LABVIEW based Thermal Power Plant Monitoring using GSM Technology

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Abstract- Nowadays most of the industries are moving towards automation. In previous days, the inspection and controlling process were done through human works. There's an opportunity of human faults while measuring the parameters value. Lack of monitoring and controlling can affect humans and environment. So, in thermal station the monitoring and controlling process of parameters may be a difficult task. As this pant work 24 hours so it had been entirely hard to watch and control parameters without noticing any problems. Therefore we exhibiting the system by using Arduino and graphical representation of LabVIEW which helps to watch and control the parameters of temperature, pressure, gas, flame and water level. Initialization of LabVIEW will display accurate graphical representation and also variations of parameter within the waveform. Mainly the system is completed with the temperature sensor, pressure sensor, gas sensor, flame sensor, water level sensor which is taken into account to process the sensor data using Arduino. Through Short Message Service (SMS) the upper officials are going to be alerted when there's explosion or decrease within the level using GSM module.

Keyword- GSM technology, LabVIEW, Arduino Uno, Level sensor, Temperature sensor, Pressure sensor, Gas sensor, Flame sensor

I. INTRODUCTION

In numerous fields there is a need of checking some physical parameters, for example, temperature, pressure, mugginess, stream rate, and so on. Regarding the amounts, appropriation and recognized recurrence of checked items, there are distinctive observing techniques to get catch the estimations [2]. It is a choice of the administration whether to have a checked dependent on manual or robotized premise [1]. There are five kinds of sensor is utilized to execute this undertaking with the assistance of Microcontroller to checking the framework. The sensors are detached kinds of transducer so it needs an outside force supply for its working. Computerized warm stations have been created in colleges by interfacing meteorological parameter observing sensors to microcomputer/economically accessible information lumberjacks with specialized gadgets or through sequential and equal ports to get printed versions of warm information. As of late, a robotized warm station with Universal Serial Bus (USB) correspondence office and an inherent information logging office is created. The framework utilized wired correspondence to move information to the checking station through the PC's worked in USB interface.

LabVIEW is a graphical programming device dependent on amazing test framework, which is an all around associated, open, and has committed administrations. Consequently, at that point test framework improvement cycle is short, ease, and yield top notch [4,10]. LabVIEW virtual sign generator is anything but difficult to work, which can be used in a wide scope of utilizations including logical research, creation and other related fields. The frameworks comprise of both equipments a product stage. The center of the equipment stage incorporates a PIC microcontroller and GSM innovation. The equipment stage obtains the basic parameters with the assistance of different sensors which are interfaced with a microcontroller 16F877A [3]. The controller assembles the information and procedures it. Programming part established by LabVIEW gets the information through the sequential port and Virtual Instrument System Architecture (VISA). The information can be put away in a characterized record of PC by LabVIEW stage while doing the information procurement [10].

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II. RELATED WORKS

The improvement of information obtaining framework utilizing LabVIEW programming has brought about a progressively smaller , dependable and productive program for this application. The framework is presently being broadly used to secure information and for additional handling [7]. The fuel power supplies of heater in power plant are executed by utilization of OPC server program and speak with LabVIEW condition to the PLC organize. The smoke discharge has been constrained by utilizing petroleum gas. Structure and improvement of caution framework for consequently send advising

messages will assist with checking and information logging remotely [6]. The reproduction has capacity for information procurement from different temperature sensor, pressure sensor and burden sensor. Supervision of chronicled information of intensity plant and alert implication for an occasion can conceivable through reproduction [5]. In Thermal Power Plant introductory framework depended on manual checking and horizontal frameworks were actualized utilizing direct factor differential transformers. This checking framework utilizing GPRS innovation can assist with completing implication undertakings in a simpler way and flaws and strange conditions can be brought to notice of legitimate quickly empowering them to take restorative measures [8]. The evaporator drul parameters like temperature, pressure, water level and beads identifier can be observed and controlled consequently by utilizing ARM8 processor. The parameter varieties of ordinary and irregular conditions are spoken to graphically spoke to by utilizing LabVIEW. The qualities can be sending to the clients by sending a SMS [9].

III. SYSTEM DESIGN

So as to conquer the current issue to customary proposed framework is utilized. In the proposed framework is to observing of the parameters by utilizing the ATmega328 microcontroller. The LabVIEW is utilized for ongoing observing of information. Right now of checking, if there is an opportunity of shortcoming it can come to information before the event of flaw.

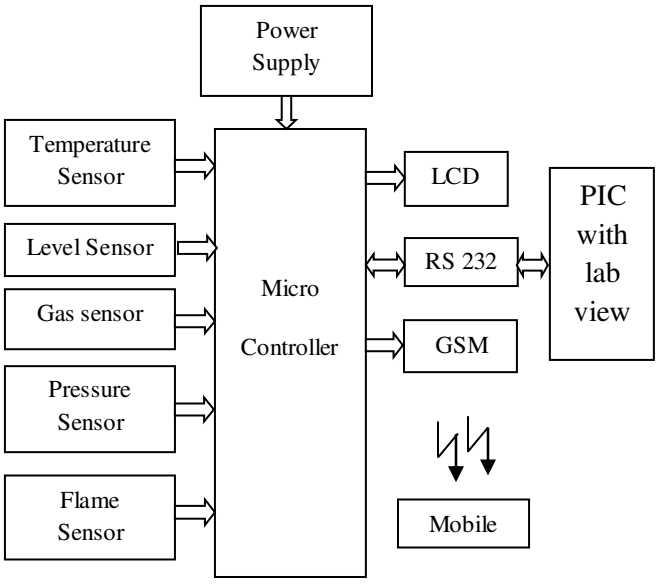

Fig: Block Diagram

Prompt ready framework is accessible in information are kept up just in log book so there is no chance of compelling information examination for making preventive move prompting creation misfortune and worker. In a programmed observing of plant parameters, for example, water level, pressure, temperature, gas and flares are estimated and it is shown in the LabVIEW. All the yield is given to the ARDUINO UNO (ATmeha328) and on the off chance that it arrives at the limit level it is consequently send a SMS to the Mobile through GSM module and the yield is shown in the LabVIEW as graphical portrayal with the assistance of RS232. In the current framework just the waveform are utilized. So this LabVIEW help us to conquer this issue by giving graphical view.

IV. RESULT AND CONCLUSION

4.1 LabVIEW FRONT PANEL

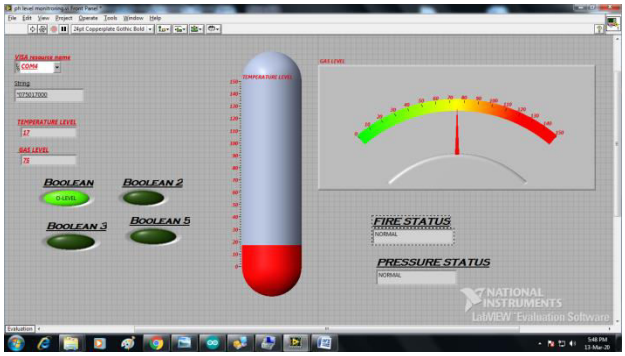

Fig 1: LabVIEW Front Panel

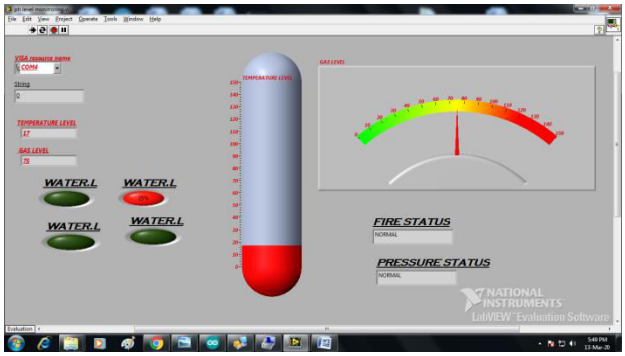

Fig 2: LabVIEW Front Panel

Utilizing the front panel different parameters are checked. In square board, particular squares are associated with structure the front board. This front board shows the parameters either ordinary or irregular conditions are spoken to in the constant qualities by utilizing LabVIEW. Fig 2 shows that the irregular varieties for water level which is demonstrated by utilizing level sensor.

4.2 ADVANTAGES

- Automatic ready framework
- Safe and Secure
- Provide exact outcomes
- More material for estimating cyclic execution

4.3 APPLICATIONS

- Industrial region
- Atomization region
- Agriculture field
- Also everyday fitness observing is material

4.4 CONCLUSION

Right now, power plant parameters like temperature, pressure, water level, gas and fire can be observed and constrained by utilizing Arduino controller. The parameter varieties of typical and unusual conditions are spoken to by values in LabVIEW. The continuous estimations of the parameters can be gotten by utilizing powerful correspondence medium. GSM innovation is utilized for sending the data to the individual in-control.

4.5 FUTURE SCOPE

The parameter varieties can be spoken to graphically utilizing LabVIEW. Keeping up database of the parameters esteems in LabVIEW utilizing exceed expectations sheet. This strategy can be stretched out to different enterprises. The database can be introduced for keeping the records of all checked parameters.

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