AUTOMATIC WATER PUMP CONTROLLER

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Abstract

Water is the most important nature's gift to man kind. Without water there is no life. Now everybody understands its importance , especially where water is not easily available. Now this is being managed by the proper manner in city areas where the use of water is more than its availability.Automatic water pump controller for both overhead and underground tank is designed to monitor the level of water in the tank. It displays the level of the water when it is at the lowest level; a pump is activated automatically de-energized.Several circuits are put together to ensure proper working of this design and the bock diagram includes the supply unit, the microprocessor unit, the sensor unit, and display unit, and the pump drives unit.

1. INTRODUCTION

Wateris

commonly used for agriculture, industry, and domestic consumption. People generally switch ON the pump when their taps go dry and switch OFF the pump when the over headed tank starts overflowing . This results in the unnecessary wastage of water.The project 'AUTOMATIC WATER PUMP CONTRLLER' is design to monitor the level of liquid in the tank. The system has an automatic pumping system attached to it so as to refill the tank once the liquid gets to the lower threshold, while offering the pump once the liquid gets to the higher threshold. The pump level controller, controls monitors and maintain the water level in the overhead and overhead tank and ensures the continuous flow of water round the clock without the stress of going to switch the pump ON and OFF thereby saving time, energy, water and prevent the pump from overworking. Proper monitoring is needed to ensure water sustainability is actually being reached with disbursement linked to sensing and automation, such programmatic approach entails microcontroller based automated water level sensing and controlling. This problem is quietly related to poor water allocation, inefficient use, and lack of

adequate and integrated water management. Therefore, efficient use and water monitoring are potential constraint for home or office water management system. Moreover , the common method of level control for home appliance is simply to start the feed pump at a low and allow it to run until a higher water level is reached in the water tank.

2. RELATED WORK

Micro tail fully automatic water level controller for tank sump this model will automatically switch ON and OFF the motor .Auto ON occurs when tank level is low confirming water is present in the sump .Auto OFF when tank is full or when sump is empty suitable for motor pump operated by a normal on/off switch/mcb. This controller unit has a fully automatic function.

Features

- Fully automatic controller with dry run protection single phase.
- Anti corrosion stainless sensor.
- Contact capacity :30 Amps.
- Tank water level indication , pump ON indication.
- Mechanical system saves electricity compact.
- Operating voltage 220 -250 volts AC.

Disadvantages

- Maintenance cost of the machine is too high.
- More difficult to install.
- More numbers of sensors are used.
- Cost of the product is too high.

Water level controller

the overhead tank is full. The pump is not allowed to start if the water level in the sump tank is low This water level controller monitors the level of overhead tank and automatically switches ON the water pump whenever the level goes below a limit.The level of the overhead tank is indicated using a LED'S and the pump is switched OFF when.

Features

- It can be used in water tanks to control water level.
- Automatically turn ON and OFF pumps.
- High and low level alarms.
- Sewage pump level control.

- Automatically adjust water level.

Disadvantages

- Water level controller needs to be replaced after every 3 years.
- More difficult installation.
- Electronics are usually build separately.
- Most float switches are outdated.

Gaps In Existing Solutions

All the existing solutions have many disadvantages the following are the gaps we found in   those existing solutions.

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3. IMPLEMENTATION

Most of the people in our country are still using manual process for water pumping and motor control that are used in home ,office and industries. Manual controlling process is difficult when the water tank is located at higher buildings and controlled from ground level . Due to more time consuming on manual operation it is total loss on our valuable time. If we are unable to continuous   monitoring there are loss of energy sources of natural resources by overflowing water from tank.

We have designed this system which controls the motor automatically start and stop as our requirement. This system is not only motor controlling it also checks the condition of motor tank and display the present status.The water pump controlling system solves all issues and saves the water.The main objective is to protect the motor while running without water and also to reduce the overflow of water in overhead tanks by using an ultrasonic sensor with low cost.

1.To design an automatic water pump controller system.

2. To avoid overflowing of water from the tank.

3.To incorporate an interactive medium between the end user and machine.

4. To avoid the damage of sump.

This water pump controller monitors the level of the overhead tank and automatically switch on the water pump whenever the level goes the limit. The level of the overhead tank is detected by the sensors and the pump is switched off when the overhead tank if filled. The pump is not allowed to start if the water

level in the sump tank is low and also the pump is switched off when the level inside the sump tank goes low during the pumping cycle.The ultrasonic sensor is placed at the top of the tank and the float sensor is placed at the bottom of the tank where both of them detects the water level of the tank.Float sensor is also placed in the sump to detect the water level of sump when it gets empty.This water level controller will automatically switch ON and OFF the motor based on the water level of the tankAnd also the machine makes sure to switch OFF the motor when no water in the sump to avoid the damage of sump.
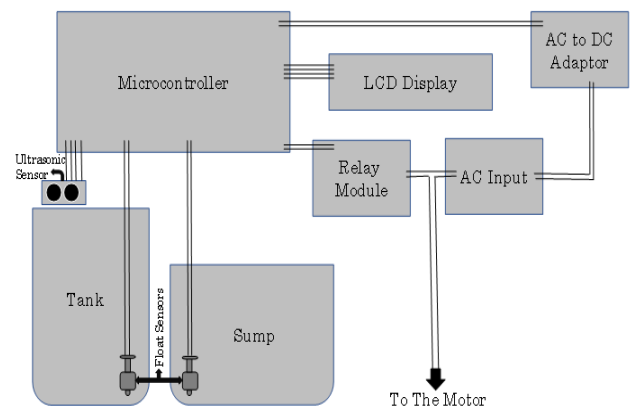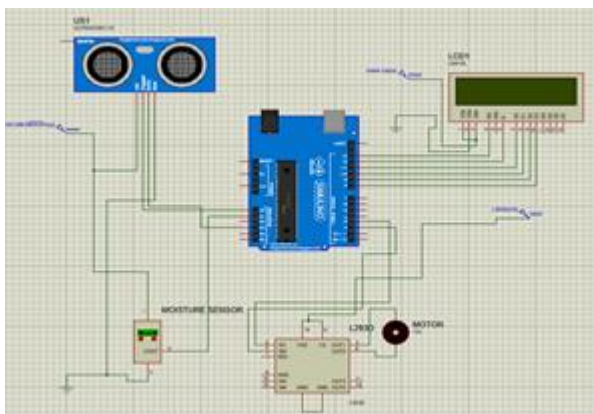
4. EXPERIMENTAL RESULTS

The automatic water level controller and indicator is very useful gadget for house hold and industrial applications. It can be used for various fluid level controls in industries etc. Following are the few advantages and applications listed. Advantages

- Easy installation.
- Low maintenance.
- Compact and elegant design.
- Users can control the required level of water in over head tank.
- Avoids wastage of water from tanks.
- It can maintain exact preset water levels.
- The system is very versatile, a numbers of tailor made variations like control of multiple tanks or multiple pumps are possible.
- Being automatic saves man power.

Applications :

- Used in buildings where the manual monitoring is difficult.

- Used in industries to control the water level and in chemical mixing etc.

- It can be installed in metro cities where the drinking water is the only water used for all purposes which keeps the drinking water from being wasted.

5. CONCLUSION

The proposed flexible automatic water level controller and indicator without any microcontroller is implemented and found working satisfactorily. The flexibility of the choice of level of over head tank while pumping the water from the underground tank is found making the distinction among the available such water level controller circuits and economically affordable. The pump operation begins only when the low level probe is sensed from the over head tank and a bypass switch can be provided to start the pump whenever required. The present circuit can be modified suitably by incorporating low cost controllers like Arduino and IOT to make it operated from anywhere and able to interact intelligently by messaging or warning.

6. REFERENCE

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