

SMART WATER MANAGEMENT

Phase 1 Submission Document

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Abstract :

Water is the most important need for all living beings. This paper helps to regulate the proper maintenance of water tank using IOT. Water management problems such as water usage, overflow in the water tank. To overcome this problem by implementing proper monitoring and information updation system. Ultrasonic sensor is used to indicate the level of water in real time. When the water level falls below the threshold level the motor will automatically ON. Temperature sensor is used to sense the temperature in the water tank. Water flow sensor is used to know the usage of water liter per hour. By using ESP8266 WI-FI module the data is recorded in real time and updated in cloud.

Description :

Smart water monitoring is an innovative system designed to efficiently and intelligently manage water resources by utilizing advanced technology and data analysis. This system encompasses a range of sensors, devices, and software solutions to collect, process, and analyze data related to water quality, consumption, and distribution. Here is a detailed description for smart water monitoring:

1. Sensors and Data Collection:

Smart water monitoring relies on a network of sensors and data collection devices strategically placed throughout a water supply system. These sensors are capable of measuring various parameters, including water quality (pH, turbidity, chlorine levels), flow rates, pressure,

temperature, and even leak detection. The data collected from these sensors is continuously transmitted to a central data repository.

2. Real-time Monitoring:

One of the key features of smart water monitoring is real-time data acquisition. The system provides constant updates on the status of the water supply, ensuring that any anomalies or issues are detected immediately. This enables rapid response to potential problems, such as leaks, contamination, or supply disruptions.

3. Data Analytics:

Advanced data analytics and machine learning algorithms are used to process the massive amount of data collected. These algorithms can identify patterns, trends, and anomalies in water usage and quality. This information can help utility providers make informed decisions, optimize distribution, and conserve resources.

4. Remote Control and Automation:

Smart water monitoring systems often include the capability to remotely control various aspects of the water supply, such as adjusting pressure, opening and closing valves, and initiating emergency shutdown procedures. Automation reduces response times and improves the overall efficiency of water distribution.

5. Leak Detection and Prevention:

The system's ability to detect leaks and irregularities in the water supply network is a crucial component. By identifying leaks early, the system can prevent water wastage and potential damage to infrastructure, thereby saving resources and reducing operational costs.

6. Water Quality Management:

Monitoring water quality in real-time allows for early detection of contaminants, ensuring the delivery of safe and clean water to consumers. Any deviations from established quality standards can trigger alerts for immediate action.

7. Customer Engagement:

Some smart water monitoring systems offer customer-facing interfaces, allowing end-users to track their water consumption, set usage goals, and receive notifications about any unusual consumption patterns. This promotes water conservation and empowers consumers to make informed choices.

8. Sustainability and Resource Management:

Smart water monitoring is a valuable tool for promoting sustainable water management practices. By reducing water losses, improving distribution efficiency, and enhancing water quality, it contributes to environmental conservation and resource preservation.

9. Cost Savings and Operational Efficiency:

Water utilities and municipalities benefit from reduced operational costs through minimized water loss and improved maintenance planning. Smart water monitoring enables data-driven decision-making, optimizing resource allocation and budgeting.

10. Environmental Impact:

Implementing smart water monitoring can have a positive impact on the environment by reducing unnecessary water consumption, energy use, and the release of greenhouse gases associated with water treatment and transportation.

Conclusion :

According to this system, proposed architecture becomes more autonomous with quick transmission of data by using IOT. The main advantage in IOT is, even when clients are not in the node network, data will be sent, whenever a client is connected with that node, they can able to see the data which has been sent already. Smart water management can reduce the overflow of water in tanks and provide the usage of water in liter per hour in real time. This system is cost effective. This enables the efficient use of water. Thus it reduces the wastage of water. This project can be further enhanced by using the results of this present project. The turbidity sensor is placed in the water tank to know quality of water which is helpful to know that chemicals in the water. The PH sensor is also placed in water tank to know the nature of water in tanks in which is suitable for drinking or not for living beings in real time by using IOT.