PLC Based Water Level Control System

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Abstract- A PLC is a digital computer used for automation of electromechanical processes and industry purpose.This is a very most important for automation purpose.so that this type project safe a water and any type of boiler automation system at which some time. I have used Siemens plc for water level control system. In this type plc is a very simple programming language so that this project used a four float switch sensor. Two float switch sensor is used a upper tank and two float switch sensor is used bottom tank.It is on this platform that the need to minimize or check water wastage arouse. Water is a free gift of nature but due to its indispensability to human existence; it should be conserved for the purpose of constant availability or sufficiency. Moreover, in order to take a good care of this problem of wastage, there is need for the construction of water level controller this will guide against unnecessary wastage of water, for it will make a reasonable quantity of water to be used a any time. In this project, effort has been made to construct a water controller that is capable of controlling the electric water pumping motor operation in regard switching on or off at predetermined level of water in the storage tanks or reservoirs. This project also gives the clarity of advantage of using an automatic method of controlling level over human or manual control method.

*SENSOR:*Float Sensors contain hermetical sealed Reed Switch in the stem and a permanent Magnet in the Float. As the Float rises or falls with the level of liquid the Reed Switch is activated by Magnet in the Float.A float switch is a device used to detect the level of liquid within a tank. The switch may be used to control a pump, as an indicator, an alarm, or to control other devices. One type of float switch uses a mercury switch inside a hinged float. Another common type is a float that raises a rod to actuate a micro switch. One pattern uses a reed switch mounted in a tube; a float, containing a magnet, surrounds the tube and is guided by it.

I. INTRODUCTION

The proposed system will control and monitor the water level of the tank continuously and will ensure that a sufficient level of water is maintained. This system can be used home application and industrial application.it can be used to prevent industrial accident by overfilling of any open tank to prevent overfilling of any closed tank thereby creating overpressure condition. The high number of the input output port of the plc.

Automatic water level controller circuit is a simple engineering project. It can automatically switch ON and OFF the domestic water pump set depending on the tank water level. You can implement this motor driver circuit at your home or college using less costly components. The main advantage of this water level controller circuit is that it automatically controls the water pump without any user interaction.

Three sensors are used to implement the system. These sensors detect the presence of water. The readings of the sensors are used by the PLC to take the required decision. Finally the decision is implemented by the PLC through a relay switch. The ladder logic was implemented in coveys. The proposed system will control and monitor the liquid level of the tank continuously and will ensure that a sufficient level of water is maintained. This system can be used ubiquitously in industrial application. It can be used to prevent industrial accident by overfilling of any open container, to prevent overfilling of any closed container thereby creating overpressure condition. The high number of the input output port of the PLC will enable this single system to control large number of tanks single handedly. Leakage can also be monitored. Flexible and can be reapplied to control other systems quickly and easily. Computational abilities allow more sophisticated control. Trouble shooting aids make programming easier and reduce downtime. Reliable components make these likely to operate for years before failure. The PLC was invented in response to the needs of the American automotive manufacturing industry Programmable logic controllers were initially adopted by the automotive industry where software revision the rewiring of hard-wired control panels when production models changed. Before the PLC, control, sequencing, and safety interlock logic for manufacturing automobiles was accomplished using hundreds or thousands of relays, timers, and drum sequencers and dedicated closed controllers
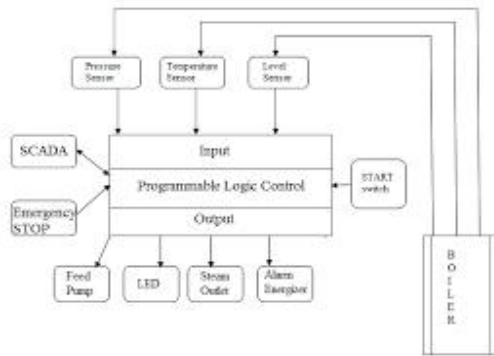
II. COMPONENT LIST

Programmable Logic Control (PLC)
SMPS (Switch Mode Power Supply)
Float Switch
Start Switch
Stop Switch
AC Pump
Power Supply

A.C Pump: The existing method of water conservation ranging from the privative manual control to the use of "float" to control the pumped action of the electric motors, there has not been a complete electronic method of control. In the manual control, bring compelled to climb up to a reservoir in which water in being pumped by an electric motor, in order to determine the level of the required water and for which the motor should be stopped, be not the best way of using qualified manpower. Besides, this offers a very tedious working condition to the working personnel's on the whole. However; improper way of controlling the water level in the overhead tanks or reservoir is contributing to the problem of water wastage and environmental flooding which can lead to inconvenience for the people around, damage of the property and other valuable materials in homes and industries.

Hence, the real motivation in having this supervisory unit equipment is based on its advantages of the ability to detect the presence of water at a predetermined level and then controlling of the pumping operation in basically completed electronic mode, the advantage which reduces the problems associated age which reduces the problems associated with improper way of water level centered.

Pumps operate by some mechanism and consume end to perform mechanical work by moving the fluid. Pumps operate via many energy sources, including manual operation come in many sizes for use in medical applications to large industrial pumps.

Mechanical pumps serve in a wide range of applications such as pumping water from wells, aquarium filtering, pond filtering and aeration, in the car industry for water-cooling and fuel injection, in the energy industry for pumping oil and natural gas or for operating cooling towers. In the medical industry.

In biology, many different types of chemical and bio-mechanical pumps have evolved, and bio mimicry is sometimes used in developing new types of mechanical pumps.

III. BLOCK DIAGRAM OF TANK FILLING
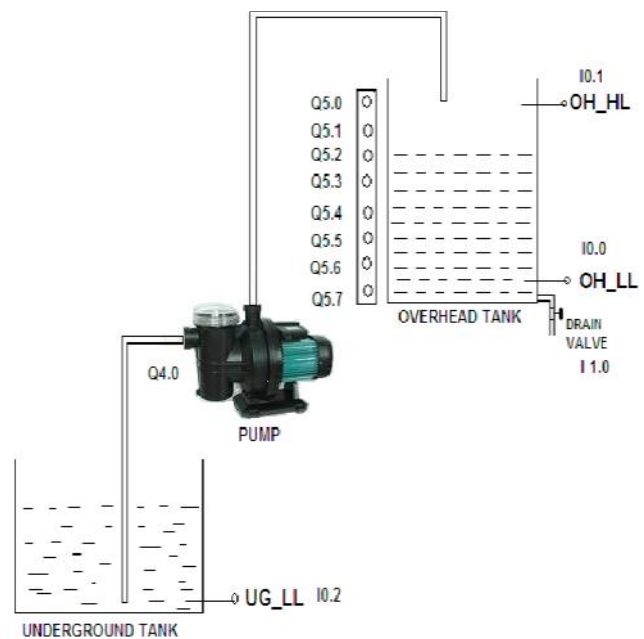
IV. WORKING

The block diagram of the showing an actual working of the system. The working of principle is a very most important in the automation system at which some time. The requirement of two type tank. First tank is a upper tank and second is a bottom tank. When upper tank is empty then motor is automatic on and upper tank is full then automatic motor off. So that this project used a home purpose at which some time.

V. RELATED WORK

Float Sensors contain hermetical sealed Reed Switch in the stem and a permanent Magnet in the Float. As the Float rises or falls with the level of liquid the Reed Switch is activated by Magnet in the Float.

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VI. CONCLUSION

In this paper,home Automation using PLC was designed and implemented. Different sensors are used to measure the water level system.

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