Water Monitoring as Well as Pipe Leakage Detection and Check Moisture

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Abstract: **Water is one of the most important natural resources essential for survival. This paper focuses on leakage detection in over-ground pipes as well as sprinkler pipes and method based on vibration sensors to overcome the problems of water location dispersion in water distribution networks. Bearing in mind that water leakage is a big issue that has already grown to become a critical issue in agricultural areas. The main objective of the paper is to develop a water monitoring and leakage detection system using some basic components: Flow sensor, GPRS module, Solenoid valve, Micro-controller, Solenoid valve and relays.**

Keywords: **Leakage detection sensor, GPRS-General Packet Radio Service**

1. Introduction

In India more than 30% of people live in urban areas that are expected to double in population by 2050. With an increasing economy and dynamical lifestyles the pressure on water resources used for supply purposes is increasing. Most cities in Indoor with lack of water, with no city having 24/7 water supply. Water is very important for human and animal life for maintain ecological balance and for economic and development activities of all kinds. Water is a fundamental need of every people everyone must save the water for the future. Water management in the cities has become a big issue due to lack of rainfall, increase in population many people are facing water problems because they don't have enough water for daily needs. Management of water resources in India is important to sustain one billion plus population. Because of improper monitoring water cannot be supplied properly, in cities some areas can get proper supply of water and the others areas may have irregular supply there is a need of continuous observing and controlling, of water supply booking and appropriate circulation. Different issues are extreme utilization, flood of tanks and spillage in pipes, interruption in the water supply in the city. Forth leakage of the water pipelines there are many other process and also we have some the protocols for water leakage detection and some other for monitoring and controlling. In this paper we discuss about water leakage detection, monitoring and controlling using advanced techniques. In some papers we have Smart Water Leakage

1) Detection and Monitoring Device

By BhekiSithole, Suvendi Rimer, Khmers, C.Mike, J.Pinifolo; In this paper they have Smart Water Leakage Detection and Monitoring Device By BhekiSithole, SuvendiRimer, Khmers, C.Mike, J.Pinifolo;

In this paper they have explained about water leakage detection and monitoring. This paper is exhibiting a variable minimal effort device which is equipped for deciding conceivable spillages in the client's property and announcing current household water consumption levels in real time. Flow meter sensors are used to measure the quantity of water consumed by consumers. In turn, the flow rates of water and amount of water this system has been efficiently and precisely intended to limit commercial losses. An Enhanced Underground Water Pipeline Water Leakage Monitoring and Detection System Using Wireless Sensor Network by M. Jayalakshmi, Dr.V.Gomathi: This paper depicts about the plan and execution of a water spillage observing and discovery framework to screen and distinguish spill with the assistance of remote arranged sensors. The goal of this upgraded framework is to identify conceivable underground water spillage for private water pipes that are checked from a PC. In this way, a powerful and dependable wireless sensor organise which forms little Printed Circuit Boards (PCB), information from remote sensors of various sorts (acoustic,weight, temperature, stream rate and so on) are gathered and observed on a Pc to distinguish the correct spillage position. Once a break is identified the water utility must make restorative move to limit water misfortunes in the dispersion framework. Along these lines the proposed framework will be utilized to spare water and decrease the supplanting cost.

2. Related Work

Water pressure, pipe material and diameter have a significant impact on the detection accuracy due to the interference of frequency. In this paper we will show the whole system ideas, procedure, benefits, devices and apparatus used to accomplish the whole system in a technical way with high efficiency. The main idea talks about how to detect the leakage which occurs in

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water distribution. This problem causes many difficulties for farms and their owners.

1) Water Level Detection in well

A water level indicator is a system that relays information back to a control panel to indicate whether a body of water has a high or low water level. Some water level indicators use a combination of probe sensors or float switches to sense water levels. "The Water Level Detector employs a simple mechanism to detect and indicate the water level in a well" The purpose of a water level detector is to gauge and manage water levels in a water well. The control panel can also be programmed to automatically turn off a motor once levels get too low .A water-level sensor monitors the level of the overhead well and spontaneously switches on the water pump whenever the level goes below a specific limit. The water level detector sensor does not allow the pump to start if the water level is critically low.

The programming is done in the Ardinueo kit and sends the data to the LED Indicates the level of water and leakage or not.
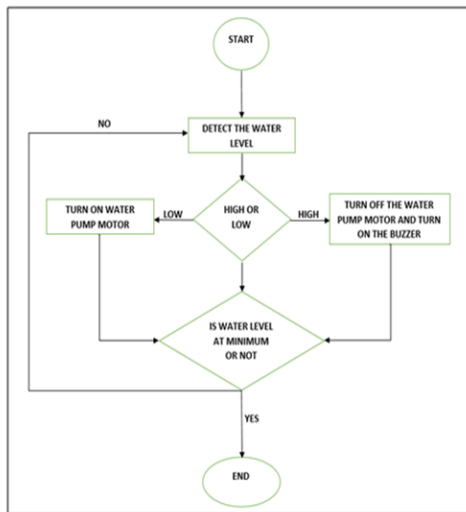

Fig. 1. Flow chart of Water leakage Detection

1. Smart Water Leakage Detection Using Wireless Sensor (SWLD) by using a water monitoring system, we avoid the water wastage, power consumption and easily prevent the water. If our idea applied in fully technical true way, this will be very useful for agricultural. This experimental system will save money for owners and will detect the leakage in water distribution pipelines and helps the owner to be familiar with the problems early to make the required maintenance. In our system we make a home model to be a prototype for SWLD system. We arrange water pipelines and put water sensors on points which have a high probability for water leakage. Also required (Arduino) also to receive data from water sensors. The Arduino connects too sensor to detect the water leakage and decrease in water level rapidly and remotely and then send SMS to the owner. And we use the Android application to receive this data from the sensor and control the pump. The goal of this system

is to design and manage a Wireless Sensor Networks (WSN) that helps to monitor the location of water leakage with the help of information sensed by the sensors located both end of pipe, so as to keep the water resource within a standard described for domestic usage and to be able to take necessary actions to restore the health of the degraded water quantity. We use Arduino mega2560 to design and build a water leakage detection. Wireless control system which provides the user with new features such as water leakage detection and water level control in tank by sensors. The purpose of the system is to bring comfort and energy saving to our lives.

3. Level and Leakage Detection Tools (Hardware)

1. Flow rate sensor
2. Float sensor-check water level
3. Arduino kit

4. Overall Working of Proposed System

- Can detect leaks anywhere along the entire pipe and sprinkler and give the message to the farmer.
- It will be able to control the motor so that water supply can also be regulated It will be able to detect the water level well.
- The project on Automatic Water Level Detection using Float sensor helps the user to be aware of the water level in the well through an SMS alert and also the pump is switched on and off when the water in the well reaches a particular threshold level. It saves time and also keeps the user updated regarding the water content.
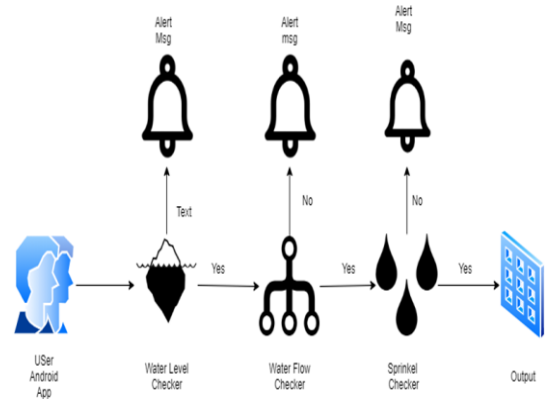

Fig. 2. System Architecture

5. Conclusion

Implementation of this system at a local level like societies, educational institute, etc. can reduce the burden on the local authorities. The automatic waste segregator is one small step towards building an efficient and economic waste collection system with a minimum amount of human intervention and also no hazard to human life. Using a conveyor belt makes the system far more accurate, cost-effective and also easier to

install and use at a domestic level. Segregating all these wastes at a domestic level will also be time-saving. While implementing our systemwe came across many problems like the sensing range of inductive proximity sensor, the ac_x0002_curacy of the moisture sensor, adjusting the range of IR sensors and some more, but using some modifications we tried the make the system as reliable as possible but not completely perfect.

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