

Design of An Automatic Fan Speed Controlling System Using Arduino UNO

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ABSTRACT: As we all know that we are slowly moving toward automation and automation is one of the trending topics. So, basically in this project we will be controlling fan speed with respect to the temperature of room or that of surrounding. The system will get the temperature from the temperature Sensor (LM35) and it will control the speed, of the according to the temperature, set by the user (i.e. if a person wants the fan to run at a particular RPM for a particular surrounding temperature we can do this via this project). In this project, microcontroller forms the processing part, which firstly senses the temperature and the controller then compares the data with the set temperature. If the current temperature is greater than the set temperature, the controller turns ON the fan and the set speed will be proportional to the difference between the set temperature & the current temperature. If the current temperature is less than the set temperature, the fan will be turned OFF .The fan's speed will change according to the temperature of the room or surrounding.

KEYWORDS : Arduino Uno, LM35(linear monolithic),DC motor (fan),LCD(Liquid Crystal Display), Speed control .Temperature sensing, potentiometer, Revolutions per minute(RPM).

I. INTRODUCTION

Electric fan is one of the most popular electrical devices due to its cost effectiveness and low power consumption advantages. It is a common circuit and widely used in many applications. It is also one of the most sensible solutions to offer a comfortable and energy efficient. In fact, the fan has been long used and still available in the market. Fan can be controlled manually by pressing on the switch button. Where in this method, any change in the temperature will not give any change in the fan speed[1,2]. Except the usage change the speed of the fan which is manually. So, an automatic temperature control system technology is needed for the controlling purpose in the fan speed

according to the temperature changes. This paper results in the automation of fans where there will no need to switch the regulators up and down to change the speed of the fan. So by the usage of microcontroller the fans can automatically change is RPM by the use of heat & temperature sensor[3,4,5].

II. PROPOSED SYSTEM:

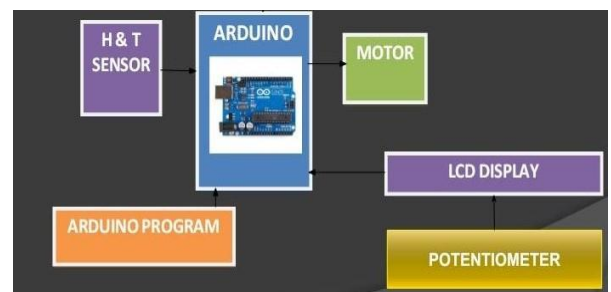


Fig. 1 Block diagram

The arduino is the heart of the system. It accepts inputs from the H&T sensor which allows for the measurement of the current room temperature, then the controller will give the action to maintain the required fan speed. The speed control can be done via dumping the required parameters that is being required by the user. LCD is used to display the fan speed and room temperature. The above description can be seen in the fig. 1

III. ARDUINO UNO

A microcontroller is a computer control system on a single chip. It has many electronic circuits built into it, which can decode written instructions and convert them

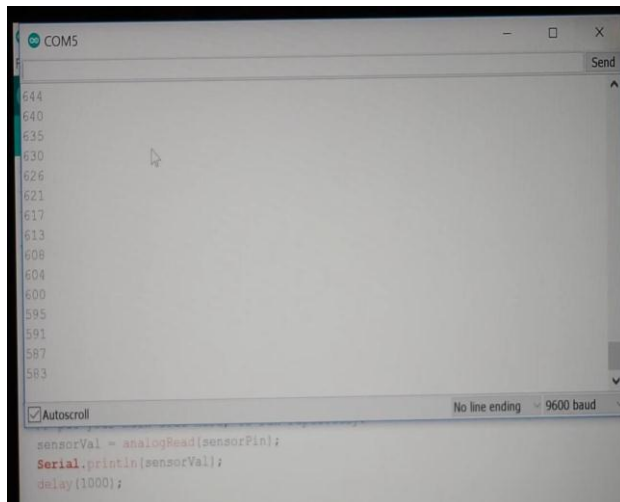


Fig.7b Variation in the RPM

When the temperature in the room is decreased beyond the extend that had been programmed using Revolutions per minute arduino uno, the RPM of the fan will start to fall down upto the RPM rate that has been fixed in the algorithm. If the temperature again increased to a certain extend the RPM of fan will rise up. This rising and falling of fan's RPM depends upto the level of temperature that is being set. This temperature can modified if wanted. Thus the experimental decrease of the fan's RPM is being given in the Fig. 7a & Fig. 7b.

V. CONCLUSION

This work elaborates the design and construction of fan speed control system to control the room temperature. The temperature sensor was carefully chosen to gauge the room temperature. Besides, the microcontroller had been used to control the fan speed using the fan speed in rpm and the arduino was successfully programmed using C/C++ Language to compare temperature with standard temperature and set fan speed and their values displayed on LCD. Moreover, the fan speed will increase automatically if the temperature room is increased. As conclusion, the system which designed in this work was perform very well, for any temperature change and can be classified as automatic control.

REFERENCES

1. Mustafa Saad, Hossam Abdoalgader, and Muammer Mohamed, "Automatic Fan Speed Control System Using Microcontroller" 6th Int'l Conference on Electrical, Electronics & Civil Engineering (ICEECE'2014) Nov. 27-28, 2014 Cape Town (South Africa)
2. Vaibhav Bhatia an Gavish Bhatia "Room Temperature based Fan Speed Control System using Pulse Width Modulation Technique" International Journal of Computer Applications (0975 – 8887) Volume 81 – No5, November 2013
3. Dr. AntoBennet, M , Sankaranarayanan S, Ashokram S ,Dinesh Kumar T R, "Testing of Error Containment Capability in can Network", International Journal of Applied Engineering Research, Volume 9, Number 19 (2014) pp. 6045-6054.
4. Dr. AntoBennet, M , Resmi R. Nair, Mahalakshmi V, Janakiraman G "Performance and Analysis of Ground-Glass Pattern Detection in Lung Disease based on High-Resolution Computed Tomography", Indian Journal of Science and Technology, Volume09 (Issue02):01-07, January 2016
5. Pratik S. Danage, Ajay B. Dongare, Sangramsinh S. Dongare, Rahul B. Ghogare, Ganesh N. Khare "Automatic Breaking Sysetm Using Eye Blinking Sensor" Vol.2, Issue 2, pp(166-170), October 2015- March-2016