



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 6, June 2017

A Survey on “Water Monitoring System”

Pragya Jain

M.E Student, Dept. of E & TC, MITCOE, Pune University, Pune, India

ABSTRACT: Water auditing is an emerging method of increasing accountability for water utility systems. Auditing simply means keeping the record of how much you have and how much you have used out of it. Our system will be able to keep record of how much amount of water has been used from the tank and also it is able to show the time. At what time how much Quantity of water has been used by the other tank which is a household tank in our system. The data can be viewed remotely with the help of IoT using the cloud platform. We do not have to present physically near the whole setup. It is an application of IoT.

KEYWORDS: IOT, International Water Association (IWA), American Water Work Association (AWWA).

I. INTRODUCTION

Water Audit comes into picture in late 80s to overcome a drought related problem, shortage, leakages and losses. The goal of an audit is to express an opinion on the person / organization / system etc., in question, under evaluation based on work done on a test basis. Water audits provide a rational, scientific framework that categorizes all water use in your system. It is a tool to overcome drought related problem, shortage, leakage and losses. International Water Association (IWA) / American Water Work Association (AWWA) initiated a large scale effort to assess reduced above related problem with the help of audit. Water audit is most effective tool for water management. With the help of water audit, we identify and quantify what steps can be taken to reduce water use and losses. Water audit and its analysis which can solve not only many water related problem but also saves precious resources and public money. Just as business routine, bank prepares statement of debits and credits for their customers and provides a statement of money, which owes into and out of accounts. Water audit displays how quantity of water flows into and out of the distribution system and to the customer. Yet, as essential and commonplace as financial audit are to the world of commerce, water audits have been surprisingly uncommon in public water supply throughout most of the world.

A portion of the total water use is leakage, some of it is due to inaccurate metering, some of it is unauthorized use, and some of it is water delivered to customers. A water audit determines where the water ends up and how much of it got there. The level of detail in the water audit will vary based on the information on system that is available. All water systems lose some amount of water for a variety of reasons. There are no accurate statistics for how much water is lost. Water loss costs money, paid by the system and customers. Utilities cannot reduce their water loss to zero. Some water loss is unavoidable, and it is not worth the expense to try to eliminate every drop escaping your system. However, most of the loss that occurs in water systems can be better managed by using a water audit. Managing a water utility is similar to managing any other business. In India, the land, water resources and population are 2.4 percent, 4 percent and 16 percent respectively of those of the globe. On an average the 50 percent of rain fall is within 15 days and in less than 100 hr, and this water is used for 365 days. The present water availability of India is 1820 m³ per capita per annum reduces from 6000 m³ per capita in 1947. In the context of prevailing scenario, the water audit becomes an inevitable activity in India and in World. Thus it is a tool to identify public money wastage due to the water loss, unauthorized connections as an advantage over the optimized use of water resources with environmental protection.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirccce.com

Vol. 5, Issue 6, June 2017

II. RELATED WORK

A. Water Conservation

The concept of water conservation and managing water as a resource gained popularity in the 1950s when the President's Water Resources Policy Commission published: *A Water Policy for the American People*. The report emphasized management and conservation of water in order to protect the country's development. At the time of the report, conservation was defined as the reduction of water use and water loss. More recently the term refers to an effort to reduce water use by improving the efficiency of water services. As it has become increasingly apparent that water is a scarce resource, and as urbanization and growing populations have placed increased demands on this resource, emphasis has been placed on improving resource use. The current water conservation strategy is commonly referred to as demand management, a method of conservation which aims to minimize the overall demand for water. It has been recognized that demand management programs are among the cheapest, least resource intensive and sustainable methods of water conservation. Various types of demand management programming include: increasing system efficiency, promoting reuse, substituting resource use, increasing end use efficiency and improving consumer education. The latter two subjects, increasing end use efficiency and consumer education is particularly relevant to this discussion. Increasing end use efficiency includes developing strategies so that consumers use less of the resource for the same purpose. Consumer education focuses on teaching users about the scope of their water use and the full cost of their resource use rather than simply the price charged. This includes comprehensive education about the environmental impact of water use and a detailed water analysis (i.e. a water audit).

B. WATER AUDITS

In the 1930s through the 1960s water professionals viewed water conservation as the establishment of a reservoir to capture runs that would otherwise flow into the ocean or an otherwise unusable body of water. In the 1970s that perspective changed and water professionals became aware of the importance of minimizing waste water in order to protect a limited resource. Long term water conservation became the focus, emphasizing: Water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies. It is out of this type of conservation effort that demand side management developed to practically reduce water waste in homes. The public perception of water conservation typically centres on water restrictions due to drought, which is a short-term drought management tool. To expand this perspective conservation groups stress that the primary incentives for undertaking efficiency programs also include reducing demand in order to extend water supply, or to reduce customer cost.³² Most utility-sponsored programs expand on this by emphasizing long-term improvements in efficiency while maintaining quality of life standards. Regardless of the approach, conservation programs are designed to answer questions such as: The purpose of such programs is threefold: to enhance quality within operations and management systems, to reduce environmental impact, and for broad communication.

Community benefit includes environmental justice, fewer social equity issues, creation of water conservation jobs, and customer savings. Within the United States demand management strategies have included water audits, which came at a time of increased interest in water conservation due to multiyear periods of drought across the country in the mid-1900s. Water suppliers have been delivering water to households for almost 200 years, making these old systems subject to large water losses due to leakage. Thus, the idea of conducting a water audit was originally developed to ensure efficient delivery of drinking water from the treatment plant to customer's homes and businesses. Over time that idea has been applied to investigating the water delivery systems within individual homes, in order to determine more efficient ways individuals can manage their water use. Conservation efforts have been successful in lowering customer demand for water via the implementation of water efficiency measures such as low flow toilets and water aerators. The auditing process quantifies water consumption and water losses that occur in a system. Although, what is meant by the term audit is clear, how an audit is performed is not clearly defined. While it is an examination of a system to check for accuracy, indicating different ways that customers use water, how this is done varies according to the group that is conducting the audit. Audits may be conducted as online self-evaluations based on general information, or they may be

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirccce.com

Vol. 5, Issue 6, June 2017

site-specific investigations conducted by professionals. Utility companies often provide residents with inserts in their water bills, informing them on how they can conduct a home leak-detection themselves. Most audit programs are offered by water utility companies and are instituted after a period of sustained increase in water consumption as an alternative to expansion.

III. PROBLEM STATEMENT

Water Monitoring System, a system which identifies the amount of water usage. It reduces wastage unnecessary use of water. It will lead to Proper Management of Water distribution so that the water wastage must be restricted. Here we make use of Wi-Fi network, the 2nd most widely deployed network after the cellular network.

IV. PROPOSED SYSTEM

A water monitoring determines where the water ends up and how much of it got there. The level of detail in the water audit will vary based on the information on system has available. All water systems lose some amount of water for a variety of reasons. There are no accurate statistics for how much water is lost. Utilities cannot reduce their water loss to zero. Some water loss is unavoidable, and it is not worth the expense to try to eliminate every drop escaping your system. However, most of the loss that occurs in water systems can be better managed by using a water audit. Managing a water utility is similar to managing any other business. Thus, in this Project we Provide a breakdown of the how, when where water is used. It is very much helpful in order to reduce wastage & unnecessary use of the water. It will lead to Proper Management of Water distribution so that the water wastage must be restricted.

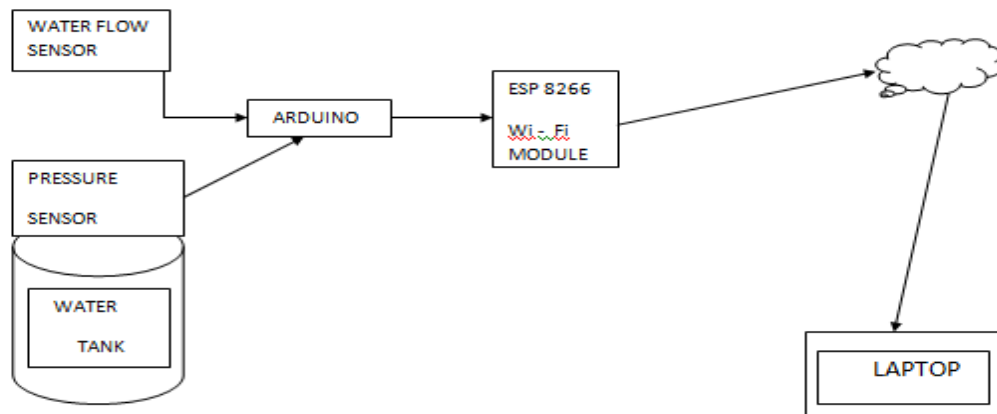


Fig. Implementation of proposed system



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 6, June 2017

V. RELEVANCE

The world water resources are finite but exist on a planet with a constantly growing population. But, as our populations continue to grow and shift, the availability of quality water resources is in decline. Water audits provide a rational, scientific framework that categorizes all water use in your system. It is a tool to overcome drought related problem, shortage, leakage and losses. Although some of these devices can be quite effective in reducing consumption when properly used. In addition conducting water audit often results in various ancillary benefits to a water utility including increasing in the revenue to the utility by introducing slabs within uses of various sectors, by giving concession rate on reduced consumption & giving subsidies for reuse water use and rainwater harvesting.

VI. CONCLUSION AND FUTURE WORK

Water is the most useful element on earth surface. The sources of water are very limited. It is very much essential that the available water should be use very effectively. The proposed system will monitor the amount of water usage so that the unwanted usage of water must be avoided. With the help of IoT we are monitoring the water usage. The importance of the system is that we are monitoring the water usage remotely. The system can be extended to apply in a big place where the water wastage must be avoided.

REFERENCES

1. Liemberger R., Brothers K., Lambert A. McKenzie R., Rizzo A., Waldron T. "Water Loss Performance Indicator" pp 1-10 (2011),
2. Lambert A.O, Brown Timothy G., Takizawa M., Weimer D "A Review of Performance Indicator for real Losses from Water Supply System" IWA/AQUA, pp 1-14(2010),.
3. Kunkel George "Evaluating Water Loss and Planning" Manual Chapter-4,pp 35-49 (2007),.
4. Holmes Matthew "Water Use Auditing ,New Mexico Rural Water Association", pp 1-20 (2015), .
5. Fanner V.P, Sturn R., J.Thornton " Evaluating Water Loss and Planning Manual," Chapter -7, pp 75-93 (2014).
6. Rathi Dinesh, "Water audit in National scenario National conference on water management conservation and sustainable development, Abstract Vol 1, pp 26-27(2014).
7. Md. Arafat Hossain, Student Member "Lab-in-a-phone: Smartphone based Portable Fluorometer for pH Measurements of Environmental Water" IEEE Sensors Journal, 2014.