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RESEARCH ARTICLE

SPEED CONTROL OF FAN BASED ON ROOM TEMPERATURE BY USING PROGRAMABLE LOGIC CONTROLLER

Vikas Vats and Upendra Kumar*

Amity University Gurgaon, Haryana

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ABSTRACT

This paper gives the design and image of fans speed control system based on room temperature using programmable logic circuit (PLC). The design projected here is according to the smart lifestyle. The image of the system has done on a software v 8.0 and graphs showing relation between temperature and different parameter that plotted in graphs to show the accuracy of the system.

INTRODUCTION

In this modern life technology are updating every day. Everything is getting more and more sensible and intelligible. Microcontroller has a very important role in the growth of the smart system like brain is given to the system. It is a single chip microprocessor adjustable for the automation of the machines and processor. There is block diagram to understand the micro controller system. It has a timer and counter, C.P.U, interrupts, memory input and output port on a single chip. A temperature sensor is being introduced to measure the room temperature and hence fans moving accordingly.

System Design

It is done by the P.L.C software RS Logix 500 that are installed, in this software program is installed based on temperature by connected temperature sensor to the input to sense the temperature and a controller to control the speed of fans by their resistance coil or capacitor and fans moving accordingly now the figure clear how the system are connected figure.

The whole system having consist of three different unit where the first one is PC runs a program called RS Logix 500 next one is P.L.C of allen-bradly to control the system and last one is fan or rotating part that should be moved according to the temperature

- The general function component of a P.L.C system have a memory , input/output interface section, communication interface and programming device etc.
- The C.P.U consists of microprocessor. It has a interrupts input to the signal are carried out the control action as per the program stored in the memory.
- The main power supply is used to convert the main AC voltage to the low voltage DC compulsory for the processor and the circuit in the input and output interface modules.
- The memory of the processor is being used to enter the required program by the power supply unit and the program is made in the device and then carried out to the memory unit of the P.L.C
- The program stored where the microprocessor is memory unit. It is also stored input data from the processor and buffer for output
- So in this case a Allen broadly compact P.L.C. having 92u DIS (digital input) 16 Dos (digital outputs), Als (analog input) AOs (analog output) and a power supply (120/230 v AC, 24V D, 5A.

Programing Setup

programming is being done on the allen-bradley P.L.C. the analog input is given to the P.L.C in the not scaled manner that's why it need to convert in to the scale manner that is

*Corresponding author: **Vikas Vats and Upendra Kumar**
Amity University Gurgaon, Haryana

possible by changing the format 0 to 4095 resolution. If the input of the P.L.C is on than it will be converted to 4095 and if it is not on than it will be converted to 0.

Now the following steps for programming as follows

- RUN 1= Press the start the button.
- RUN 2= temperature sensor sense the temperature.
- RUN 3= according to the temperature corresponding input will on.
- RUN 4= fans will start accordingly.
- RUN 5= if the temperature is less than 26 degree fans will stop automatically.
- RUN 6= and heater will start
- RUN 6= end of the program here

Experimental Setup



Figure 1 Experimental Setup

Experimental Result

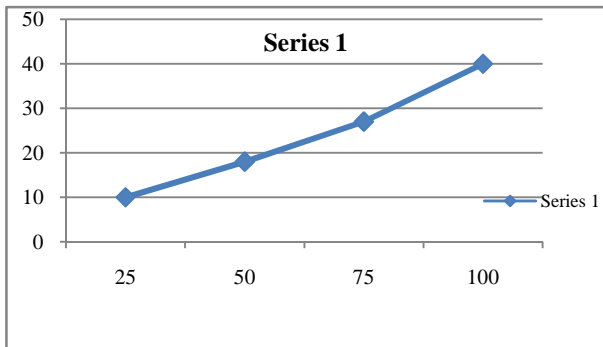
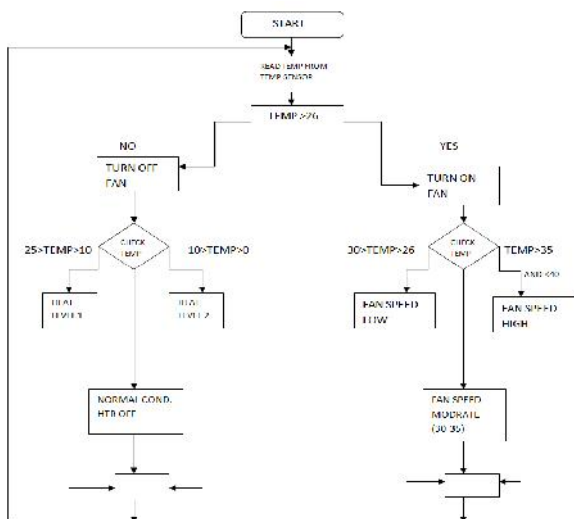


Figure 2 Speeds in Percentage

Flow Chart



RESULT

The speed of the fan can be controlled by using PLC technique according to the room temperature and flow chart shows how the system is work and the graphs shows the accuracy of the given experiment the design of this system being presented in this paper is according to the latest technology.

CONCLUSION

A latest design of speed control of fans based on room temperature using P.L.C technique is given in this paper. The image of the system is working perfectly and the design is appropriate according to the modern needs and technology. The advantage of this system is there is no need to regulating the speed manually. This design can be expand in terms of power at layout and being characterized level by advanced VLSI application.

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