

# IOT CONTROLLED WATER SUPPLY MANAGEMENT FOR SMART CITY CONCEPTS

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**Abstract** - The system shown here is IOT (Internet of Things) based solenoid operated valve system, which can effectively control the water supply system. The microcontroller is programmed which communicate with IOT protocol and connect with Ethernet or WIFI shield to operate the solenoids at particular time interval at particular areas the control room person has to operate the overall operation using android application from an android mobile. As per the requirement the main pump operates and a microcontroller even turns on the particular area solenoid also, the water now flows through solenoid and supplies the water to particular area. After the required timed operation the next area solenoid will goes to trigger by the same procedure.

**Key Words:** Water controlling, Water distribution, IoT, cloud computing, Water management, water flow sensor, Solenoid, Microcontroller.

## 1.INTRODUCTION

As per the survey in recent, urban areas face problems in distribution of water due to the increase in population. For the daily requirement several communities suffering with insufficient supply of water. The major problem in the water management is no proper controlling and monitoring in the distribution of water. Not all the areas in the city facing the insufficient water distribution problem only few areas are facing this. This is because of some issues in the supply of water line like breakage in the water pipeline, this breakage causes because of minimum water pressure or high pressure due to this reason water cannot supplied to the far area's water tank. All these problems are because of improper real-time controlling and monitoring technology and also because of its traditional and manual technology.

Today, urban areas are currently changing and begun to adjust smart advancements for feasible areas. As they take an interest for financial progression and offices that expansion to their energy, water is a need in their agendas [1]. Making water manageability an approach is required which is multidisciplinary. It additionally needs good state of art to work with the activity and the executives particularly in gathering and dissecting information to start an activity for management in smart way, arranging and making decisions. The proceeds with improvement in

the city like development of business structures, regions, private houses and foundation of business, water supply is most in need. Presently, to proceed in growing their inclusion to give the requirements of the local area and giving the required measure of water every day for the buyers is a big deal.

The helpless instrument in observing and keeping up water conveyance is the issue of administration because of its activity which is manual that where human intercession is needed. As per Mr. Moises P. Pascual, Water Utility Management and Development Officer, in a meeting directed, observing of offices is as yet in a manual activity. It requires 2 administrators to be conveyed in each station of pumping however because of absence of labor, 1 administrator manages two stations of pumping that cause upkeep and observing risk. Hence, this examination is too timely due to it giving reasonable local area is one of the city's needs.

### 1.1 Literature review

IOT is considered as a wireless network which is dynamic architecture which integrates several solutions and interaction methodologies to allow communication among the objects/things and people [8]. For the improvement of several uses for urban cities many opportunities are improved by this remarkable methodology. For example, for the real time updates from the system of water supply IOT is utilized for controlling and monitoring the supply of water in management of water. This works can be analyzed with several updated works the review of literature on the utilization of IoT methodologies of the managing of water, this is confirmed. Therefore large works on this technique are engineered works they mainly concentrates on the IOT architecture to estimate few possibilities on the development. Other works are discussed with the data, which are collected from the sensors.

Through the big data methodology they not able to display the proper response time in the system of water to detect the patterns like leakage of water. In practical life situation the estimation should provide the real time outcomes. Or else it becomes very much delay to consider the required operations to manage the system problems of supply of water.

To prevent the unpredictable problems in the system of water supply effective techniques should be considered to operate and control all these systems in real time. To handle the undesirable scenarios system of water supply needs flexibility. Meanwhile it is required to keep control strictly with regard to the policies on operational and strategy, which are from the companies of water management. In this project, we will develop IOT dependent water quality monitoring system that monitors the water quality in real time. Parameter of quality of water is estimated by the sensors which are in this system. For the intention safe supplying of drinking water with its quality must be analyzed in real-time this new IOT methodology can be innovated

### 1.2 Problem statement

Several usable architecture systems are utilized in urban areas due to the cost of management, investment, and complexity are high. In the years ahead, it is normal that urban areas and other metropolitan places will experience asset circulation challenges related with an increment in populace stream, energy issues because of the exhaustion of petroleum product assets, expanded speculation overheads, spiraling support and the high costs because of maturing framework and inappropriate land asset usage, among others. Creative and new practical frameworks are fundamental to limit the effect of these eminent challenges.

In view of the setting introduced hitherto, the arrangement of spotless and reliable water establishes a vital region for the working of metropolitan frameworks. Fast urbanization, neediness and metropolitan rot, feeble political initiative and administration, lacking and insufficient foundation, under venture and estimating issues, are among the key, and commonly re-implementing factors that encroach upon a city's water the executives framework. The effects of environmental change and other ecological stressors, eventually increasing water with the high challenges, and obliging the accessibility and the nature of metropolitan water assets, additionally exacerbate these elements.

### 2. PROPOSED SYSTEM

The proposed methodology for IOT controlled supply of water management for smart city concepts is represented in below figure.

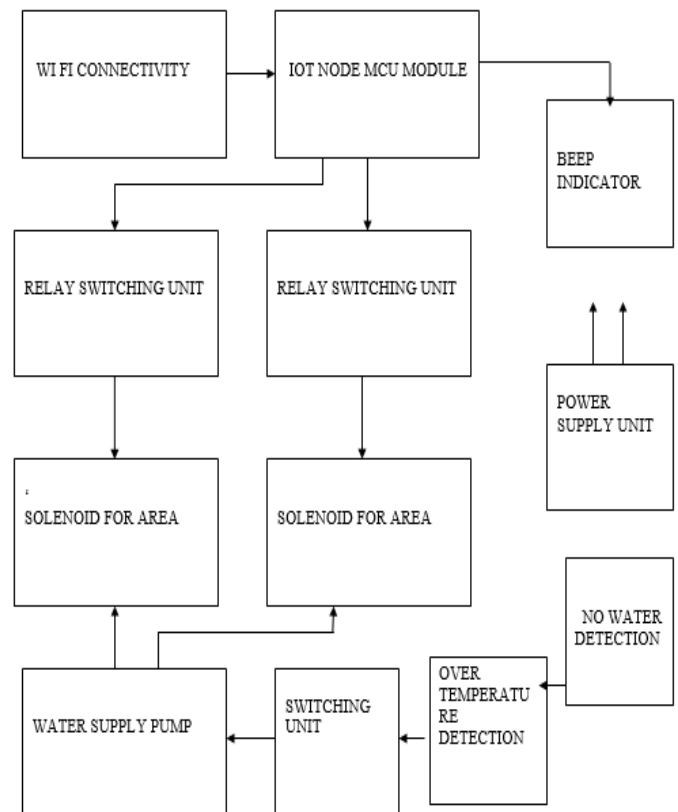


Figure 1: Block diagram of IoT controlled water management system

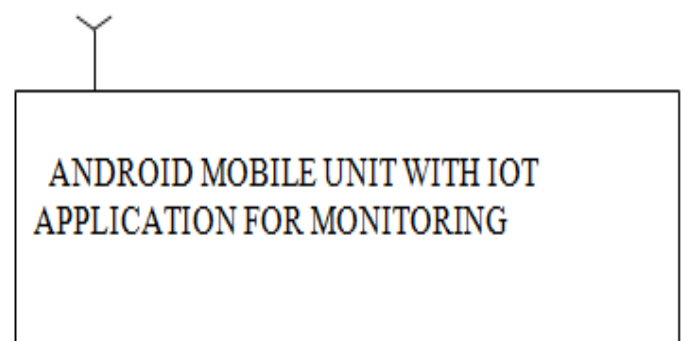


Figure 2: Android mobile unit

This system utilizes IOT (Internet of Things) dependent solenoid processed valve system which is able to efficiently control the system of water supply. Programmed microcontroller communicated along with IOT protocol, which gets connected to the Wi-Fi or Ethernet shield to perform the solenoids at certain region and certain interval of time.

To operate the complete process control room person utilizes android application by a smart phone. According to the necessity pump functions and some region of the solenoid turned on by microcontroller and now through the solenoid water starts flowing and supplying water to

the respective regions. Next region of the solenoid gets trigger from the similar operation after the needed timed process.

### 3. RESULTS

#### 3.1 No water detection

When there is no water flow or required level of water, it is detected by the system and notified through Blynk android app.



Figure 3: Snapshot1 of Blynk android app

#### 3.2 Fault in pump detection

Fault in the pump over heating is sensed by sensor in the system and notified through Blynk android app.

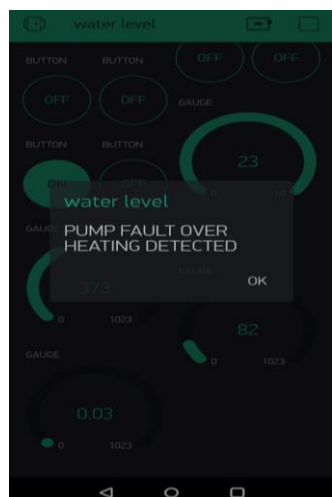


Figure 4: Snapshot1 of Blynk android app

### 4. CONCLUSIONS

By developing new technique there are several advantages to the public and government. By utilizing IOT controlled supply of water management system, it regulates water utilization by decreasing the wastage, for the water supply it minimizes the human involvement in it, and also it provides water supply effectively to public this can helps to the government in water management. Here, by utilizing various circuits an automated supply of water system is innovated developed successfully.

This model is developed with some advantages, which is its reliability, minimum cost, and automatic control. This innovated model benefits the people to obtain accurate quantity of water with no wastage. By utilizing the android application from any place level of the water is able to monitor spontaneously. This model is innovated with full smart automated here automatically motor is able to controlled.

Wastage of water can be prevented and effective water supply can be achieved effectively for all region by utilizing this technique. By utilizing minimum manual power controlling of various time intervals program modification can be achieved effectively.

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