IoT Based Temperature Monitoring and Controlling System by using myRIO-LabVIEW

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Abstract: Temperature sensors are devices that detect the Temperature in surrounding area. This paper covers an experimental analysis of a temperature monitoring and controlling system using LM35 temperature sensor and the data can be accessed from remote location using IoT.National instruments labVIEW is used as work platform and sensors are interfaced with myRIO**.**

Keywords: NI LabVIEW, myRIO, LM35 sensor, IoT

I. INTRODUCTION

Temperature monitoring system is very important in the following industries such as food manufacturing, Health care and pharmaceuticals industries because these materials should be maintained in a particular temperature otherwise it will degrade the quality of the products. The designed system [1]"Smart Industry Pollution Monitoring and Controlling using LabVIEW based IoT" used DTH-11 sensor for temperature measurement .We use LM35- temperature sensor. It is more precious than DTH-11 sensor. [2] tells about the proposed technique is to design an efficient system to read and monitor pollution parameters and if any of that factors exceeds the industry standards, immediately these information send to pollution control authority. [3] tells about the industrial Pollution parameters like temperature monitor and control. The work presented in [4] is based on Arduino UNO controller. In our system, we use myRIO controller to control output devices like fan, buzzer, LED.[5] tells about the Monitoring of Industrial Process Parameters like temperature using LabVIEW. [6] tells about the estimated values of environmental parameters like temperature by using the adaptable and smart monitoring systems. [7] tells about the automatic monitor and control when there is a pollution parameters affecting the environment. [8] tells about the air pollution monitoring and forecasting system. [9] tells about the development of Pollution Monitoring and Control System Using Lab view . [10] is the datasheet of LM35 sensor. In our proposed system, We interfaced LM35 sensor with myRIO for monitoring temperature. The fan is set to 'ON', if the temperature exceeds the given limit. The LED will glow according to the given limits like safe and hazard. We can also monitor the temperature value by using a LCD, Quickstart server.

II.METHODOLGY
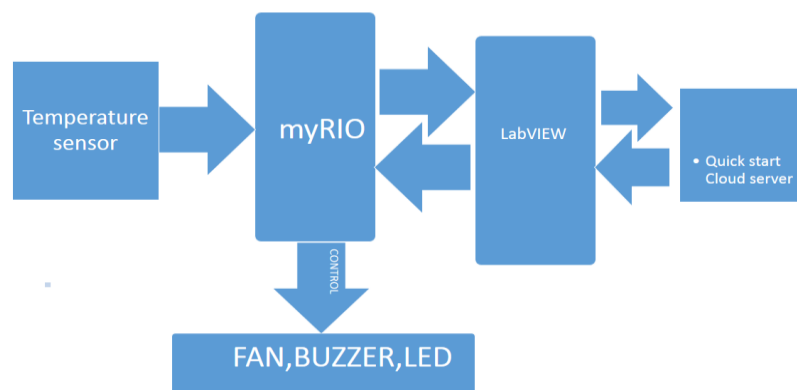
The input is obtained from the LM35 sensor and then feed that value to the myRIO, which is interfaced with the LabVIEW and controls the output devices like fan, buzzer, LED. LabVIEW is then interfaced with the quickstart cloud server.

III. SENSOR USAGE

LM35 TEMPERATURE SENSOR
LM35 Temperature sensor has the range of −55 to +150˚C temperature .As referred from the Wikipedia, the Industrial standard value of temperature ranges between −20 ° to 85 °C.
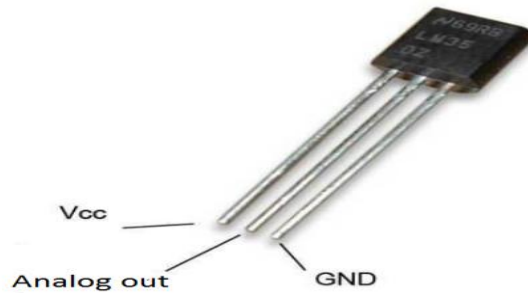

Figure: 1 LM35 Temperature sensor

IV. PROPOSED WORK

Here, we use three conditions namely1) safe, 2)moderate, 3) hazard output ranges according to which control elements like fan, buzzer, LED are used.

Table 1: Different Ranges of the Sensor Output

Parameter	Safe	Moderate	Hazard
Temperature	-20 to 35^0C	36 to 85^0C	86 to 150^0C

From the table 1, if the temperature is safe, green light glows and when the temperature is hazard, red light glows and the buzzer gets activated and the fan gets ON to reduce the temperature.
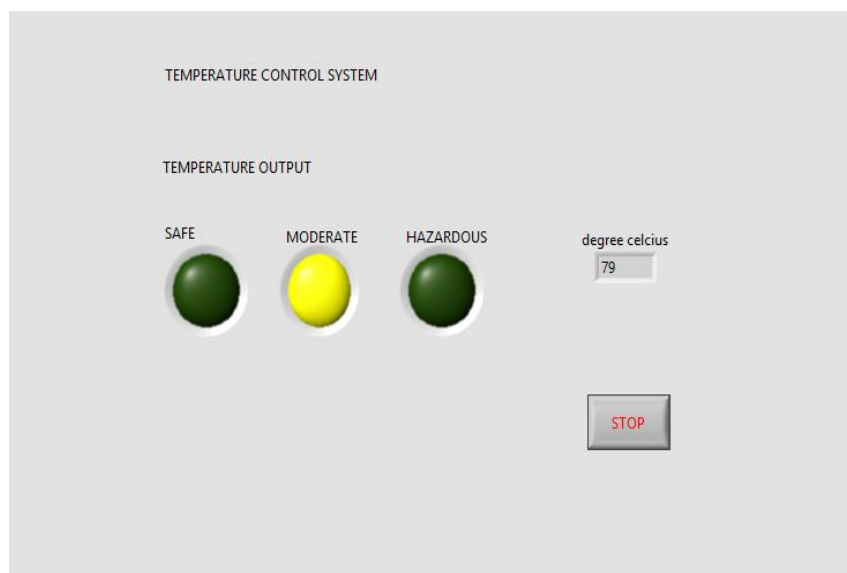

Figure: 2 LabVIEW Front panel diagram

Figure: 3Experimental setup of temperature controlling system.

Figure: 4 Output temperature obtained in the Quickstart server.

We use the myRIO device id as 1234. By entering this id in the Quickstart server, we can obtain the temperature output obtained from the myRIO in the Quick start cloud server at anytime.

V. CONCLUSION

We have developed a system in which temperature is monitored and controlled by using LabVIEW. We have set a limit to the temperature value. If the value exceeds the given limit, then there is an alert and controlling of temperature occurs. Instead of using fan to control the temperature, we can also use the chiller in industries. So, that we can reduce the industrial accidents. We can also monitor the temperature from the server.

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