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RFID CARD AND COIN OPERATED WATER ATM

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ABSTRACT: **Water is essential for life and it is a key driver for sustainable growth and development. Water management is the activity of planning, developing and distributing water resources optimally. It includes management of industrial water, sewage (or) wastewater, water resources, flood protection, irrigation and water table. Water has a great impact in today's life since the quantity of usage is increased because of the population growth and the availability is decreased. This paper focuses on the implementation of Drinking Water ATM to manage water resources efficiently. This paper presents the description of Coin Operated Water Dispenser. The water dispensing machine dispenses water on the detection of the right coin. To activation water ATM machine Coin are used 1,2 and 5 Rupees or RFID Card (Smart card).**

Keywords - *Water Management, Water ATM, Users, RFID, Coin.*

I INTRODUCTION

Water is a vital resource for life, and for the economy. Nowadays, one of the most serious challenges is to solve and manage the water scarcity. At present only about 0.08% of worlds freshwater is exploited by mankind by various activities. With the depletion of water resources, the demand for quality water is increasing day by day. International Water management Institute predicts that by 2025 all of Africa and Middle East, as well as most of Central and South America and Asia, will run out of water (or) not be able to afford it. In ancient days, water was easily reachable and it met the needs of the people. It was mainly for the preparation of food.

Now it has become scarce since the basins are closed without allowing anybody to take water. Change in water management through different policies such as access to water for the agriculture, managing rain fed water, etc can bring changes .The field of water resources management will have to continue to adapt to the current and future issues facing the allocation of water. Since ground water is the major source of supply, completely depending on it can cause overexploitation. To manage the problems faced nowadays, one have to come up with smart water management solutions and techniques With the advancement of technology the 'Coin Operated Water Dispenser' provides comfort and it fits well for its users in the era of modernization .

II LITERATURE SURVEY

Delhi Jal Board developed a decentralized approach for the potable-water distribution and supply infrastructure system. "Water ATMs" provide pay-per-use water for local residents to fill personal canisters with [5]. This system is located in the Sawda Ghevra colony, located in the northwest corner of Delhi, and provides sanitary water for United States cents per litre. Participants in this program use rechargeable prepaid smart cards.

Water sanitation plays an important role in maintaining the water in hygienic way [6]. Water management should also focus on the water cycle, based on the seasons. This will reduce the environmental impact of water in day to day life [7].

Urban Decision Support System (UDSS) – is a wireless device works in a mobile app using the sensors attached to water appliances in order to collect data about the water usage [8]. Information about every mechanism of water usage is wirelessly recorded and sent to UDSS App on the user's mobile device which analyses which appliance is

consuming more water. Later, these practices are discouraged in order to reduce the water consumption. In recent times, various measures are being taken to get rid of water scarcity. The SatyamevJayate Water Cup has done a good work of solving the water crisis in Maharashtra and it gave a sense of pride and confidence to the people of that region [9].

According to the study given in [10], based on the population of the cities, the water is being consumed. In every region, water is mainly consumed for domestic households. Also in some regions, water is consumed for commercial, industrial and civic or public use. In metropolitan cities, the minimum water requirement is about 150lpcd (litres per capita per day) and in non-metropolitan cities, it is 135lpcd. For industrial and commercial use, it takes about 74lpcd. Therefore, minimum sufficient requirement of water must be reachable to the people.

Water can be also managed well by reducing the amount of water that is being wasted daily. An efficient algorithm is devised to avoid water wastage with the help of flow sensor which indicates the leakage of excess water through faucet [11]. The excess use of water is required in the industries [12]. This should also be managed by providing only the required quantity.

A single user's effort will not be enough for the water management. It requires coordination among the country's people to have a fair sharing of water resources and to manage it efficiently [13]. Many countries like Singapore, Dubai, etc are moving towards a well managed water distribution network. The same can be implemented all over the world to efficiently utilize and manage the existing water resources.

III BLOCK DIAGRAM

The block diagram for Coin and RFID operated water dispenser is shown in fig.1

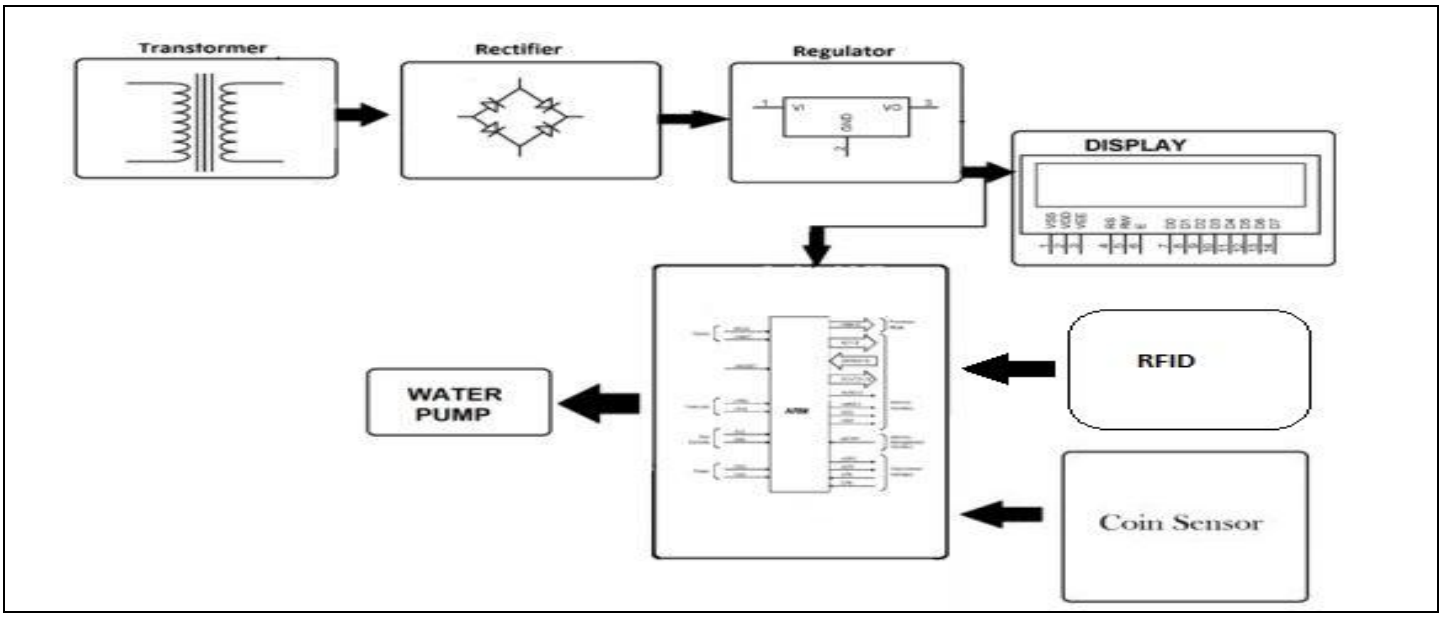

Figure.1 : Block Diagram

An RFID card can be initialised from the Water ATM controller. A set of RFID cards can be initialised so that they are recognised by a particular set of ATM Controllers only. Thus avoiding inter vendor usage. An individual card then can be charged with an amount in Rupees through the ATM controller. On receiving a batch of water from the Dispenser, an amount set per batch is deducted from the RFID card, as soon as it is presented to the controller. The controller notifies if the water level in the feed tank is low or if the charge left in the card is inadequate.

Coin operated water dispenser works on the principle of detection and dispensing water. The four interfacing units (RFID, LCD, Water Pump, Coin Sensor) are separately programmed in Arduino IDE .Program is executed in a sequence. The coin sensor has four colored wires- white, Black, Red and Grey .White colored wire is connected to Arduino board pin no. 2 , red and black wire is connected to Vcc and Ground respectively. Coin sensor is a single coin acceptor, so it is programmed for a single coin.

IV HARDWARE AND SOFTWARE DESCRIPTION -

a. Arduino Uno
b. Transformer
c. Rectifier
d. Regulator
f. LCD
g. Coin sensor
h. Water pump
i. C language programming in Arduino
j. RFID

V ADVANTAGES

1. First and the foremost benefit of Water ATM is that is provides absolutely clean and healthy drinking water to everyone, without any discrimination.
2. It is one of the most economical and cost effective source of healthy drinking water for both rural as well as urban areas.
3. The water is completely free from all kinds of germs, because it is treated well by the process of reverse osmosis, before it is available for drinking. So, there is a guarantee that everything is free from all kinds of water-borne diseases.
4. It saves a great deal of energy and time of the people who have to stand in a queue in order to get even small amount of pure drinking water.
5. It is one of the major source of water for those areas, where there is scarcity of water. People don't have to worry about buying or collecting drinking water on a daily basis. These, water ATMs make drinking water easily available at such places or cities.

VI APPLICATIONS

1. On Roads (Highways)
2. Railway Stations
3. Public Places

VII CONCLUSION

This research paper introduces a water dispensing machine which operates on coin AND RFID. Various devices like a regulated power supply, coin sensor water pump etc., are embodied to design an efficient dispensing system. The system can be programmed for different types of coin The dispenser can be installed on roads (highways), railway stations and other public places to provide water to people at low cost.

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