



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 4, April 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

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The Smart Wireless Water Management System

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ABSTRACT: As the entire world is facing water crisis situation everywhere, to overcome from this, a project has been designed in the name of “THE SMART WIRELESS WATER MANAGEMENT SYSTEM”

This device installation is easy and portable so that every farmer can install and operate by themselves and no rent for wireless communication will be charged compared to SIM based system. In fact, economically also this device is handy as it's totally free from installation cost and maintenance cost. This device accurately regulates how much energy is used to protect against any unnecessary water/electricity usage. so Over time, the money saved is quite substantial.

Hence, we introduced “THE SMART WIRELESS WATER MANAGEMENT SYSTEM” which benefits the farmers, building owners and small scale industries too at all aspects with a very low economy.

I. INTRODUCTION

A. Background:

Water scarcity will directly affect nearly 20% of the human population by 2025, according to several UN reports, and indirectly influence the rest of the planet's inhabitants as well as economies and the whole ecosystems.

Smart water systems based on the combination of Internet of Things, big data and AI technologies can help stop these predictions from happening and undo the damage the imprudent usage of water resources has already caused.

Nowadays, systems available for water management are not up to the mark and have many disadvantages.

Some of them are:

- Not easy to adopt and are complicated.
- Highly expensive.
- Large systems cannot be easily installed.
- Cost of running is high.

II. LITERATURE SURVEY

The techniques and technology currently developed or available are based on GSM based systems.

The drawback we observe about this technology is that the due to the use of SIM card, SIM services need to be subscribed from the carrier and a notable amount of charges need to be paid. This charges are not feasible for practical use.

Another drawback we observe is that, power consumption of GSM modules is high, which adds to more electricity charges.

Flexibility is another issue. Current technology is not flexible and hardly any changes can be made into the system. So, We recognized a need to overcome this problem.

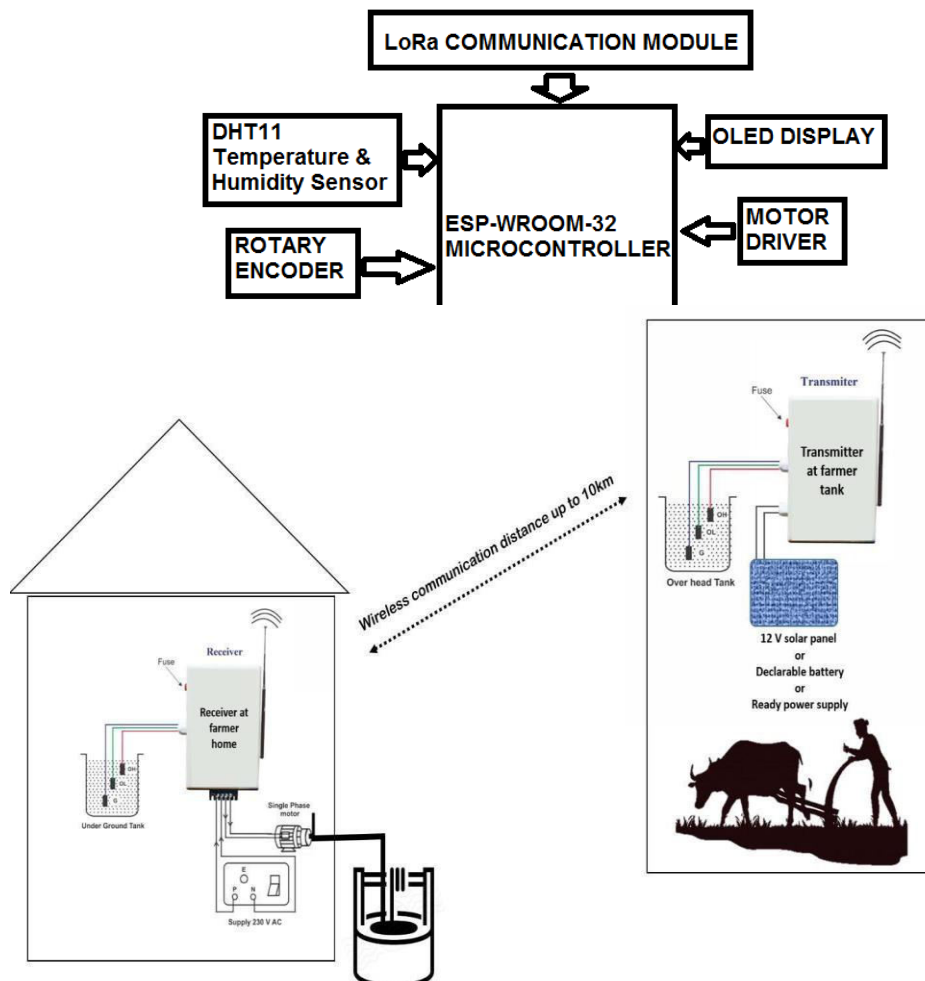
III. PROBLEM STATEMENT

Due to unavailability of practical, affordable, feasible solution for proper management of water in farms, Very large amount of water is wasted, the part of the agriculture field which needs irrigation is often ignored due to improper data of soil moisture, due to this crops may dry out.

Another problem is that unauthorized use of motor pumps, most of the times anonymous person may use the motor and water resources without permission.

A common problem is faced by farmers is the dry running of motor, is there is sudden cut-off of water, the motor may get damaged and a huge loss is faced by the farmer.

IV. PROPOSED METHODOLOGY



Proposes combine independent and complementary solutions in a water management system to provide feasible and practical solution for management of water resources in farms. The proposed solutions consist of sensing of various

environmental parameters such as soil moisture, air humidity from sensors and processing the required data to control flow of water.

- A. **Motor beside** (home)
- B. **Tank beside** (agricultural field)

From the well (of home), water would be supplied via electric motor to a distantly located overhead tank via PVC or GI pipes, which is then let out to agricultural land. In case of water getting filled to the maximum level and overflows farmer had to turn the motor ON/OFF manually which is now completely taken care of by this device automatically. This works Based on inputs provided by water level sensors available inside the overhead tank.

Benefits of the device:

- 1) No electrician or Special skill required to install the device.
- 2) Reduces usage of water/electricity, money over time.
- 3) Saves labour cost/ no labour required.
- 4) Saves wiring cost in case of wired type Water level controller device.
- 5) Saves farmer time and night travel just to turn ON/OFF the motor.
- 6) The device works just fine with the battery or solar power or both.

Additional features:

- 1) "**Intrusion Detection System**" : Meaning if any unauthorized person or intruder enters in farmer Land, tank device will send a messages to motor device (near home) which will trigger 'Siren sound', So that farmer can take necessary actions.
- 2) "**Dry-Run**" : i.e. If water flow have not reached within the set time (Ex: Within 60Sec) to tank, motor will shut down its function and wait for Manual reset so that user can check existing problem in pipe line or wiring etc.
- 3) "**Offline Shut Down**" : Motor side device will shut down its motor operation . if Tank device fails to reply back (Offline). that may be due to battery low, power failure, solar power failed, sensor faulty etc. to avoids water tank over flow.
- 4) "**Bluetooth Remote**" : Farmer can manually switch ON / OFF Motor and check its status in his phone "**via Bluetooth**" enabled Android phones from 10mtr vicinity of the tank or motor device.



- 5) "Manual Push Button" : Farmer can manually switch ON / OFF Motor and check its status in *Hardware push button & Device display* in case he doesn't have his mobile phone with him.

"Programme updating OVER THE AIR" : If the farmer needs any working firmware changes or update, it can be done via "*OTA function*" He doesn't have to bring the entire device to update the software.

V. CONCLUSION

Using "**THE SMART WIRELESS WATER MANAGEMENT SYSTEM**" , farmers can upgrade their farming system as well as save money and water at the same time, They can also add multiple Motor's or tank's sources using gate valve system along with Handheld Remote controller.

This device can expand its service support by using long range mesh network with repeaters station to extend range in case of too long application or huge obstacles in between wireless communication line (or no clear line of sight). in addition we can also add Up GSM module (A SIM based message system) for really long distance requirements.

VI. ACKNOWLEDGEMENT

I take this opportunity to express my sincere appreciation for the cooperation given by **Prof. S. G. GIRAM, Principal of AISSMS'S POLYTECHNIC, Pune** and need a special mention for all the help extended by him, constant inspiration and encouragement to make my project a memorable experience. I am thankful to our H. O. D. of E&TC Department, **Prof. V.S.Gaikwad** for her time to time support and valuable guidance. I am deeply indebted to my internal guide **Mrs. M. T. Dangat**, for completion of this project for which she/he has guided and helped me going out of the way.. I am thankful to all teachers and professors of our department for sharing with me, valuable knowledge on their respective fields. I would also thank my fellow classmates and friends for their support and timely suggestions. I would also like to thank library staff and laboratory staff for providing me cordial support and necessary facilities, which were of great help for preparing the project report. Thanks to all!!!

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SJIF Scientific Journal Impact Factor
Impact Factor: 8.423



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