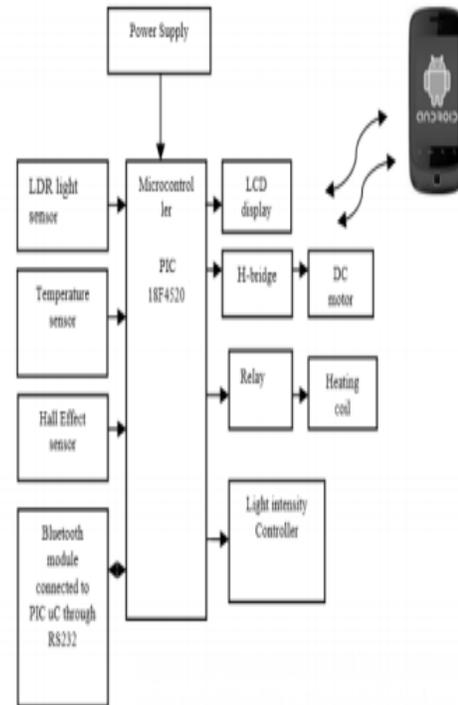
### III. LITERATURE REVIEW

1. Developed the hardware and software for controlling speed of induction motor. Here wireless operating is preferable for controlling speed of induction motor using Bluetooth and android application. The system is integrated with Android mobile technology and embedded system. Android mobile user has to install an application on his/her mobile handset to control the devices. The designed a Bluetooth Based Remote Monitoring & Control System using the Microcontroller as an embedded target and Bluetooth device. The Bluetooth is connected to the controller along with different sensors to measure different real time parameters such as temperature, pressure & humidity; it also controls the temperature of a process. Belgiet al illustrated the home appliances Control System accessed by a mobile phone to allow the user to control, monitor and coordinate the appliances. The system is capable to control fan speed and light intensity

### IV: SYSTEM ARCHITECTURE

In the proposed system we are measuring and controlling the appliances like heating coil and its temperature, light intensity control and its measurement in Lux, DC motor direction, control and measurement of speed. So in order to control these parameters the temperature sensor, LDR for intensity measurement and hall effect sensor for motor speed measurement are interfaced to the PIC microcontroller and the controlling of heating coil, light intensity variation and dc motor are also interfaced. To control these appliances embedded system is interfaced with Bluetooth technology. Operator is controlling these appliances by the Smartphone which is paired with system Bluetooth device. In order to operate, operator has to install an application from which commands for the controlling has to be sent. When commands are transmitted from the operator the Bluetooth device in the system receives those commands and send those to the PIC microcontroller through RS 232

communication channel, then the microcontroller will take the responsibility of controlling particular appliances according to the respective commands sent by the operator. For measuring the parameters microcontroller receives data from the sensors then manipulate it into a respective data unit and sends them to the Bluetooth device for transmitting to the operator and also display it on the LCD display.



### LDR Sensor

A light dependent resistor (LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells. In the system, LDR is used for the measurement of light intensity in terms of lux and also for light intensity control. For the measurement of lux with a LDR the resistance output is converted into voltage with an appropriate signal conditioning circuit. The microcontroller will convert voltage into lux.

### **Temperature sensor**

To measure the temperature of a heating coil LM35 temperature sensor is used whose output voltage is linearly proportional to the Celsius (Centigrade) temperature.

### **CONCLUSION**

The developed industrial appliances control system using android mobile & Bluetooth technology is useful and convenient in monitoring and control of industrial appliances. As this system has interface between Bluetooth and android smart phone provides easy operation with monitoring the parameters by wireless communication in real time. By this system the operator can continuously monitor the appliances so not to exceed the desired set point ranges like temperature, intensity level and speed and direction of the DC motor. Herewith it is believed to provide good control all over the appliances.

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