



Water Theft And Leakage Detector Using GSM Module

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Abstract:-

Water is the basic need of all living organism and human mankind, without water living is impossible. In recent days the rapid population growth causes insufficiency and wastage of drinking water which leads to scarcity of water and uneven distribution of drinking water. Next issue is that the supplied water is sucked more by individual home unit using suction pump which leads shortage of water to the remaining houses in the locality. In this paper a system has been modelled to overcome the above stated problems. The main aim of this paper is to distribute only required amount of water needed, thus ensuring there is no wastage and block in supply of water. In order to implement the proposed system each home unit must be provided with water flow sensor which is controlled by arduinouno board. Flow sensor generates series of electric pulse through which water utilize by the user, flow rate and the amount of water supplied can be calculated. Along with this arrangements a valve and relay is provided, which controls the supply of water from main tank. The main focus is to avoid usage of drinking water for domestic purpose and reduce scarcity of water in near future.

Key Words:-*Suction pump,Flowsensor,ArduinoUno,Tank.*

Need Of Project:-

As we know that in rural areas availability of water is less. In urban area when water supply is on some people uses suction pump to get more water or due to mechanical injury there is water leakage. So to stop water theft and leakage this system is useful. Using this system more water will conserve and saved for future. In India more than 30% of people live in urban areas that are expected to double in population by 2050. With a increasing economy and dynamical lifestyles the pressure on water resources used for supply purpose is increasing. Most cities in India are with lack of water, with no city having 24/7 water supply. Water is very important for human and animal life for maintain ecological balance and for economic and development activities of all kinds. Water is a fundamental need of every people everyone must save the water for the future. Water management in the cities has become a big issue due to lack of rainfall, increase in population many people are facing water problem because they don't have enough amount of water for daily needs.



Introduction:-

In India more than 30% of people live in urban areas that are expected to double in population by 2050. With a increasing economy and dynamical lifestyles the pressure on water resources used for supply purpose is increasing. Most cities in India are with lack of water, with no city having 24/7 water supply. Water is very important for human and animal life for maintain ecological balance and for economic and development activities of all kinds. Water is a fundamental need of every people everyone must save the water for the future. Water management in the cities has become a big issue due to lack of rainfall, increase in population many people are facing water problem because they don't have enough amount of water for daily needs. Management of water resource in India is importance to sustain one billion plus population. Because of improper monitoring water cannot be supplied properly, in cities some areas can get proper supply of water and the others areas may have irregular supply there is a need of continuous observing and controlling, of water supply booking and appropriate circulation. Different issues are extreme utilization, flood of tanks and spillage in pipes, interruption in the water supply in the city. For the leakage of the water pipelines there are many other process and also we have some the protocols for water leakage detection and some other for monitoring and controlling. In this paper we discuss about water leakage detection, monitoring and controlling using advanced techniques.

Components in system:-

i. MICROCONTROLLER:-

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

ii. GSM :-

SIM800L is a miniature cellular module which allows for GPRS transmission, sending and receiving SMS and making and receiving voice calls. Low cost and small footprint and quad band frequency support make this module perfect solution for any project that require long range connectivity. After connecting power module boots up, searches for cellular network and

login automatically. On board LED displays connection state (no network coverage - fast blinking, logged in - slow blinking).

iii. Liquid Crystal Display(LCD):-

LCD stands for **Liquid Crystal Display**. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons: The declining prices of LCDs .The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters. In corporation of a refreshing controller inzto the LCD, there by relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data. Ease of programming for characters and graphics. These components are “specialized” for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD. A model described here is for its low price and great possibilities most frequently used in practice.

iv. Flow Sensor:-



Water flow sensor consists of a plastic valve body, a water rotor, and a hall-effect sensor. When water flows through the rotor, rotor rolls. Its speed changes with different rate of flow. The hall-effect sensor outputs the corresponding pulse Signal.

Working:-

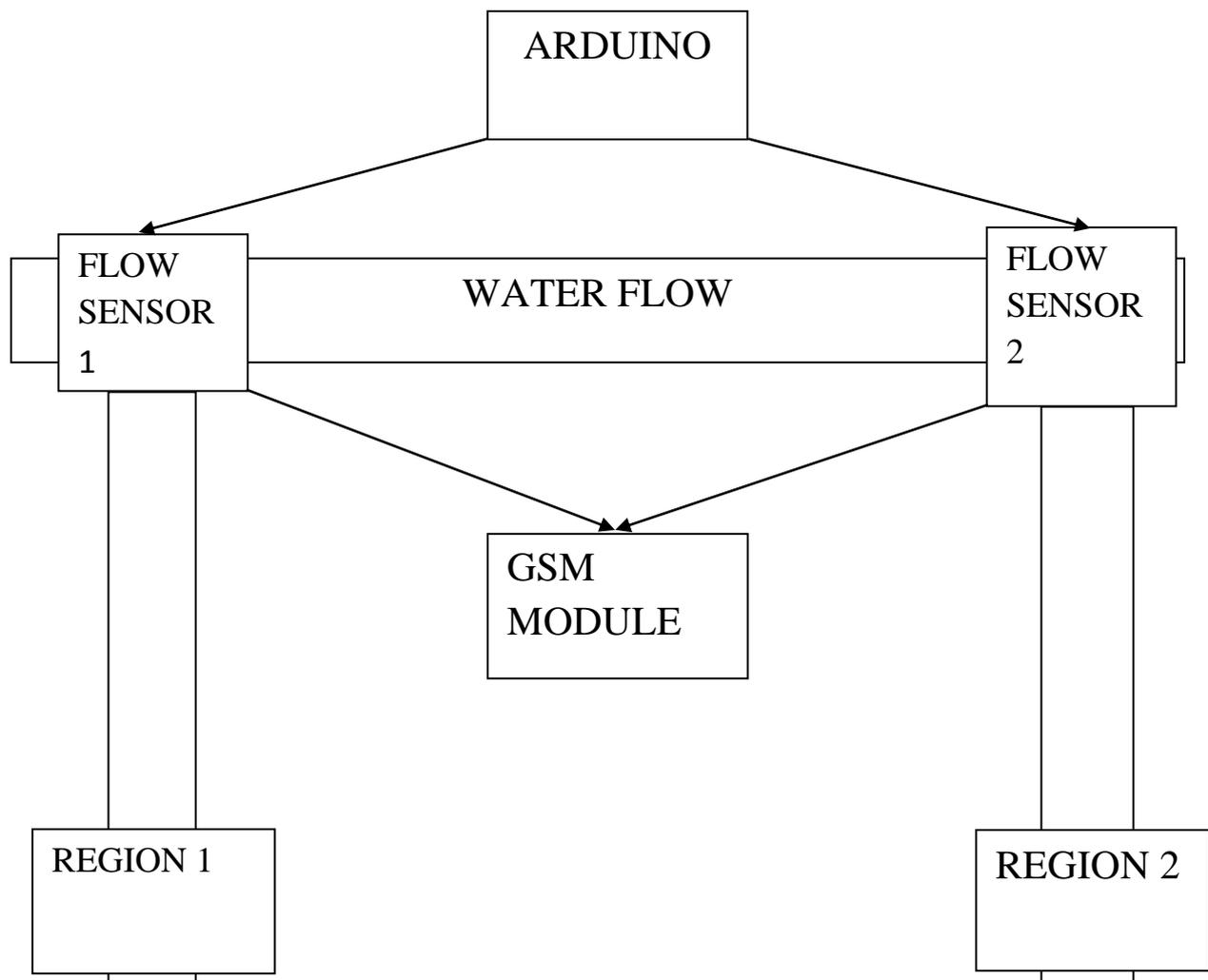
When water supply comes from the corporation by using suction pump people sucks more water or due to mechanical injury on the main pipeline more of water get wasted. For saving the for future we designed this system.

In this system we have used flow sensor, GSM module, Arduino UNO, LCD display and relay module.

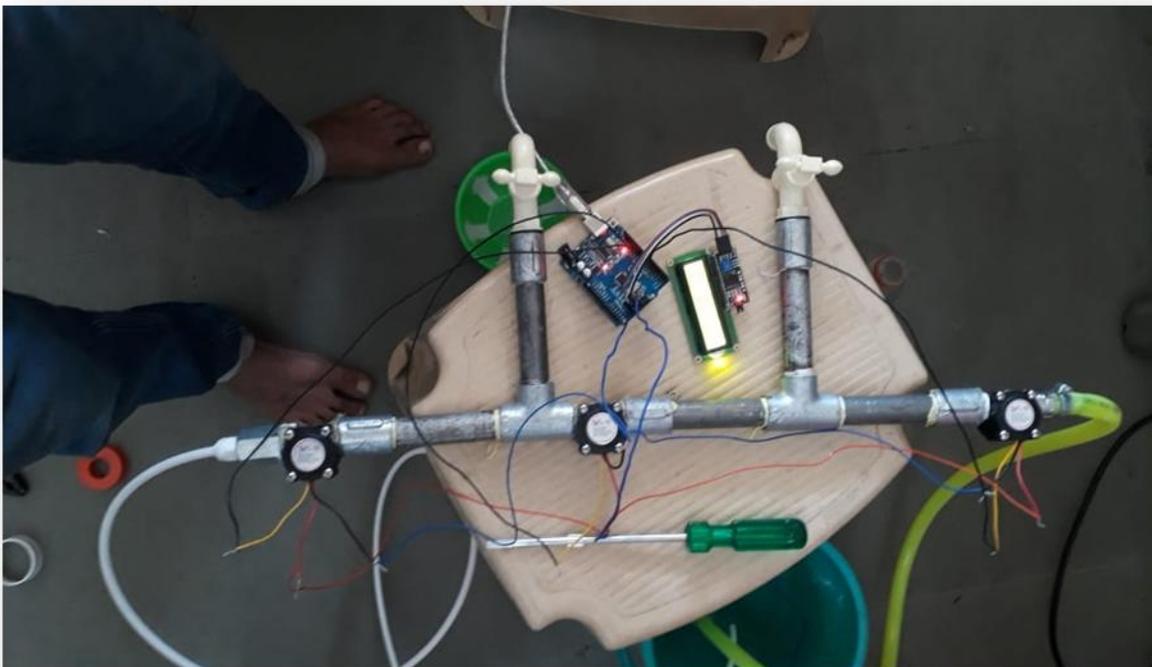
If somewhere is water theft or leaking it will immediately inform to the officer through the sms using gsm module. And flow value will display on the LCD display.

Now officer is informed about the water leakage it will send the sms to the GSM module to turn on the module due to this solenoid valve will operate and water supply will cut off and officer will check the leakage place and repair the pipeline. Due to this more water will conserve

Block Diagram:-



Photos Of Project:-





Conclusion:-

The rapidly increasing population has led to the need for innovative method to manage water supply system. In the proposed system the fixed amount of water is supplied and when it reaches the particular limit it blocks supplying the water. The automated distribution water supply monitoring system ensures proper water supply, avoid wastage of water, and cost efficient. Flow sensor overcomes the basic limitation such as less accuracy and human error. It supplies the fixed amount of water with appropriate quality and quantity at correct time. The future work can be automated billing system and inclusion of GSM module for billing and maintaining the quality. The optimization technique can be used for complex pipeline system and overcrowded area.

Future Scope:-

This system is useful for safety purpose also this can be implemented in where liquid is transport through pipeline such as oil refineries , petrol pump , gas station . this system can be implemented by corporation to supply water through pipeline. Due to this more water will conserve and in rural areas people will get more n more water. In future work the system can be modified using SCADA along with PLC. So that it is possible to inspect and overcome fault in whole system from main control units. SCADA gives graphical interface which will be beneficial for the unskilled operators to understand and stores data for the future use. Field device can be interfaced with PLC using various wireless communication technologies. By using this system quality of water can be maintained as advanced automation using PLC and SCADA.

Advantages:-

- Using this system more water will conserve
- Water theft will stop
- In rural areas people will get more water

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- Water will conserve and it will send to the rural areas

Disadvantages:-

- High initial cost for material and installation

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