

Field Tainting Monitor and Control System using Lab View

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Abstract— Industrial disaster is the major accident affect the environment. Every serious incident is happened from minor faults. Industrial parameter like temperature, Carbon monoxide, pH level etc., plays a vital role and it has standard limits in the field. The main objective of our project is to control these parameters causing pollution and to reduce the effects without affecting natural environment. The system is implemented using LabVIEW software, which is used to monitor the pollution and also send the controlling signal to arduino, when there is a disturbance affecting the standard of the system. The system probes the level of these parameters during industrial process.

Keywords—Pollution parameters monitor and control, LabVIEW, Temperature, pH, CO

I. INTRODUCTION

Industrial pollution is generally referred to undesirable outcomes when factories emits harmful by-products and waste into the environment such as emission to air or water bodies (water pollution), deposition on landfills (land pollution) or emission of toxic chemicals into atmosphere (air pollution). Environment law now requires industry to take responsibility for any pollution that could harm the environment. Ongoing independent monitoring of the air and water supply are necessary to check for any breaches of legislation.

LabVIEW (Laboratory Virtual Instrument Engineering Workbench) is a system design platform and development environment for a visual programming language from national instruments. The software is perhaps the most important component of the system. All monitoring strategies have reasons and justifications which are often designed to establish the trends in environmental parameters.

Nowadays, Due to improper monitoring many problems are creating. If the system is monitored regularly, the parameter will be controlled in any cases.

Arduino microcontroller acts as an I/O engine that interfaces with LabVIEW VIs through a

serial connection. This helps to move information from Arduino pins to LabVIEW without adjusting the communication, synchronization.

The major objectives are, to monitor and control the tainting parameters, to alert the surrounding while parameters exists standard level in industries using LabVIEW.

II. RELATED WORK

A. Monitoring system

In this project, system allows user to monitor the parameters. By using sensor, the data acquire through an arduino using the graphical programming environment LabVIEW.

In the industrialization, it becomes necessity to monitor the industry environment remotely. With the help of sensor the data will updated based on the condition and arduino receives the information.

Overall process get monitor through LabVIEW. In this project monitoring is the initial step to analyze the parameters efficiently.

B. Controlling system

Control of parameters can be computed and data can be transferred through online. Pollution controlling system comes under arduino using LabVIEW. The major aim is to control the temperature in the industry and for other parameter alert process will takes place.

III. SYSTEM DEVELOPMENT

HARDWARE REQUIREMENTS

1. Arduino:

Arduino is a single board microcontroller intend to make application of ineractive object or environments more accessible. It is an open source physical computing platform and development environment for writing software for the board.

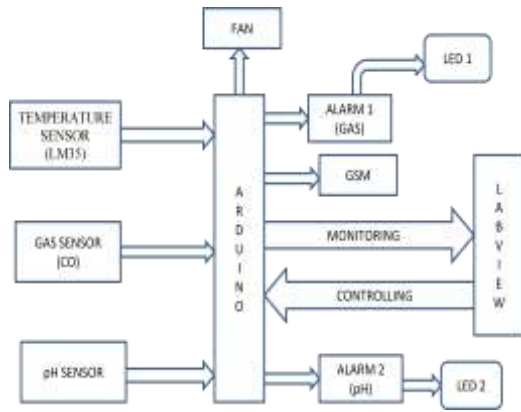


fig.4.

IV. BLOCK DIAGRAM

A. Methodology:

fig.4 shows the process of the system. In this diagram, sensed data from parameters sensor which are used above considered as an input. Those inputs are given to arduino and by passing information from arduino to LabVIEW, the monitoring process takes place. After monitoring, the information returns to arduino for control those parameters.

Initially temperature can be control using fan and alternate sources when the level exceeds the limits. Fan which is a control unit connected to arduino. For CO and pH level alert unit is connected. If the levels cross the limit respective alarm will operate with separate indication. GSM is used to receive the message when user is far away from the field.

V. BLOCK OF ENTIRE DESIGN

fig.11 represents the entire process of the project. The above diagram shows the circuit design of each parameter components. It is the pictorial representation of the method which undergoes in our project and as well as important of LabVIEW interface.

TABLE.1.Limits of parameters

S.N O	PARAMETER S	MINIMUM VALUE	MAXIMUM VALUE
1	Temperature	20°C	40°C
2	Carbon Mono-oxide	30ppm	200ppm (150mV)
3	pH Level	6.5(80mV)	(7.5)105mV

A. Table Description:

- Temperature has range if the range exceeds the corresponding control action takes place to limit the level of the temperature. fig.6 & fig.7 shows implementation by LabVIEW as given below,

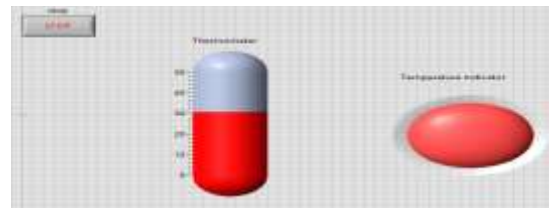


fig.5. Execution of temperature level

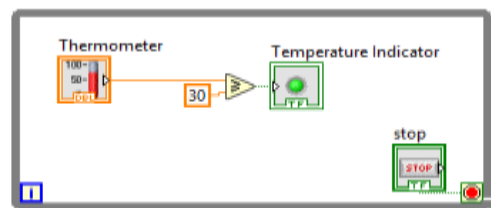


fig.6. LabVIEW block of temperature

- The alarm 1 activates for alerting with required led indication when CO level cross the given limits shows in fig.8.table

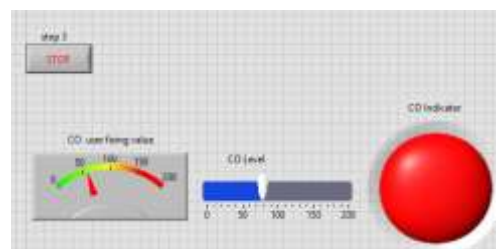


fig.7. Execution of CO level

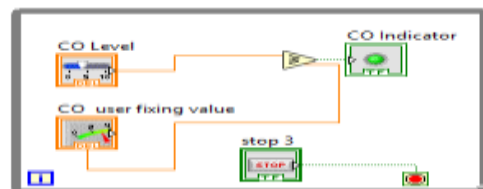


fig.8. LabVIEW block of CO

- If pH level exceeds the range mentioned in the above table, the alarm 2 will activates with specific led indication then the system receives the alert signal.

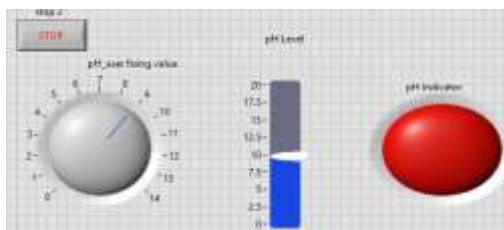


fig.9. Execution of pH level

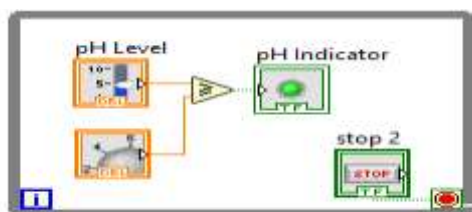


fig.10. labVIEW block of pH level

VI. CONCLUSION

The field of pollution monitoring and control is very wide and this project is an attempt to minimize the problem of cost and regular inspections in the field. This is an endeavor to monitor and control by utility of LabVIEW software. The performance of the tainting monitor and control system can further be improved by implementing sensors for controlling dust, noise, smoke, moisture and other parameters, thereby improving the industrial and natural environment.

There may be other softwares used for designing control system but LabVIEW is the simplest and user-friendly than others. Here ranges are mentioned based on our wish .In case of some field; they have standard levels on their work basis. It doesn't need any code to run the software and the constants can be changed easily as a user's desire. The user can monitor the parameters readings taken from the workplace and control them.

VII. REFERENCE

The quality of the effluent management and working environment can determine [1]. The operator window is opened then operator will be able to monitor all the required parameters [2]. The execution and remotely the contamination observing and control framework

can further be enhanced [3]. The data based server is attached to the pollution server for storing the pollutants level [4]. The wireless system is used which is more adaptable and cost effective it provides the password security against operator misuse [5]. The observation and assessment both are used synonymously. The industrial natural condition evaluation is given by contamination administration board once it can pose as a viable rival modern quality in importance ordinary quality [6]. Operating strictly according to environmental regulations significantly increases drilling, waste disposal and site restoration costs, thereby cutting down profits [7]. Using sensors and enables to have a keen control on the environmental pollution caused by the industries. This paper introduces a LabVIEW based online pollution monitoring of industries for the control over pollution caused by untreated disposal of waste [8].

- [1] Pravin J, Deepak Sankar A, Angeline Vijula D, "POLLUTION MONITORING SYSTEM USING LabVIEW AND GSM" International Journal of Advanced Research in Electrical Electronics and Instrumentation Engineering Vol. 2, Issue 6, June 2013.
- [2] A.H.Utgikar , Ajay Gardi , Pratik Khule , Kiran Dayma , "LabVIEW BASED INDUSTRIAL PARAMETER SUPERVISION AND ALERT SYSTEM" International Journal of Innovative Research in Computer and Communication Engineering , October 2016 .
- [3] Mythlly J, Balaji P, "IMPLEMENTATION OF MONITORING INDUSTRIAL POLLUTION SYSTEM USING LabVIEW AND GSM" International Research Journal of Engineering and Technology (IRJET) ,March 2016.
- [4] Sarathkumar M, Barathiselvaraj M, Vikram S, Chikkandhar G, "ADVANCED POLLUTION MONITORING AND CONTROLLING SYSTEM USING CLOUD INTERFACE" IJSRD - International Journal for Scientific Research & Development ,2016.
- [5] Isha Gupta, Rashpinder Kaur, "DESIGN AND DEVELOPMENT OF INDUSTRIAL POLLUTION CONTROL SYSTEM USING LabVIEW".
- [6] [6] Karan Siyal, Ratnaprabha Kasde, "LabVIEW AND WIRELESS BASED REAL TIME SENSOR MONITORING".
- [7] Francis D. Udoh and Offiong I. Akpanika, "AN APPROACH TOWARDS EFFECTIVE MONITORING OF ENVIRONMENTAL POLLUTION RESULTING FROM PETROLEUM".
- [8] Kunja Bihari Swain, Santamanyu G, Amiya Ranjan Senapati, "SMART INDUSTRY POLLUTION MONITORING AND CONTROLLING USING LABVIEW BASED IOT".

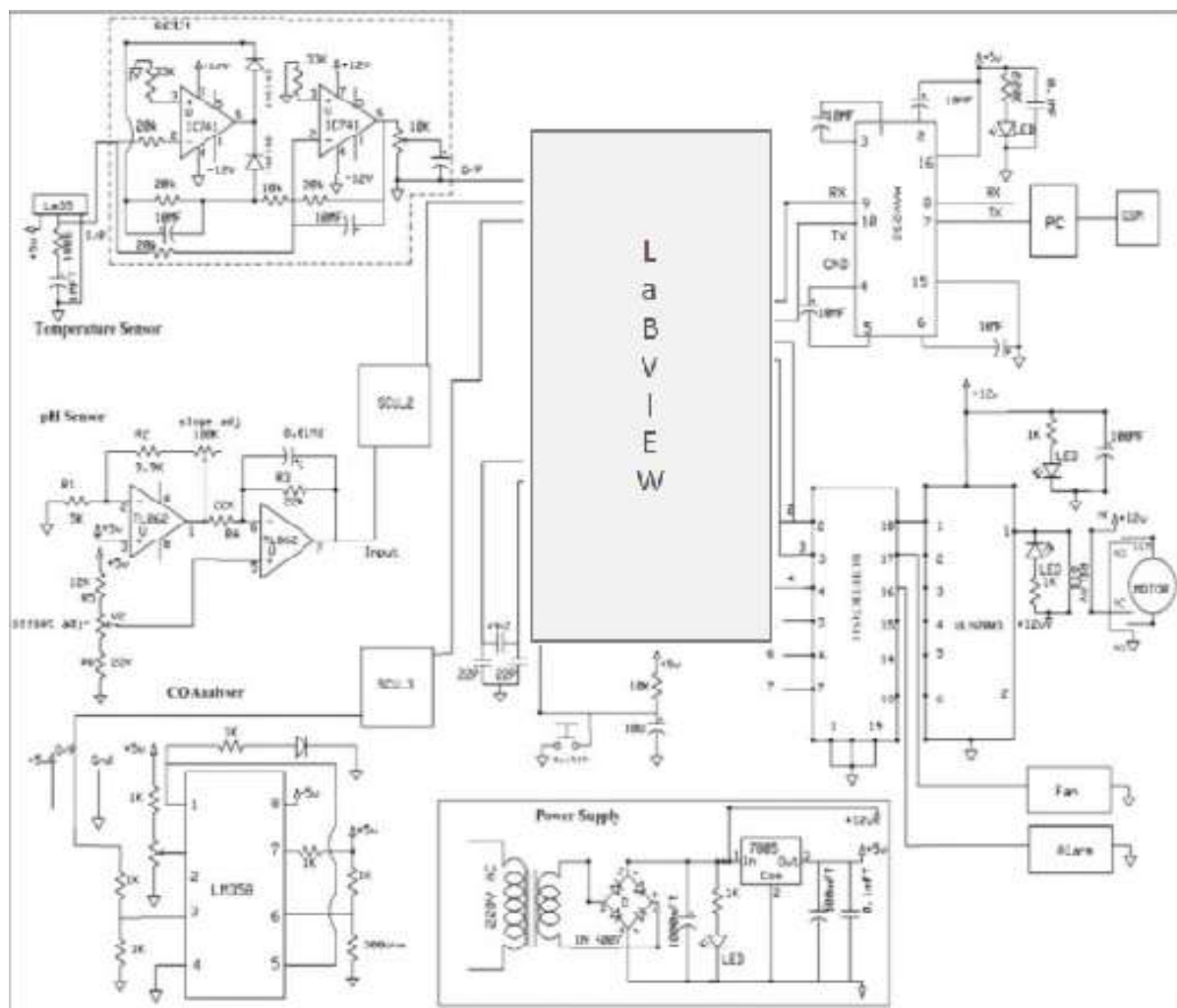


Fig.11.Implementation using LabVIEW