INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

Automated wastewater management using Arduino

Sahil Patil
patilsahil1002@gmail.com
Thakur Polytechnic, Mumbai, Maharashtra

Depesh Singh
depeshsingh10@gmail.com
Thakur Polytechnic, Mumbai, Maharashtra

Kartikeya Tiwari
Kartiktiwari303@gmail.com
Thakur Polytechnic, Mumbai, Maharashtra

Manish Salvi
manish.co@tpoly.in
Thakur Polytechnic, Mumbai, Maharashtra

ABSTRACT

Water scarcity is one of the major problems facing major cities of the world and wastage during transmission has been identified as a major culprit. This is one of the motivations for this research, to deploy computing techniques in creating a barrier to wastage in order to not only provide more financial gains and energy saving, but also help the environment and water cycle which in turn ensures that we save water for our future. We presented our research in embedding a control system into an automatic water pump controller through the use of different technologies in its design, development, and implementation. The system used ARDUINO to automate the process of water pumping in an overhead tank storage system and has the ability to detect the level of water in a tank, switch on/off the pump accordingly and display the status on an LCD screen. This research has successfully provided an improvement on existing water level controllers by its use.

Keywords: *Arduino, Float Sensors, GSM Module, Water Level, Pump.*

1. INTRODUCTION

In today's day to day life, the most important factor for human life is water.AS there is a scarcity of water in the world, it is very important to save this valuable natural resource. So to prevent wastage of water, technology plays a very important role. So we are making this project as a small step towards conservation of water. The project we developed is "Smart Water Level Management System Using Arduino". This project is manual as well as automatic. Our project is working towards managing water levels in the water tanks in public societies. As the water in the society tanks is wasted due to overflowing of tanks, this project will play a vital role in saving water in a very large quantity. In our project, the water levels in the water tanks are detected by using electrodes and this information is send to the higher authorities of the society using GSM (Global System for Mobile communication) module. In GSM the communication is carried out in the form of SMS or messages. In this project, user can get information about the water level of both the tanks (Upper tank and lower tank).if the tank is full then the user can switch off the pump by sending the request of PUMP OFF. Similarly he can switch on the pump by sending the PUMP ON request. The user can also the status of upper and the lower tank by sending the request UT STATUS and LT STATUS respectively

2. METHODS AND EQUIPMENTS

For the design of this hardware we have used Arduino simply link with GSM module for IOT applications, float sensors are used as water level sensors, PH sensors are used to detect the purity level of the water Power adapter to give power to circuit, pump.

3. ARDUINO NANO

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328 (Arduino Nano 3.x). It has more or less the same functionality of the Arduino Duemilanove, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one.

3.1 Arduino Pin Daigram
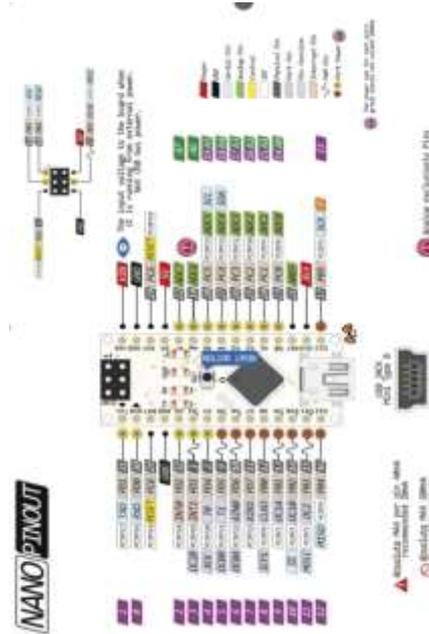
4. GSM MOUDULE

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages

5. FLOWCHART
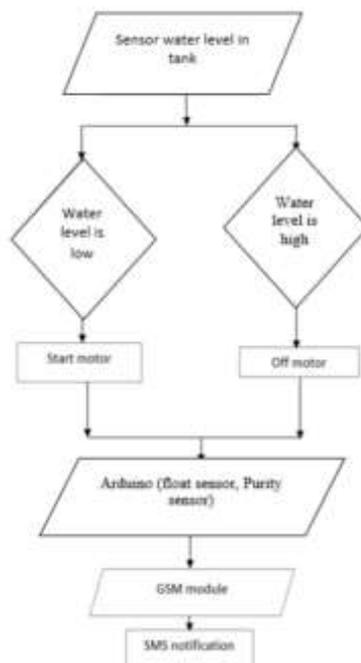
6. PROPOSED SYSTEM

In this venture the water levels in the water tanks are identified by utilizing terminals and this data is send to the higher specialists of the general public utilizing GSM (Global System for Mobile correspondence) module. In GSM the correspondence is completed as SMS. In this task, client can get data about the water level of both the tanks (Upper tank and lower tank) everything will work automatically (because of float sensor) ones the system is running. The system can be control manually like if the tank is full then the client can turn off the siphon by sending the solicitation of PUMP OFF. So also he can turn on the siphon by sending the PUMP ON demand. The client will receive an SMS from the system in the end of the day how many times the PUMP was ON/OFF, In the end of the month the client will receive an overall SMS saying the total count of the PUMPS were ON/OFF.

7. LITERATURE REVIEW

7.1 Literature Survey

The Water tank level management has been implemented by many people and in different technologies. This project is implemented by many societies by suing different modules. After lots of research, it has been found that this project has been implemented by RAHEJA CLASSIQUES CO HOUSING SOCIETY. They have implemented this project by using GSM module. The building has 20 floors. In their system, the entire system is controlled by the security guards as they are looking after the cleaning and the operation of the water tanks. The GSM module has requests for pump off and pump on. They have no provisions for current water level. The operation starts with switching on the pump at 8am by manual request sending of PUMP ON. After 45 minutes, the pump is switched off by sending the request of PUMP OFF. On the days of water shortages or water cuts, the timings are changed. The pump is kept on for just 15 minutes. If the water level is to be checked, the guards themselves have to do it by going on the terrace. This is the added feature in our project that the water level is checked by sending requests and there is no need to check it manually.

8. PROS AND CONS

This framework is helpful regarding sparing water and to keep a beware of the everyday utilization of water so the there is no overabundance utilization of it. It likewise calls attention to the pH level of the water to check its virtue level. The main burden can be the issue in the system as we require a steady system to send messages.

9.REFERENCES

[1] S. Sachio, A. Noertjahyana and R. Lim, " IOT Based Water Level Control System," 2018 3rd Technology Innovation Management and Engineering Science International Conference (TIMES-iCON), Bangkok, Thailand, 2018, pp.1-5.

[2] S. Wadekar, V. Vakare, R. Prajapati, S. Yadav and V. Yadav, "Smart water management using IOT," 2016 5t h International Conference on Wireless Networks and Embedded Systems (WECON), Rajpura, 2016, pp.1-4

[3] M. Saraswati, E. Kuantama and P. Mardjoko, "Design and Construction of Water Level Measurement System Accessible through SMS," 2012 Sixth UKSim/AMSS European Symposium on Computer Modeling and Simulation, Valetta, 2012, pp.48-53.

[4] P. P. Shah, A. A. Patil and S. S. Ingleshwar, "IOT based smart water tank with Android application," 2017 International Conference on I-SMAC (IOT in Social, Mobile, Analytics and Cloud) (I-SMAC), Palladam, 2017, pp.600-603

[5] B. N. Getu and H. A. Attia, "Automatic water level sensor and controller system," 2016 5th International Conference on Electronic Devices, Systems and Applications (ICEDSA), Ras Al Khaimah, 2016, pp.1-4.