Mirai of Water Tank

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Introduction

Water is abundant yet scarce. Water conservation is need of the hour in IIT Goa as its shortage has affected the students quite often. A major reason being the overflow of water tanks , and sometimes late arrival of water tankers. Our project aims to deal with both the above problems and makes the water automation much smoother. Aim of the project is to maintain sufficient amount of water in the reservoir with the help of water level indication. We hope our project will help in sustainable use of water and decrease the water problems to their least.

As the water level in the upper tank drops below the reserve level a LOW signal is sent to the arduino and the water pump is turned on , which is connected to the arduino through Relay Switch. The pump is turned off as soon as the water level in the upper tank is at maximum. If the water level in the supply tank falls below the reserve level, there is no connection between water and the conducting wires and hence , the circuit is open. In this case , with the help of GSM , a message is sent to the hostel guard for calling the water tanker. GSM is connected to the arduino.

System Overview

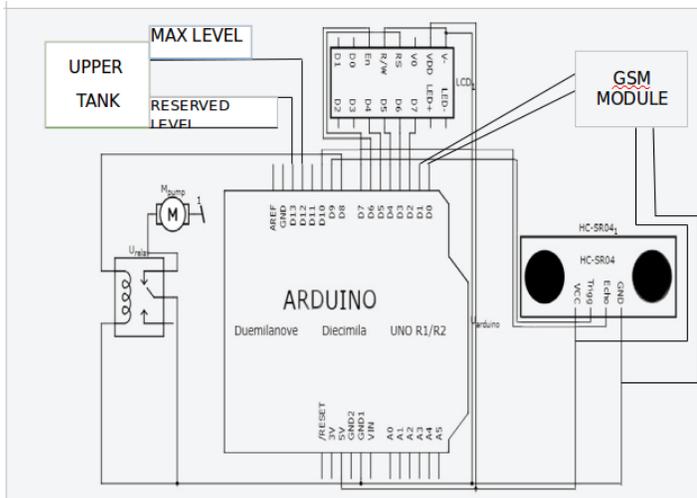A block diagram of the system is given in Fig. 1.

Fig. 1: Overall Block Diagram.

We have two water tanks (a supply tank set at the ground and the upper tank on the top). The upper tank has 2 levels marked in it – maximum and reserve. Supply tank has only one level (reserve) and two conducting wires are dropped down to that level. We also have a Ultrasonic Sensor fit at the top of the supply tank to know the water percentage and an LCD is used to display the water level of the supply tank.

Implementation Details

We know that water (not distilled) conducts electricity due to presence of some impurities in it. We have constructed logic circuits , at the maximum and reserve level , in the upper water tank and water is used to open / close the circuits. Similarly , in the supply tank when water level is above reserve , the conducting wires are dipped in water and hence the circuit is complete. The water pump is responsible for the flow of water from supply tank to upper tank and is switched ON or OFF based on the output signals of the upper tank circuits. The Ultrasonic Sensor calculates the distance of water from itself using ultrasonic waves and using this distance it calculates the water percentage in the supply tank.

Components of our setup are easily available and whole project was completed at a very low cost. Functioning of the system is automatic and no specific person is required to operate it. Water level in both the tanks is maintained continuously throughout the automation and the water pump is controlled by the output of logic circuits. Implementation was proper and we got the desired results. Our project successfully solves the introduction problem.

Results

1. We are getting Dynamic reading of water level on LCD.
2. Water tank is getting filled automatically through automation.
3. We are getting message that tank is getting empty.

References

http://www.arduino.cc/
http://www.wikipedia.org/

Conclusion

We have automated the water tank filling system and saved a lot of water from getting wasted.We are also getting the water level reading. This can be the future of water tanks, that's why we named our project "Mirai of Water tank" where "mirai" means "The Future" in Japanese.We also connected our system through GSM Module that makes it a project of IoT.