

Design and Implementation of Water Pump Automation System

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Preface

Water is one of our most valuable resources. The importance of water in our daily life can not be emphasized enough. Water scarcity is a serious issue in major cities. Wasting of water is not acceptable in any way. It is a common problem which is faced by every house owner, that when his tank is empty he has to switch on the motor and switch the motor off when it is full. Due to our busy life it is common that the tank usually overflows without notice. One has to keep on observing his tank water level to switch off the motor once it is switched on. So these are the everyday problem that motivated us in coming up with an efficient , affordable, automatic way to pump the water from the water supply line to the roof-top tank that doesn't need any attention once it is installed.

Methodology for Achieving Goal

This project is about the design and construction of a highly efficient water pump automation system. It is made up of integrated circuits, active and passive hardware devices. The design monitors the amount of water in the water tank. The LCD display displays the height of the water in the tank . The relay which is powered by a Microcontroller, turns the motor off When the water in the tank reaches 90% and turns it on when the water decreases below 10%.

Simulated Results

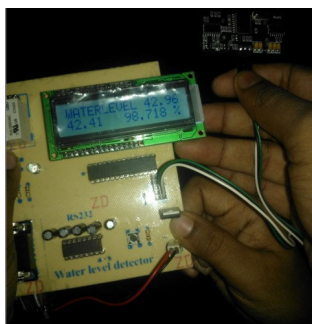


Figure : An almost Empty Water Tank



Figure : A semi-filled Water Tank

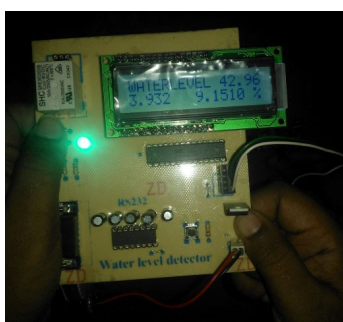


Figure : An almost Filled Water Tank

Designed Prototype

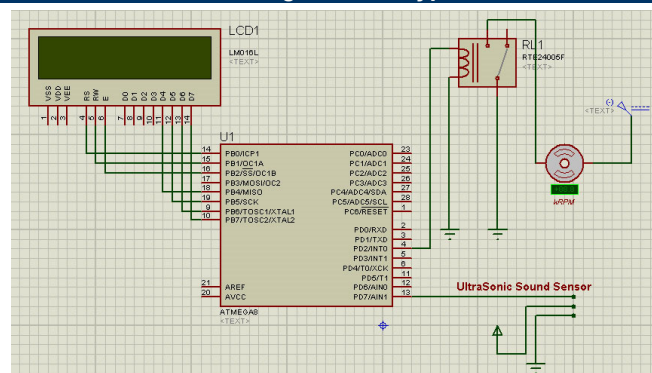


Figure : Circuit Diagram of Water pump automation system



Figure : Physical appearance of the Water pump automation system

Conclusion & Future Work

The typical water pump system in our household is very old and time consuming. This water pump automation system of ours is hassle free after the installation and can be operated without any human intervention for a long time after the installation except when the battery (power source) needs a changing. Our project also saves water, saves time, saves electricity by switching the motor off at the correct time, helps preventing a mess by stopping the overflow of water. By changing a few things we want to add features like auto and manual start , wireless sensor, support for reserve tank or multiple tanks and support for multiple motors in near future.

Acknowledgement

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Key References

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