IOT based Smart Water Supply management System

Abstract:

Water supply management system needs data regarding water storage present in Dam. Satisfying the increasing demand for water supply has been major challenge for many countries around the world. Water is one of the major requirements for human survival, conservation and management of the water resources must be given most importance. The system can measure the water level and give measurement report to the central office. This system use sensors to measure the water level of Dam and updates are provided to Corporation on daily basis.

Modules:

System View: This system uses arduino, ultrasonic sensor, water flow sensor and GSM module as the main part. The system can measure the water level and give measurement to central office.

Arduino: Arduino is a computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world.

Rotobotix Water Flow Sensor YF-S201: This sensor sits in line with your water line and contains a pinwheel sensor to measure how much liquid has moved through it. There's an integrated magnetic Hall Effect sensor that outputs an electrical pulse with every revolution. The hall effect sensor is sealed from the water pipe and allows the sensor to stay safe and dry. The sensor comes with three wires: red (5-24VDC power), black (ground) and yellow (Hall effect pulse output). By counting the pulses from the output of the sensor, you can easily calculate water flow. Each pulse is approximately 2.25 milliliters.[4] Formula to calculate water flow: Flow Rate (L/min) = Pulse frequency (Hz) / 7.5. Flow Rate (Litres/hour) = (Pulse frequency x 60 min) / 7.5Q

.GSM module: Sim800 GSM/GPRS USB Modem, Featuring an industry standard interface, the SIM800 delivers GSM/GPRS 900/1800MHz performance for SMS, Data, and Audio in a small form factor and with low power consumption.

d. Ultrasonic sensor: The ultrasonic sensor has a transmitter and receiver. It detects the object's distance by transmittting ultrasonic wave for200 us and then detect the reflection/echo wave. The time used by the wave from

transmission until reflected back and received by the receiver is the key to determine object's distance.

User Side module: Once the user side module starts up, all the peripherals are initialized. The ardunio checks for water flow if water flow is detected then one more check will be performed by the ardunio if the customer has paid the trailing months bill and only if the bill has been paid the ardunio opens the valve and starts recording the quantity water flow; after completion of 30 days the data will be sent to the data centre/ central office, this process will be in infinite loop.

Dam side module Dam side module calculates water present in dam and ends data regarding water level present to central office on daily basis. This module containing one ultrasonic sensor to sense the water level and communicates with arduino to process operations such as calculation of water present in dam and then volume data is send to central office using GSM module.