Automatic Water Distribution And Smart Charge Using GSM Module

Santhosh.M[1], Poorani.S[2], Vanitha.M[3], Pavithra.R[4], Bernard rayappa.A[5]
[1, 2, 3, 4, 5] Department of ECE
[1, 2, 3, 4, 5] Jansons Institute of Technology, Tamilnadu, India

Abstract-Improvement in science & technology changed our lifestyle in a big level, from this project we are going to be a part of the people who involved in the activities like technical improvements in day-to-day life. With the fast growth in technology, automation in each field is playing a vital roll. Thus with the growth in urban residential areas, to provide ease to human beings and considering scarcity of water due to wastage and water theft, an automatic water distribution system using 16F877A ,PIC controller is discussed in this paper. The system consist of the GSM module to track the extraction of water using high power motor sensed by flow sensor. The supply gets disconnected using relay, if the flow sensed is higher than the predefined value. The system is very efficient to eradicated the water theft and provide limited water supply to each house in the locality. Thus the proposed system will help to conserve our natural resource i.e. water. Depending on the level of water in the tank , the speed of the water will be varied. The supply of water to different areas are automated through the use of GSM and these mobile controlled water distribution result accurate meter reading and bill payment. The flow meters are placed in pipe in particular intervals. If the flow rate is decreased from the designed level, the motor is automatically increased the speed. The advantage of this project is leak control and leak management which is achieved through flow sensors.

Keywords-Embedded system

I. INTRODUCTION

Water is one of the important and most necessary substances on earth. All living things must have water to survive. In many areas, there is lack of water and severe water scarcity is to be found. According to the survey, water scarcity is due to excess of usage and also leakage of water. Due to contamination of water many viral diseases were spreading, Through this project causes for leakage of water is monitored and rectified immediately.Quantity of water can be verified in flow meter respectively.

1.1. LITERATURE SURVEY

1.1.1. Automation In Drinking Water Supply Distributed System And Testing Of Water

Now a days there is a rapid development in urban residential area ,where as in case of water distribution system they are using traditional method, which isnot atomized .along with this another problem in the water supply system is that public is using suction pumps to suck the water directly from the home street pipeline. The best way to improve the water distribution system is by using industrial PLC and PC system ,which includes all network components like flow sensor GSM modules ,PH sensor etc..The water theft can be best monitor by the flow variations given by flow sensors mounted on the channels. The system includes remote terminal units (RTU) ,flow transducers and actuators distributed on a wide geographical area ,control and power panels for the pump stations etc. The reliable instrumentation connected to PLC or RTU assure real time monitoring of the main technological parameters of large water distribution networks. The data acquired of SCADA system represent the support for optimization of the process and the data –driven decision support system (DSS).

1.1.2. Gsm Based Automatic Energy Meter System With Instant Billing

In this paper, we propose a system which measure the current consumption unit through IR sensor unit. The IR transmitter is placed in the rotating unit of the EB meter. Therefore, photo diode is placed in a certain place which is used to find no of rotation. By getting the number of rotation we get the current consumption. After getting the current consumption the ARM processor will reduce the unit given for specific user.

The unit here is taken as numeric value. If the unit is reduced to minimum value it will intimate the user through alarm and LCD unit. If the user wants to add more units for him, he has to send a message to EB section. From the EB section the required value will be sent to the ARM controller through GSM modem. From the obtained value the ARM will increment the unit in the memory. Thus recharge process is done quickly with less manual interactions. Our system may

be applied in Industrial control, medical system and access control.

### 1.1.3.   GSM Based Automatic Electricity Billing System

In this project an automatic meter reading system is designed using GSM Technology. The embedded micro controller is interfaced with the GSM Module. This setup is fitted in home. The energy meter is attached to the micro controller. This controller reads the data from the meter output and transfers that data to GSM Module through the serial port. The embedded micro controller has the knowledge of sending message to the system through the GSM module. Another system is placed in EB office, which is the authority office. When they send "unit request" to the microcontroller which is placed in home. Then the unit value is sent to the EB office PC through GSM module. According to the readings, the authority officer will send the information about the bill to the customer. If the customer doesn't pay bill on-time, the power supply to the corresponding home power unit is cut, by sending the command through to the microcontroller. Once the payment of bill is done the power supply is given to the customer. Power management concept is introduced, in which during the restriction mode only limited amount of power supply can be used by the customer.

II. PROPOSED MODEL

In this work, it is proposed to develop an automatic water distribution and smart charge using GSM module. it is used to detect the water leakage and monitoring the water flow and measure the water consumed and the information.The proposed system automatically reads the water consumed and sends it to the service provider using the existing short messaging services (SMS).This project is very useful in home and government water board for measuring the desired water level used in each home and also measure the any damage occurred in pipe line.The objective of this project is to improve the water distribution and water management by automation.

### 2.1. Architecture Diagram

TANK SIDE:
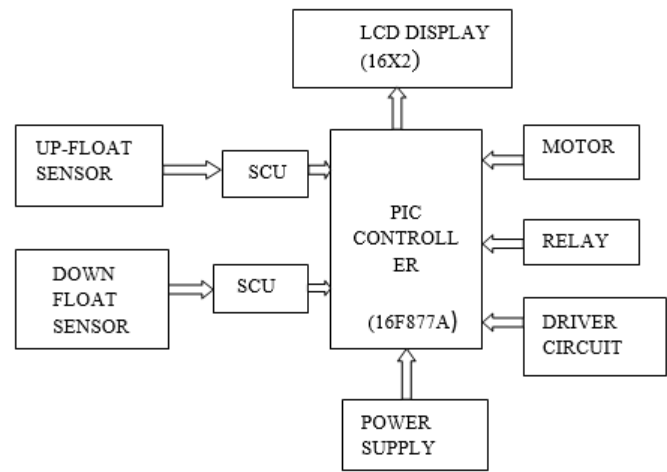
HOME SIDE
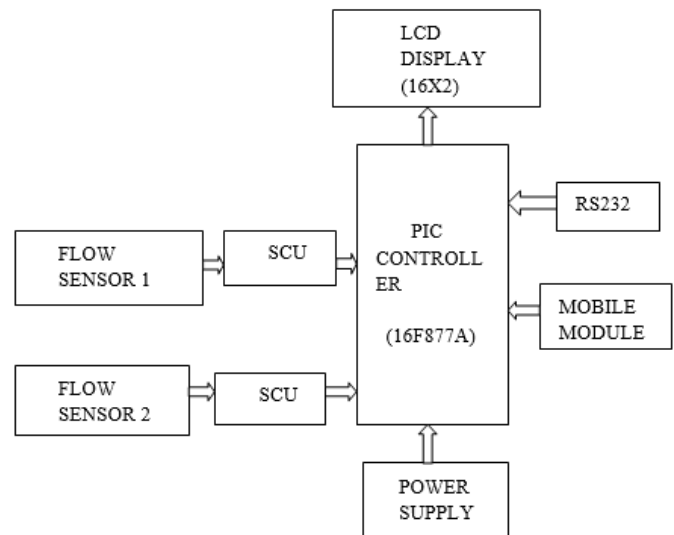
HOME SIDE

In each home we are fixed flow sensor to measure the quantity of water consumed by the user. Flow sensor is also one of the special sensors which will give pulse output to the controller through signal conditioning unit. Pulse output will be given to signal conditioning unit before giving to microcontroller. Then the microcontroller transmit this water usage value to mobile through RS232 communication. Then the mobile modem is used to transmit this information to water board and consumer through SMS. At the same time if any damage occurred in pi pipeline based on the flow level changes then the microcontroller program to measure the leakage calculation and inform to water board.

TANK SIDE

In this project, the tank consists of float level sensor which is special type of sensor in which the resistance value is varied depending upon the water level. The variable resistance obtained from the level sensor is converted into variable voltage signal through voltage converter circuit. The converted voltage signal is given to microcontroller. Here, the microcontroller is the flash type reprogrammable microcontroller in which we have already programmed. So the water tank level is vary, the float sensor value will change, then the microcontroller will turn ON, the inlet water pump motor to filll the water in tank automatically. If the water level in tank is reach maximum level, then the pump motor will turn OFF based float level.

2.2. Prototype Of Hardware
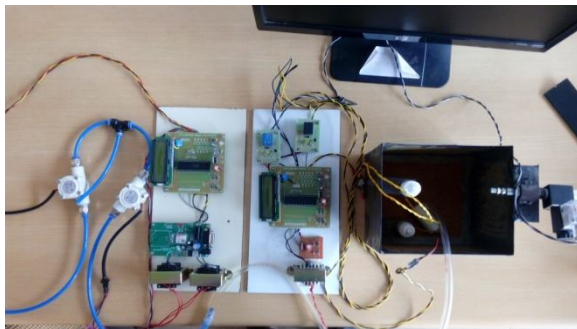
The Hardware prototype of proposed system is shown in Fig.3. In this work, it is proposed to develop an automatic water distribution and smart charge using GSM module. it is used to detect the water leakage and monitoring the water flow and measure the water consumed and the information.The proposed system automatically reads the water consumed and sends it to the service provider using the existing short messaging services (SMS).This project is very useful in home and government water board for measuring the desired water level used in each home and also measure the any damage occurred in pipe line.The objective of this project is to improve the water distribution and water management by automation.

III. RESULT

At particular period of time, consumption of water charge can be intimated through GSM. And in case of any leakage, it also can be intimated through SMS.
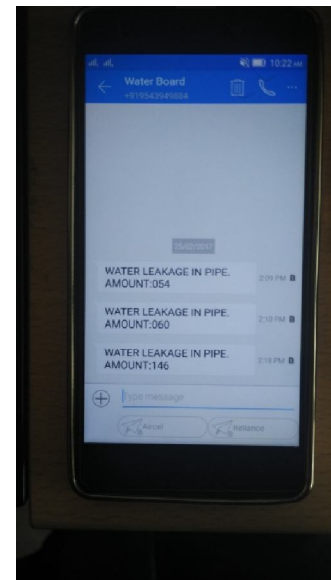
IV. CONCLUSION

Finally, in this paper we concluded that the water distribution can be made automatically and water level can be monitored, that information sends through mobile communication. Also, leakage of water can be determined by using flow sensor. So, it helps to eliminate the difficulty of man power and avoids the wastage of water.

V. FUTURE SCOPE

Every application has its own merits and demerits. The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the existing modules or adding new modules can append improvements. In future generation There will be scarcity of water and consumption of water will be limited ,there fore people should consume water limitedly and also water leakage is limited. The proposed system can be implemented in India and further development can be made by implementing the system across the world.

ACKNOWLEDGEMENT

REFERENCES

[1] H.G.Rodney Tan, C.H.Lee and V.H.Mok "Automatic Power Meter Reading System Using GSM Network", IPEC 2007, International power engineering conference, PP.465-469, Dec3-6,2007.

[2] Jipson,ML.,Kanagaraj.K,Radhika.P,Deepak.B,Prasobhku mar.K "Remote monitoring and control for rural water distribution",International journal of recent trends in engineering and research,volume 02,issue 03,march 2016.

[3] Gouthaman.J, Bharathwajan prabhu.R & Srikanth.A, "Automated urban drinking water supply control and water theft identification system", Proceeding of the 2011 IEEE Students Technology Symposium 14-16, 2011, IIT Kharagpur.

[4] Ayob Johari,Mohd Helmy Abd Wahab,Nur Suryani Abdul Latif,"Tank water level monitoring system using GSM network",International journal of computer science and information technologies,Volume 2(3),2011

[5] Sagar,Khole, Tushar,Kolape, Mrs.A.P.More," Automated drinking water supply system and theft identification using Embedded ",International journal of innovative research in computer and communication engineering,Volume 3,Issue 3,March 2015.