

IMPLEMENTATION OF MONITORING INDUSTRIAL POLLUTION SYSTEM USING LABVIEW AND GSM

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Abstract - The main objective of our project is to design an efficient and robust system to control the parameters causing pollution and to minimize the effect of these parameters without affecting the plant or natural environment. The proposed methodology is to model a system to read and monitor pollution parameters and to inform pollution control authorities when any of these factors goes higher than industry standards. A mechanism using GSM and LabVIEW is introduced in this proposed methodology, which will automatically monitor when there is a disturbance affecting the system. The system is implemented using LabVIEW software. The system investigates level of pH in industry effluents, level of CO gas released during industry process and temperature of the machineries. With the design of GSM, the signals can be effectively transferred and the actions in these cases can still be made accurate and effective. Thus through this project we try to prove that control of pollution can be computed and the data can be transferred online. Our proposed method is more accurate to derive the desired parameters.

1. INTRODUCTION

The terms checking and appraisal are habitually befuddled and utilized synonymously. The procedure of mechanical quality appraisal is an assessment of the mechanical quality in connection to standard quality set by contamination control board. Specific consideration is given to variables which might influence human wellbeing and the strength of the regular framework itself. Ecological quality appraisal incorporates the utilization of observing to characterize the state of the water, to give the premise to recognizing patterns and to give the data empowering the foundation of cause viable connections. Modern quality observing is the gathering of data at set areas of various commercial ventures and at general interim with a specific end goal to give the information which might be utilized to characterize current conditions, build up patterns and so forth. Because of the multifaceted nature of components deciding modern quality,

substantial varieties are found between various commercial ventures. Correspondingly, the reaction to modern effects is additionally exceedingly variable.

The principle explanation behind the evaluation of the nature of the mechanical environment has been, generally, the need to check whether the watched mechanical quality is suitable for expected employments. The utilization of checking has likewise developed to decide patterns in the nature of the water, air and soil environment and how they are influenced by the arrival of contaminants, other anthropogenic exercises, and/or by waste treatment operation (sway observing). All the more as of late, observing has been attempted to gauge supplement or poison fluxes released to waterways, ground waters, lakes, seas furthermore, soil or crosswise over worldwide the limits. The appraisal of foundation nature of the modern environment is likewise now broadly attempted as it gives a method for examination with effect observing. It is additionally utilized essentially to check whether any sudden change is happening in generally immaculate contaminations. Be that as it may, it ought to be noticed that modern natural quality is exceptionally variable relying upon nearby conditions. New water is a limited asset crucial for use in horticulture, industry, spread of untamed life and fisheries and for human presence. India is a riverine nation. It has 14 noteworthy streams, 44 medium waterways and 55 minor streams other than various lakes, lakes and wells which are utilized as essential wellspring of drinking water even without treatment. The greater part of the waterways being nourished by storm downpours, which are constrained to just three months of the year, run dry all through whatever remains of the year frequently conveying wastewater releases from commercial ventures or urban areas or towns jeopardizing the nature of our rare water assets. Thus working environment in an industry is essential for wellbeing of its specialists and individuals who live close to it. Thus it is critical to screen measure of temperature and carbon monoxide level in an industry.

The principle issue confronted in past papers where either the procedure was unpredictable or it required high cost for execution. Likewise different procedures predominantly needed access at remote areas and thus this framework demonstrates to succeed these significant disadvantages.

The fundamental goals of Industrial contamination checking framework utilizing LabVIEW and GSM are

1. To decide the nature of gushing administration and workplace in businesses.
2. To decide the key descriptors to be considered in contamination observing.
3. To decide the achievability and expense of a checking program.

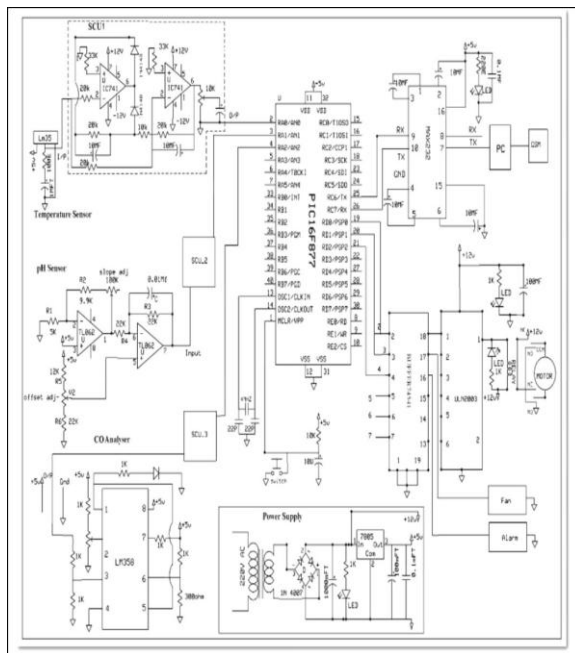


Figure.2 Connection Diagram of the Design

1.1 BLOCK DIAGRAM WITH ITS DESIGN

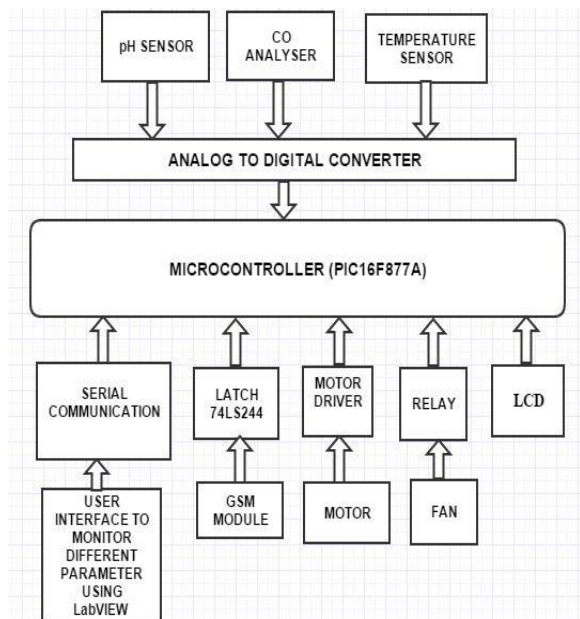


Figure 1. Functional block diagram

3. pH Analyzer

The below circuit is utilized to gauge the pH of the specimen water utilized and to change over it into voltage signals. The signs from the pH terminal have a run of the mill estimation of resistance fluctuating from 10 MΩ to 100 MΩ and the voltage signs are in extent of 0.56 mV. So we need to utilize IC's which performs under a low present.

Here resistors are utilized for different current constraining and intensification purposes. Capacitors are likewise utilized. In pH mode the reference can be balanced from pH 0 to pH 12. With the reference legitimately balanced, the yield in volts will be the genuine pH of the pointer arrangement. Our pH sensor is digitized and can correspond with PC and can consequently record information for developed timeframe etc.

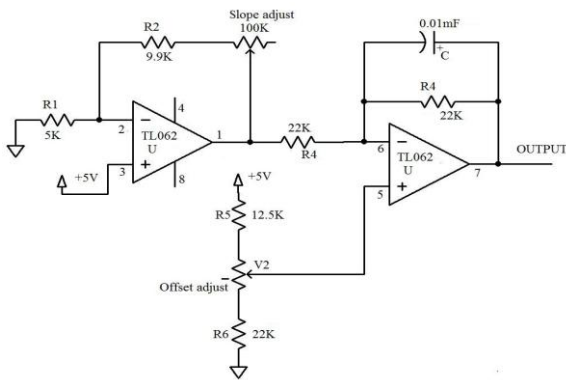


Figure 2. pH Sensor Circuit

3.1pH Identification

Here pH detection technique used is discussed.
 Maximum value.....7.5.....105mV
 Minimum value.....6.5.....80mV
 At the point when pH quality is under 6.5 or more noteworthy than 7.5 contamination level is shown and it is accounted for to contamination control board through GSM innovation and an engine gets on consequently.

4. Temperature Analyzer

This gives brief portrayal about temperature analyzer utilized as a part of this venture. The LM35 is an incorporated circuit sensor that can be utilized to gauge temperature with an electrical yield relative to the temperature. The LM35 creates a higher yield voltage than thermocouples and may not require that the yield voltage be opened up. Temperature analyzer is appeared in figure 3.

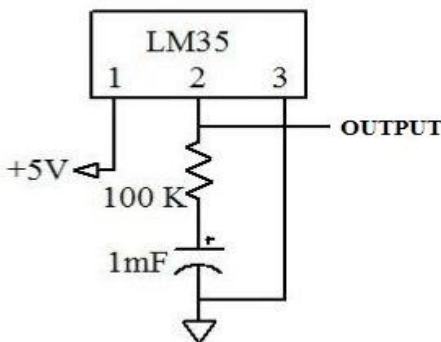


Figure 3: LM35 Circuit

The circuit comprises of a LM35 whose terminals are associated with a data voltage of 5V and an arrangement association of 100kΩ resistance and 100MF capacitance is associated so as to maintain a strategic distance from any voltage drop over the circuit. The arrangement association is

grounded and yield is taken from terminal 2. It has a yield voltage that is relative to the celsius temperature. The scale element is .01V/°C. The LM35 does not require any outer adjustment or trimming and keeps up an precision of +/- 0.4°C at room temperature and +/- 0.8°C over a scope of 0°C to +100°C. Another vital trademark of the LM35DZ is that it draws just 60 small scale amps from its supply and has a low self-warming capacity. The sensor self-warming causes under 0.1°C temperature ascend in still air. The LM35 along these lines has leeway over straight temperature sensors adjusted in ° Kelvin, as the client is not required to subtract an expansive steady voltage from its yield to acquire helpful Centigrade scaling.

4.1Temperature Identification

Here the temperature detection technique adopted is discussed.
 Maximum value.....400C
 At the point when temperature quality is more noteworthy than 400C contamination level is shown and it is accounted for to contamination control board through GSM innovation and fan gets on consequently.

5. CO Analyzer

A carbon monoxide analyzer or CO analyzer is a gadget that recognizes the vicinity of the carbon monoxide gas in request to avert carbon monoxide harming. The circuit setup comprises of analyzer head associated with an increasing unit. A number of supporting resistances are utilized to stay away from voltage drop over the circuit. Resistance estimation of MQ-7 is contrast to different sorts and different fixation gasses. Thus, when utilizing these segments, affectability alteration is extremely vital. It is suggested that aligning the locator for 200ppm CO in air and utilizing Load resistance of around 10KΩ (5KΩ to 47KΩ) builds circuit proficiency.

5.1CO Identification

Here CO detection technique used is detected
 Maximum value.....200ppm.....150mV
 At the point when CO worth is more prominent than 200ppm contamination level is shown and it is accounted for to contamination control board through GSM innovation and an alert get on naturally.

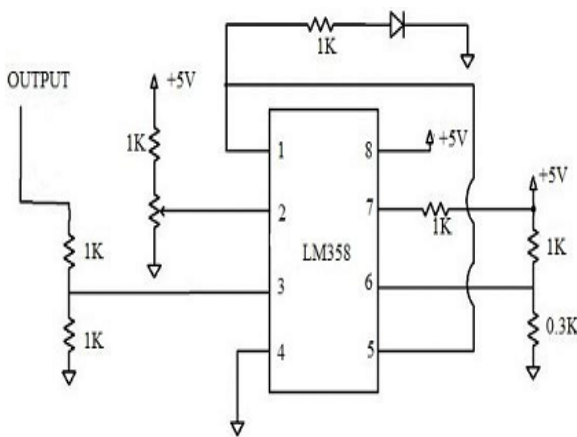


Figure 4: CO Analyzer Circuit

6. Connection with PC

In this circuit the MAX 232 IC used as level logic converter. The MAX232 is a dual driver/receiver that includes a capacitive voltage generator to supply EIA 232 voltage levels from a single 5v supply. Each receiver converts EIA-232 to 5v TTL/CMOS levels. Each driver converts TLL/CMOS input levels into EIA-232 levels

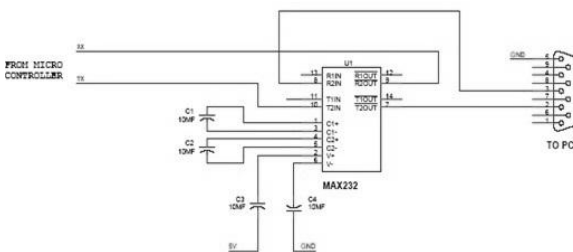


Figure 5: Connection of MAX 232 with PC

7. Proposed Approach

The mechanical environment parameters is persistently detected utilizing diverse sensor, the initial step is to sense the distinctive parameters moistness level, pH, CO level, temperature. Sensor's yield is as simple sign as microcontroller take computerized esteem so ADC will be utilized. Also if there any adjustment in the parameters it will be shown on LCD and if the estimation of the distinctive parameters surpass their edge esteem the ready SMS will got through GSM module to the controller to make the control move the entire framework will be controlled remotely by utilizing LabVIEW programming and GSM framework

8. Applications

For watering system to remotely control the dirt dampness and pH level and in addition the temperature.

In Petro substance industry to look at the whole modern environment by sitting far from site territory.

Reduce labor as to consistent screen the contamination temperature, moistness, pH level and CO gas as control will done through sensors.

In paper making industry to control the parameters which causes contamination and weakens the modern and regular habitat.

9. Justification of Research

Modern contamination checking is must as the Industrialization expands the level of robotization and in the meantime it builds the contamination. This work proposes a PC based sign obtaining framework. Its investigation can be proficient utilizing LabVIEW and it is additionally savvy strategy for industrialization contamination observing.

10. Conclusion and Future Scope

The field of contamination observing and control is wide and this is an endeavor to screen and consistent investigations by the utility of Global System for Mobile correspondences. For easing these issues, progressed GSM framework with LabVIEW is utilized. The execution and remotely the contamination observing and control framework can further be enhanced by actualizing sensors for controlling dust, commotion, smoke and different parameters, subsequently enhancing the modern and regular habitat.

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BIOGRAPHY



J.MYTHILY was born in Chennai, Tamilnadu, India on May 20th 1991. She received B.E degree in Electronics and Instrumentation Engineering from Panimalar Engineering College, Chennai, affiliated to Anna University Chennai, Tamil Nadu, India in May 2013. She is pursuing M.E (Instrumentation Engineering at St.Peter's University



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