Smart Water Flow Control and Monitoring System

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Abstract -Water wastage is a global problem. It requires continuous monitoring to prevent the wastage of water. One of the reason for this to happen is the unawareness of public and administration. Various types of water monitoring system are available but the controlling has to be done manually in it. This project is concerned with the efficient management of the water. The Project aims at designing smart system for controlling and monitoring of water discharge. The System is designed using Arduino which allows the water to discharge from the pipe in a controlled manner. At the transmitter end, the quantity of water 'q' to be discharged and the time 't' to complete this task shall be given as the input to the system through keypad and is displayed on the LCD screen which are connected to Arduino. The data is transmitted to the Arduino which is present at the receiver end, wirelessly through XBee. The data received is compared with the code which is written using Arduino programming. The water flow sensor is interfaced with the Arduino and according to the code, the required amount of water is made to flow through the pipe. This project has successfully overcome the problem of control of water discharge.

I . INTRODUCTION

Water is one of the most precious and irreplaceable natural resources available on earth. It needs to be managed carefully and efficiently, to be preserved for the coming generations. Water is one of the prime elements responsible for life on earth. Water circulates through the land just as it does through the human body, transporting, and dissolving, replenishing Nutrient sand organic matter. There are a couple of electronic flow measuring devices based on hardware sensors available in markets but software application have not been developed. Water management is a very delicate issue and needs to be dealt with at most care. This project is concerned with the efficient management of the water automatically.

The significance of this model is to control the flow of water to suit predefined specifications. The main objective of this project is to develop a flow control device.

II. LITERATURE REVIEW

Kuganesan Kumar, MoaminA. Mahmoud[1]In this paper, they have developed an online Mobile app that monitors and controls the water flow through taps whenever there is an unusual Reading of the water usage at home. The developed App enables a user in monitoring and Controlling the water flow at home via an online mobile application's graphical user interface (GUI).This makes the monitoring process more efficient and convenient for house owners.

Rasin,Z.;Hamzah,H.;Aras,M.S.M [2] resolves the problem of the manual analytical method Adopted in water flow detection with bad real-time character, this paper introduces a remote Water flow measuring and monitoring system. It has used wireless sensor network based on the ZigBee to realize the water quality parameter remote probing and the real-time monitoring Smart water flow control and monitoring system 2017-2018.

Zulhani Rasinand Mohd Rizal Abdullah[3].In this paper, the application which is particularly Used for wireless networks, specifically a water equitable distribution and monitoring system is Been used. A possible communication system for the water equitable distribution and monitoring The quality, and describe our channel measurement approach is proposed.

Ejio for VirginiaEbere, Oladipo Onaolapo Francisca [4] the microcontroller for the automatic Water level monitor with feedback, having passed her necessary tests with the other components interfaced to it, is here by presented. With this implemented system, it is possible to monitor the water level in an over-head tank, switch on the water pump when the tank is empty and switch off the same pump when the tank is full without any need for human intervention. By so doing, the incidence of water wastage is eliminated and abrupt cut-off of water supply is equally also eliminated.

T.Deepiga, A.Sivasankari[5] this paper is about developing an efficient wireless sensor network (WSN) based water monitoring system. Three different ways to monitoring the water such as water level monitoring, water pollution monitoring and water pipe line leakage monitoring. Finally the is water monitoring system of smart homes/office research concept will be completed by using wireless sensor technology.

FrankA. Richerand[6]The system will consist of monitors in tandem or as required working in Conjunction with inter face probes reading in multiple locations, and diversion valves directly Operated based on the output of the interface probe sand monitors. The probes relay the water Interface location at multiple locations throughout the process and send that data to a Programmable Logic Controller (PLC)

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III. METHODOLOGY

The block diagram is shown in the figure 1.1. From the block diagram, the process is divided into two parts-transmitter and receiver section. At the transmitter end, the quantity of water 'q' to be discharged and the time 't' to complete this task shall be given as the input to the system through keypad and is displayed on the LCD screen1 which are connected to Arduino 1. The data is given to Xbee to transmit the data wirelessly by the Arduino 1. The data is transmitted by the transmitter Xbee. Further the data is received by the Xbee which is at receiver part. The data received is given to the Arduino 2 and compared with the code which is written using Arduino programming. Arduino 2 and water motor are connected through Relay in order to eliminate the excess power consumption. The water motor pipe is inserted in the water flow sensor. The water flow sensor is interfaced with the Arduino 3 and according to the code, the required amount of water is made to flow through the pipe. The flow rate is displayed on

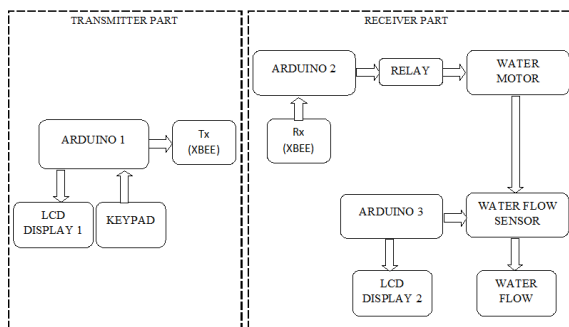the LCD screen 2. This project has successfully overcome the problem of control of water discharge.

Figure 1.1: Block Diagram

IV . EXPERIMENTAL RESULT

This project has successfully overcome the problem of controlling and monitoring the water by making the process automatic. Thus wastage of water is prevented.

CONCLUSION

Designed a smart system capable of controlling the water automatically. This project is of low cost and the efficiency of the project is more compared to the previous methods. Using this project, automatic controlling and monitoring the flow of water is done. Thus, required amount of water is discharged. Same methodology can be implemented in case of any fluids in the industries. The disadvantage of the previous systems, that required manpower was eliminated. This real time project represents a solution for easy and automated management of water which helps in preventing wastage of water.

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