SMART WATER SYSTEM

Definition:

- Smart water management systems can provide a more resilient and efficient water supply system, reducing costs and improving sustainability. High-technology solutions for the water sector include digital meters and sensors, supervisory control and data acquisition (SCADA) systems, and geographic information systems (GIS).

Abstract:

This paper represents an IoT (Internet of things) based smart water quality monitoring (SWQM) system that aids in continuous measurement of water condition based on four physical parameters i.e., temperature, pH, electric conductivity and turbidity properties.

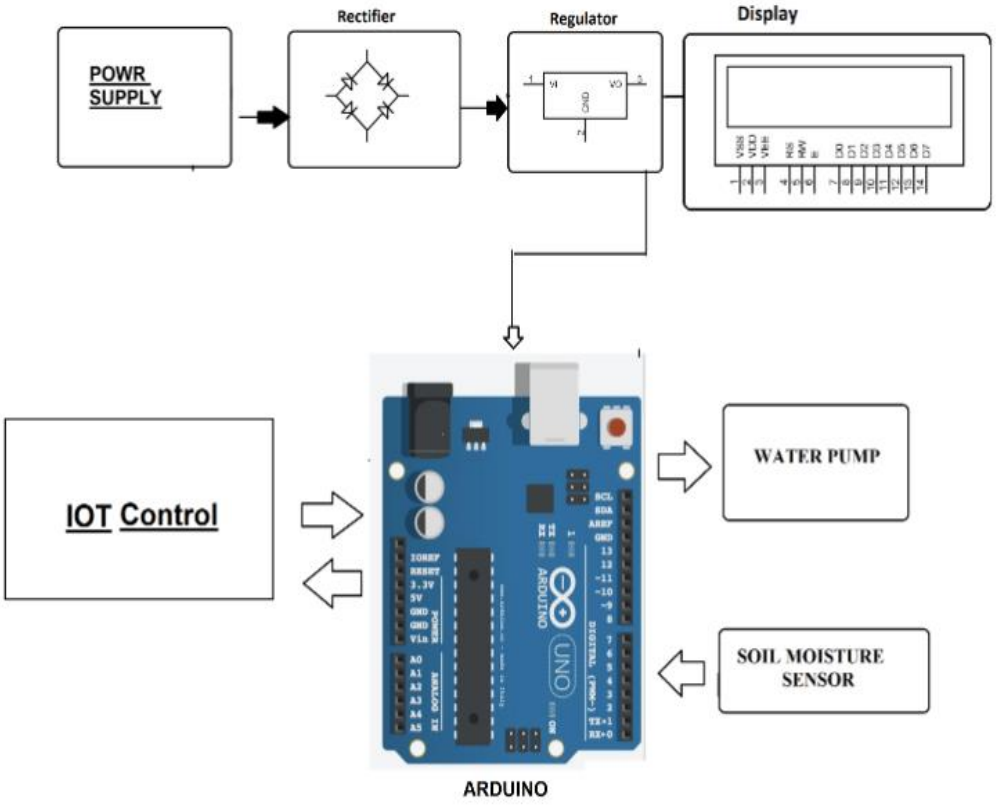
A serious drop in ensuring the water quality in the distribution system is a factor that affects public health. This could lead to increase in biological and non-biological contents, change in color and odor of the water. These contaminants cause a serious threat to the whole water ecosystem. The conventional methods of analyzing the water quality requires much time and labor. So, there is a need to monitor and protect the water with a real time water quality monitoring system in order to make active measurements to reduce contamination. The growth of the technology had helped in developing efficient methods to solve many serious issues in real time. Internet of things (IoT) has achieved a great focus due to its faster processing and intelligence. This paper focus on discussing the architecture, applications and need of IoT in water management system.

Problem statements:

- The main conclusions drawn from this study can be summarized as follows: The lack of consensus in the definition and architecture of a smart water system and metrics of intelligent water system assessment is hindering the process of smart techniques entering the water sector.
- The implemented system was very basic in nature consisting of IoT devices using sensors for water level monitoring in a smart home. In 2017, Malche et al. presented an IoT based system for water level monitoring for the smart village. The main objective of the proposed system was to monitor the real-time water level from a distant location.
- Water management is possible primarily by real-time monitoring of water level and quality. Real-time water level monitoring can significantly reduce wastage of water due to overflow from tanks. The water management system can also help detect water leaks in a smart home by analyzing water levels during different hours of the day.
- The main problem with the IoT is the storage system. A typical IoT device can accumulate thousands of data, thus a large storage systems needed. Notification on

how to use push is also a topic of discussion. When to alert user based on the water status is also a problem that needs to be solved.

BLOCK DIAGRAM:



Problem Solving Solution:

Smart water management has become possible thanks to progress in the IoT (Internet of Things) sphere. Today's systems typically include a series of IoT sensors and microcontrollers that help gather data related to water quality and the state of equipment.

Using IoT in water management brings a wide range of advantages and new opportunities.

- ***Real-time water consumption analysis.*** Sensors can capture precise data and send it to the user's dashboard. This information can be used to detect patterns in water consumption and to analyze water use in separate regions.
- ***Remote monitoring.*** With the help of IoT solutions, water authorities can execute high-quality monitoring and make the best use of their human resources.

- ***Predictive maintenance***. Failures in the water supply chain or technical problems like pipe breaks can lead to financial losses and other serious consequences. But smart water systems can track factors that indicate the technical state of the equipment. If there is a deviation in patterns, relevant authorities and organizations will receive a notification and be able to address the problem in a timely way.
- ***Feasibility of using water resources.*** Thanks to smart water management systems, it is possible to track when and how water is used and control its consumption. This point is especially relevant in farming, where smart irrigation tools are widely applied.

Conclusion:

smart water technology offers transparency and enhanced control to the entire water supply chain including a freshwater reservoir, wastewater recycling, and a lot more.

smart water management can be monitored in real-time from any part of the world using a combination of portable sensors, digital computer devices, communication media (e.g., TCP / IP protocols), and Internet services. The IoT-based Smart Water Level Monitoring System solves many problems with aesthetics.