Industrial Waste Water Treatment using PLC

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***Abstract*-Recycling of water is an important process. Industries do have lot of waste water where such water will be mostly acidic in nature. Such water must be well treated to bring it to normal water state. Waste water from industries is left to reservoir through purification process thus it will not affect water in reservoir nor any aquatic life. Water purification is done on the basis of acidic detection process. The pH value is measured and with automated process water is treated with respective purifiers. Hard materials commonly iron separation is done from waste in this project.**

Key words- PLC, pH sensor, ALCD, PIC controller.

INTRODUCTION:

Water is one of the essential sources of life. Preventing water from pollution must be in first priority. It's a common known truth is that wastes from industries is left to river. Waste water if left without treatment will cause numerous problems to aquatic life as well as living beings and one who consumes it. In this project waste water is tested and treated before it is left to river. Water will be more dangerous if it is more acidic. In this project water is tested for acidic content and it treated accordingly. Hard materials commonly iron separation is done from waste in this project.

OBJECTIVE:

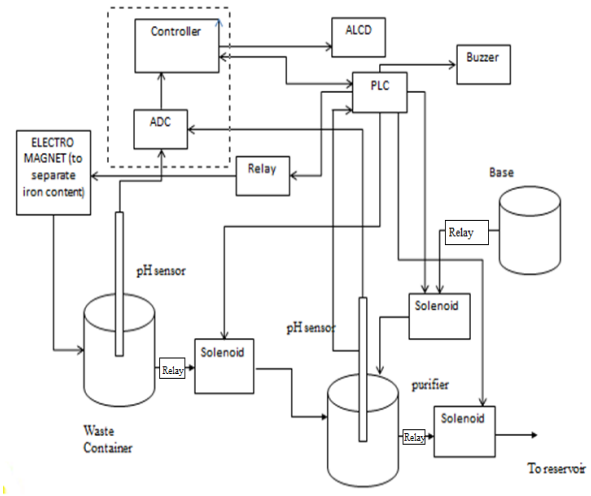
The principal objective of wastewater treatment is generally to allow industrial effluents to be disposed of without danger to human health or unacceptable damage to the natural environment. Irrigation with wastewater is both disposal and utilization and indeed is an effective form of wastewater disposal (as in slow-rate land treatment). However, some degree of treatment must normally be provided to industrial wastewater before it can be left to river. The most appropriate wastewater treatment to be applied before effluent use in agriculture is that which will produce an effluent meeting the recommended microbiological and chemical quality guidelines both at low cost and with minimal operational and maintenance requirements. Adopting as low a level of treatment as possible is especially desirable in developing countries, not only from the point of view of cost but also in acknowledgement of the difficulty of operating complex systems reliably. In many locations it will be better to design the reuse system to accept a low-grade of effluent rather than to rely on advanced treatment processes producing a reclaimed effluent which continuously meets a stringent quality standard.

WORKING PRINCIPLE:

An acidic solution consists more positively charged ions than an alkaline one, so it has greater potential to produce an electric current. Hence it acts like a battery that can produce a greater voltage.

Based on the above principle pH meter works like voltmeter where it measures the voltage produced by the sample solution and compares it with the voltage of the known solution.

BLOCK DIAGRAM:



PROPOSED IMPLEMENTATION:

The pH of a substance is an indication of how many hydrogen ions it forms in a certain volume of water. There's no absolute agreement on what "pH" actually stands for, but most people define it as something like "power of hydrogen" or "potential of hydrogen." If you're using litmus paper, none of this matters. The basic idea is that the paper turns a slightly different color in solutions between pH 1 and 14 and, by comparing your paper to a color chart, you can simply read off the acidity or alkalinity without worrying how many hydrogen ions there are. But a pH meter somehow has to measure the concentration of hydrogen ions. An acidic solution has far more positively charged hydrogen ions in it than an alkaline one, so it has greater potential to produce an electric current in a certain situation—in other words, it's a bit like a battery that can produce a greater voltage. A pH meter takes advantage of this and works like a voltmeter: it measures the voltage (electrical potential) produced by the solution whose acidity we're interested in, compares it with the voltage of a known solution, and uses the difference in voltage (the "potential difference") between them to deduce the difference in pH.

In this project we are measuring pH of industrial waste and neutralizing it by adding base automatically. Neutralizing causes less effect on river water.

RESULT:

Sample of industrial waste water is taken, its acidity level is tested and treated accordingly.

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