

# AUTOMATED HYBRID WATER SUPPLY SYSTEM USING AURDINO

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## ABSTRACT

Demand of electricity is growing very rapidly for industrialization and urbanization of India. Renewable energy resources being available abundantly in nature can be considered as better option over conventional energy resources. Solar and wind energy are available in large amount and can be considered as reliable source of power generation. Hybrid solar and wind energy systems can be used for rural electrification and modernization of rural area. Specifically, in this paper, two major energy resources like solar and wind are used for generating uninterrupted power. Each system is designed with precise criteria and connect to form a consistent energy resource. Solar and wind energy systems are selected for the implementation. Using MATLAB/SIMULINK simulation has been done and with the corresponding hardware components practical implementation is done and all the systems are coupled together using DC-DC Buck converter. Finally, the DC hybrid output is connected to a basic inverter for AC output. With the aid of this system each house can be converted into a self-sufficient energy generating hub.

**Keywords :** Electrification, Simulation , Buck Converter.

## INTRODUCTION

Recent development of infrastructure, increase in population, leakage in pipes, uncontrolled usage and wastage of water, pollution, etc. leading to scarcity of water is faced by human beings. So it is necessary to find the alternative system which can help to reduce the water wastage issues for which Internet of Things (IOT) is the solution which helps in building an automated system for real time water monitoring. Embedding different sensors with a micro controller we can monitor the water pressure, water usage and water availability in the tank. As there is an uneven distribution of water across the city an automated system must be developed so that the water is distributed equally with equal pressure to the residents in the city. Ultrasonic sensors are used to check the water level in tanks, flow sensors can be used to detect pressure of the water and water utilized by individual user. The design of a water level sensor device is able to detect and control the level of water in a certain water tank. The system firstly senses the amount of water available in the tank by the level detector of the ultrasonic sensor part and then adjusts the state of the water pump in accordance to the water level information.

## METHODOLOGY

Design methodology of the system has two major parts software design and hardware design. Hardware is designed by arranging Arduino Uno, sensors, relays, whereas software design includes programming that is written and uploaded in Arduino IDE. The beginning supply is provided through both solar panel and ac power supply through SMPS power adaptor. Based on the requirement, we will adjust the supply by changeover switch. Whenever the sunlight available, the solar power is stored in a 12v battery and provide the supply whenever there is no power supply in lines. The heart of this project is Arduino uno, entire system is controlled by the arduino programming. All the devices or equipment's connected to the arduino uno, arduino uno collects the signals from the sensors and takes that signal as an input command, after that it will perform the task according to the code written and controls the output signals. The water is supplied to the consumers through the water tank, water tank level is regularly monitored by the ultrasonic sensor, when the water level is less than certain value the motor pump switch will be ON thus the water fills in the tank to maintain continuity of water supply to the consumer and whenever the tank is full the motor will automatically OFF and thus avoid the wastage of water due to overflow. Ultrasonic sensors are used to check the water level in tanks and LCD display is used to display the percentage of water available in the tank. When the consumer utilizes the water, the water flows through the flow sensor and it detects the water pressure and total water utilized by the consumer. Here we set the fixed cost per litre and depending upon the usage of water the total charge will be displayed on LCD display. Also we provide the separate LCD display for each house for displaying the water usage and the cost of the usage.

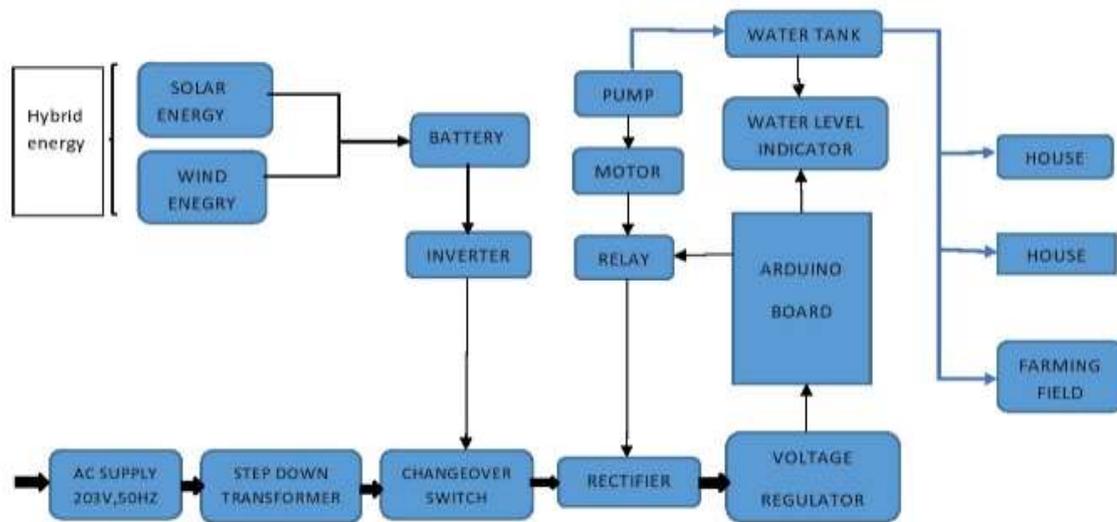


Fig : Block diagram

## CONCLUSION

The vision of this paper is to create an open and accessible technology aiding. The paper aimed at not only extend the advanced technology in water management system but also make things easier for the society. This project avoids the cost of digging more borewells and supplying a water from single borewell connection for multiple houses is the main advantage of this paper. By measuring the quantity of water used by the consumer is recorded and message will be sent to both consumer and supplier. This idea could be implemented by various government across the world to save water bodies by excess water usage. However, revolution will not be the defining metric of success in the short term.

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## DISCUSSION

Due to irregularity supply of water by government municipal corporation people are preferring for borewell connections. But when digging more bore wells in an area the density of the ground water level will be reduced thus bore wells deplete groundwater resources.

Here we are providing single central borewell for multiple users and transporting water directly to home through pipelines provided with flow sensors. By providing the borewell water to several homes with single borewell cost of digging for borewell connection will be eliminated and also by setting charges for usage of water people won't waste water and thus wastage of water will be avoided.

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