

# Industrial Automation Using Labview

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**ABSTRACT:** LabVIEW basically used in industry for process automation and Controlling systems This paper representing an monitoring as supervisory controller using LabVIEW Software .The wireless communication between the LabVIEW and the base station is performed by using Bluetooth application protocol. The test result have indicated that the LabVIEW based systems using Bluetooth data transfer scheme could enhance the performance of Plant and Machinery in a day without causing an increase in the response time of function. The supervisor of the plant can see the status of parameter without visiting the site. Therefore this system reduces the maintenance cost and necessity of continuous monitoring. Therefore this system increases the productivity and performance of the plant.

**KEYWORDS:** Gas Sensor, Temperature Sensor, IR Sensor, ARM Cortex, Bluetooth module, Humidity Sensor.

## I. INTRODUCTION

In recent years a wide range of industrial IOT applications have been developed and deployed. Evolution of this starts from RFID technology, which allows microchips to transmit the identification information to a reader through wireless communication. By using RFID readers, people can identify, track, and monitor any objects attached with RFID tags automatically. Another technology is the wireless sensor networks (WSNs), which mainly use interconnected intelligent sensors to sense and monitoring. Its applications include environmental monitoring, industrial monitoring, traffic monitoring. Both RFID and WSN are used to develop IOT. Then upcoming technology is IOT with Artificial Intelligent. In previous year, Industry was monitored manually, but this paper introduces Artificial Intelligent to monitor as well as control the Industry autonomously without human intervention.

Automation is one of the increasing need with in industries as well as for domsatic applications. Automatio reduces the human efforts by replacing the human efforts by system which are self operated, The Intenet is one way of he growing platfrom for automation, through which new advancedment are made through which on 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 syystem.

Within industries the various hazardous gas are being processed, hence to provide security to those employ working within those industreis, it becomes important issue to work on their security, If leakage of gas takes place then these system alerts by turning ON alram which notifies the employers. This system also helps us take some crucial decision from any point of the world within internet network. Wifi shield is being used to act as service point between network and connecting network.

## II. LITERATURE SURVEY

Industrial automation using LABVIEW in this paper, they are developing a system which will automatically monitor the industrial applications and generate Alerts / Alarms or take intelligent decisions using concept of IOT. They have developed new technologies that have allowed us to move from the first generation of the Internet into the current transition into the fourth generation. This generation has been propelled by the concept of the IOT. IOT BASED AUTOMATED TEMPERATURE AND MONITORING AND CONTROL. In this paper, raspberry pi running with linux OS coded with c++ program that retrieves the temperature as well as readings and these values sensed and sent to the internet.

Industrial temperature monitoring and control system through Ethernet LAN. This paper present a Pc based temperature monitoring and control system using virtual instrumentation,LABVIEW.Data acquisition is an important role in industry in order to ensure the quality of service.Temperature sensor measures the temperature and produce corresponding analog signal which is processed by the microcontroller.The simulator acquires data from the microcontroller through Ethernet port.The data will be displayed on the LCD microcontroller and PC monitor.Automation and control can be done with the help of control circuitry.

### III. ARCHITECTURE

**Master Unit:** Master Unit consists of PC and Microcontroller. It is the main part of the system and located at the centre of system. It is installed at site of plant where actual process is running.

**Remote Unit:** This unit is installed at the remote location from where we can monitor and control actual process. Remote unit collect the required data about the process and send it to the master unit.

**Communication Mode:** It works as communication medium between Master Unit and Remote Unit. It transmitted required data between these two units. Proposed system uses Bluetooth as a communication medium.

**Software:** It required for interfacing between hardware and user. It drives the hardware and provides Graphical User Interface.

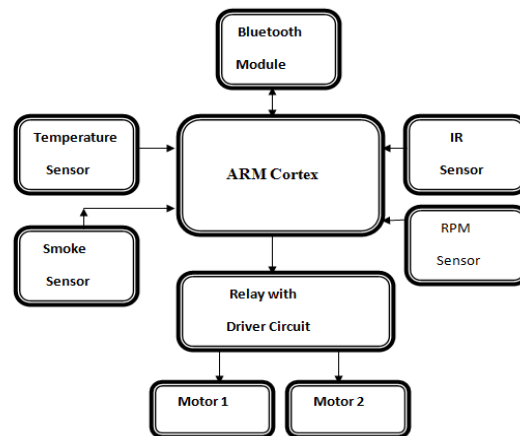


Fig 1 Block diagram

### IV. COMPONENTS

#### TEMPERATURE SENSOR

sensor is a device typically a thermocouple or RTD that provides for temperature measurement through an electrical signal.

#### SMOKE SENSOR

Smoke detector is a device that senses as an indicator of fire.

#### BLUETOOTH

Bluetooth Profiles are used to explain the different ways that a Pocket PC can connect with other devices. There are multiple profiles however the most common are Serial, LAN, PAN and Voice

LAN – A replacement for a serial cable. The Pocket PC uses PPP over the Bluetooth serial profile to connect to the access point, a cell phone or a PC. This profile is used to sync your Pocket PC and PC using Bluetooth.

PAN – Personal Area Network – a direct network connection to an access point or PC. Offers functionality similar to a network.

Voice – Used to communicate via Voice to another Bluetooth device. This is most commonly used for Bluetooth headsets.

### ARM7 ARCHITECTURE

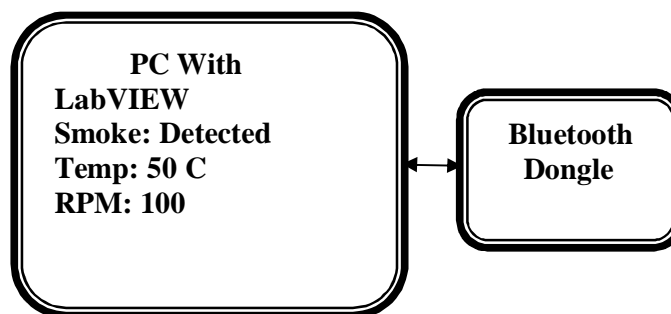
The ARM7 core family is a 32-bit RISC CPU core optimized for cost and power sensitive applications. Offering up to 130 MIPS (Dhrystone 2.1) the ARM 7 family incorporates the Thumb 16-bit instruction set (enabling 32-bit performance at 8/16-bit system cost). The ARM7 family also includes the ARM7TDMI, ARM7TDMI-S and ARM7EJ-S processor cores and the ARM720T cached processor macrocell (for use in customer specific integrated circuits).

- ARM7TDMI - Integer processor.
- ARM7TDMI-S - Synthesizable version of the ARM7TDMI processor.
- ARM7EJ-S - Synthesizable core with DSP and Jazelle technology enhancements for Java acceleration.
- ARM720T - Cached core with Memory Management Unit (MMU) supporting operating systems including Windows CE, Palm OS, Symbian OS and Linux

### LCD(Liquid Crystal Display)

Liquid crystals are a phase of matter whose order is intermediate between that of a liquid and that of a crystal. The molecules are typically rod-shaped organic matters about 25 Angstroms in length and their ordering is a function of temperature. The molecular orientation can be controlled with applied electric fields. LCD is made up of two sheets of polarizing material with the liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them, which results in display of character as per the applied voltage in its data lines. The driver is provided to drive the LCD. It stores the display data transferred from the microcontroller in the internal display RAM and generates dot matrix liquid crystal driving signals. Each bit data of display RAM corresponds to on/off state of a dot of a liquid crystal display.

## V. MONITORING AND CONTROLLING SECTION



## VI. EXPERIMENTAL RESULTS

If the temperature sensor detects an increase in temperature and smoke sensor detects smoke, buzzer indicates and the motor runs at 12v.

If the temperature sensor and smoke sensor does not detects, the buzzer does not indicate and the motor runs at 5v.

## VII. CONCLUSION

Nowadays we need everything computerised. Earlier we can only monitor the situations with the help of cameras. In industries to reduce manual overhead we have implemented LABVIEW in Industry to monitor as well as to inform the responsible person to take appropriate measures, but this partially fulfils our requirement. Sometimes it will be late in this process and it will harm to property as well as life. For this purpose we are developing a system for Industrial Automation using LABVIEW with the help of Artificial Intelligence to make system automated which will take intelligent decisions.

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