A PROPOSED FRAMEWORK FOR INTEGRATION OF IOT WITH AIR COMPRESSOR

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Abstract :

Internet of thing was implemented in various domains of industry and delivered excellent outcomes. The future of Internet of things which will transform the real world objects into the intelligent virtual objects. The aim of this paper is to provide a framework for the integration of Internet of things to air compressor with automatic valve regulation controlled by the solenoid valve for different operated pressure. The pressure jumper is attached to the outlet of air compressor which divides the outlet of compressor into variable pressure. We are using the temperature sensors and micro-controller to take the input and display output on the digital system. We are making the air compressor automatic and we are operating it from remote or frontier of it. In this project we are using 3 air pressure relief to obtain 3 different pressures for different applications.

*Keywords* - Compressor, Internet of thing, Arduino, Solenoid valve, pressure.

I. INTRODUCTION

A compressor is a device which is used to increase the pressure of fluid [gas or air]. An air compressor takes atmospheric air compressor it and deliver the high pressure air to a store vessel for it which may be conveyed by the pipe line to whenever the supply of compress air is required.In the simple air compressor, we can't vary the pressure rang so, to overcome this we have introduce a proposal framework for integration of internet of thing with air compressor.We, now that the internet of thing has influenced significantly to the complete aspects of human life. Today all aspects of our daily life whether his location, his movement can be easily controlled or monitored with the help of IOT. Today internet of thing has application in many filed like IOT based, soil tester for car maintenance approach IOT is use in health care body sensor network etc. We know that now days, there is spontaneously increasing the demand of automation and intelligent system. So do to this the completion also increases completion has force to come out which more intelligent, as well as user friendly models.

II. FRAMEWORK

Fig shows the framework i.e. the arrangement of the compressor and its various parts. It consists of an Air compressor, pressure jumper, pressure sensors, solenoid valve, pressure app, Arduino (microprocessor), Wi-Fi and outlet.

Now as shown in the fig. At the outlet of the air compressor the pressure jumper is connected. The pressure jumper having 3 air pressure relief in which are splinted or separated by 3 Solenoid valves, on each pipe of pressure jumper , which blocks or reduce pressure flow to outlet of pressure jumper and the arrangement of the solenoid valves are directly connected to set up of Arduino in which data is process as per uses demand. This Arduino guides the solenoid valve to be open or close, which is decided by the user. They generally control pressure through an Arduino through Wi-Fi. So, in this way it shows the proposed framework for Integration of Thing with Air compressor.
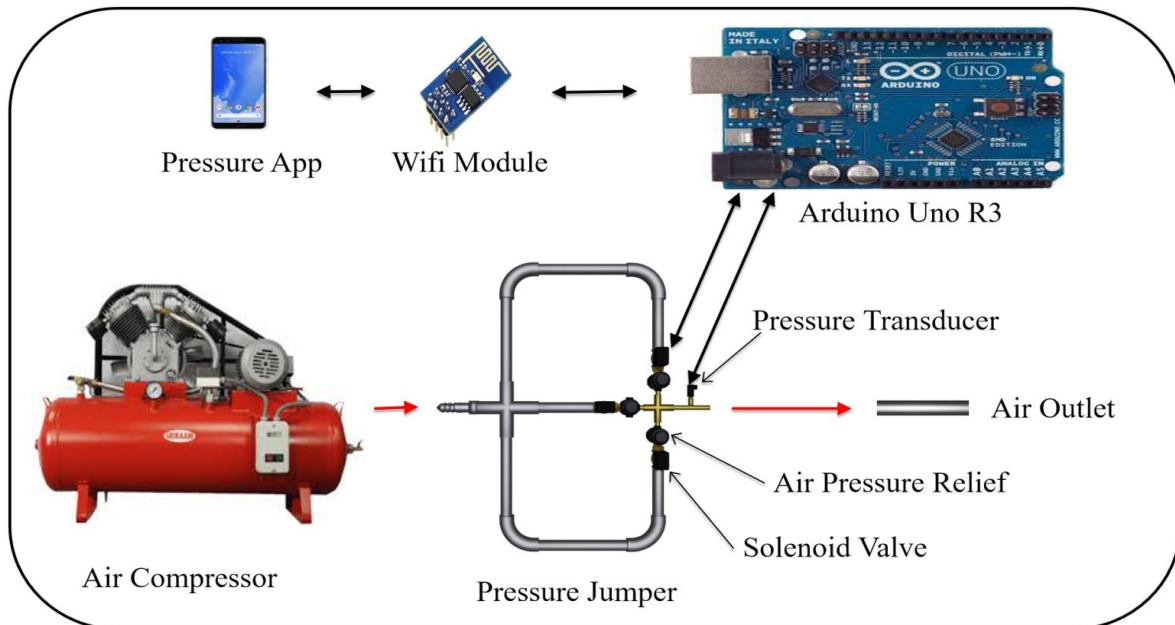
III. RESEARCH METHODOLOGY

Now a days the Internet Of Things has influenced significantly to the complete aspect of human life like cities, industries, public organization, private firms, agriculture and health care sectors .The amenities and smart facilities are work under the various application of Internet Of Things environment . The goal of Internet Of Things is to provide smart facilities to improve the excellence of human life and sustaining superiority of human life.

  The problem that we identified before working on these project are in a simple air compressor we can't vary the pressure range as we getting only fixed pressure bar, but in this project we can vary the pressure range as per needed. Our Wi-Fi connection is 100 m , The automatic air compressor will work in between in this range . We can easily control and monitor the desirable pressure range with the help of android app using latest computer programming for making this app, we can desirably change the pressure range by means of one touch that is ON \ OFF in our mobile, laptop, computer, etc.

So in this way we have identified this problem and working on this problem by making an IOT enabled air compressor.

IV. COMPONENTS

   1) *COMPRESSOR*:

A compressor is a mechanical device that increases the pressure of a gas by reducing its volume. It is pervasive in most of the industries. Compressor system generally include such components as a power driver, a compressor and a tank for receiving pressurized tank. Typically, electric motors or internal combustion engines are employed as power driver compressor systems. Normally, the compressor operates periodically according to the demand of the system. When the pressure in the tank descends to a preselected level, the compressor system operates to elevate the tank pressure, vice versa.

2) *SOLENOID VALVE:*

A Solenoid valve is used to control the fluid flow in hydraulic or pneumatic systems. A Solenoid valve is used for translating ON/OFF electrical signals to ON/OFF mechanical movement and normally used as a linear actuator. The coil will have some voltage or current rating and may be DC or AC. When the coil is energized, the core is pulled inside the coil and the amount of force by which the core is pulled mainly depends upon the number of coils and the amount of current flowing in the circuit. The spring return plunger is held in the upper position when the coil is electrically de - energized.

3) *WI – FI: -*

WI - FI is a radio technology commonly used for wireless local area networking (WAN). The WI - FI is used to provide access to the internet or a private computer network. Wi-Fi devices that can use WI – FI technologies include desktops and laptops, Smartphones and tablets, smart TVs, printers, digital audio players, digital cameras, cars, drones, etc. In this project we are going to use the normal desktop to control the compressor action.
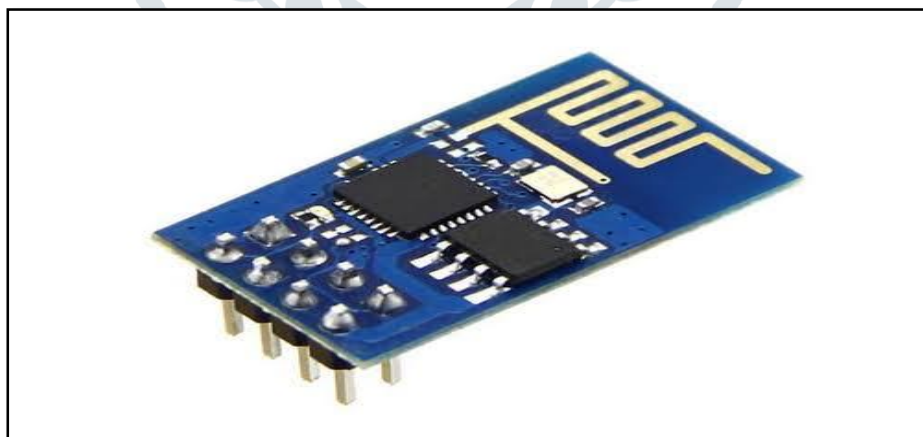
4) *ARDUINO*: -

An Arduino is a micro-controller motherboard. A micro-controller is a simple computer that can run one program at a time, over and over again. It is used to design a variety of microprocessor and controllers. It is very easy to use. This allows to upload programs to the board which can then interact with things in the real world. It can be programmed by using C and C ++ programming languages.

5) *PRESSURE SENSOR: -*

The pressure sensor is one of the earliest and most successfully commercialized micro devices that provide sensing solution, industrial and biomedical applications. A pressure sensor is a device for pressure measurement of gases and liquids. It is used for control and monitoring in thousands of everyday applications. In this research paper we have to measure the air flow.

6) *AIR PRESSURE RELIEF: -*

Air Pressure relief is used in this pressure jumper as to control or limit air flow passes through it from inlet to outlet. It generally has pressure gauge up to 10 bar to set up air pressure as required. it limits the pressure from 0 to 6.9 bar at outlet and from inlet it can sustain up to 21 bar, which satisfies our need.

IV. CONCLUSSION

Internet of Things has influenced completely to the human life. It helps to communicate between the devices which could be machine to machine i.e. M2M communication. Due to the IOT (Internet of Things) we can easily control and monitor the activities. We can make the system in automation of daily task leads to the better monitoring of the devices. In this way IOT helps to save time and money with high efficient. So IOT helps to connect the virtual world of Information Technology into the real world of things.

So, in this way we can convert the simple air-compressor into the IOT enabled air-compressor by using some sensors and with the help of IOT technology. In IOT enabled air compressor we can vary the pressure range and can be easily monitored through the app on android. Likewise, this IOT enabled compressor helpful in many ways as it can be used in many kind of application. The things cannot be performed by the simple compressor can be overcome by this IOT enabled air-compressor and with the help of various sensors, micro-controller and android it will be definitely help for the automation which is the application of industry 4.0. Therefore, by adopting this concept and technology we made this compressor, so that it work on latest technology and will give the reading more accurate also it can easily monitor with the requirement of pressure at different bar can be easily done with a less consumption of time.

V. REFERENCES

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