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Smart Water Management for Home and Corporate System using Arduino

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Abstract: *In India, there are 29% industries and 36% of farmers. We know that about 2.5% of the water on Earth is useable, despite the fact that a significant amount of water is utilised for several purposes. Water is a natural resource, yet there is a limited supply of usable water. It is up to us to keep it alive. We frequently witness massive water and power waste in households, large businesses, and municipal agencies. Today, energy plays a significant role in our daily lives, thus it is our responsibility to save and cut back on our usage. As a result, we will be able to cut down on both water and power waste. This will be helpful in the future when there is a scarcity of water and electricity.*

Keywords: Saving, Reduce wastage

I. INTRODUCTION

Unfortunately, just 2.5% of the water that covers the world is drinkable water [6]. We are likely to soon encounter ongoing water shortages due to population growth, pollution, and climate change. Due to our carelessness, people squander a lot of drinking water. Also, the most crucial component of life is electricity. It is absolutely necessary for all people. However, occasionally there is a loss of energy owing to human negligence, therefore we must save it. We must stop wasting water and lessen the water shortage.About 71% of earth is covered with water, but sadly only 2.5% of it is drinking water [6]. With rise in population, pollution and climate change, it is expected that by soon we will experience perennial water shortages. We humans waste a lot of drinking water due to our negligence. Also, the electricity is the most important part of life. It is very essential to each & every human being. But sometimes due to carelessness of human beings there is wastage of electricity & we have to save the electricity. We have to avoid the water wastage and reduce the scarcity of water.

The water sensor in the suggested design is used to determine the water level after the water has been collected in a ground tank or pipeline. A user may view the water level on a smartphone by updating the detected information on an android application. The motor is regulated in accordance with the amount of water in the tank. Everything in the modern world revolves on "smart" technology. The procedure will become more automated and intelligent as technology develops more and more. Intelligent irrigation systems often optimise resources to ensure that everything gets what it needs without wasting anything [2].

II. IMPORTANCE OF SAVING WATER & ELECTRICITY

More and more focus has been placed on irrigation methods that use less water and energy as the water and energy crisis worsens [4]. In today's world, power and water are crucial resources. The consumption and wastage of both water and electricity are rising along with the population growth. As a result, there will be a significant shortage of both in the future years. Water and electricity are the first things that come to mind when we consider the smooth operation of our daily life. Our lives would be a living nightmare without them both, so we must take the appropriate precautions to preserve them for future generations in order to enjoy the privilege of having them.

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III. METHODOLOGY

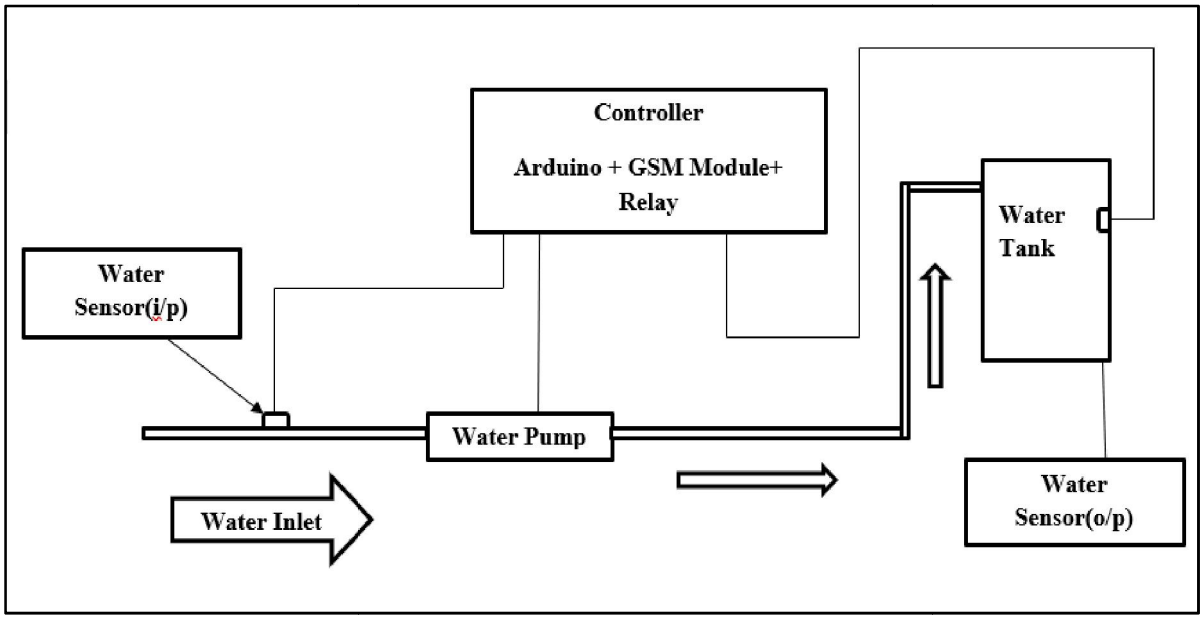

Figure: Block Diagram

Arduino, a GSM module system, a relay module, water sensors, a water pump, connecting wires, a DOL starter, a converter, etc. are all shown in the block diagram. At the water input and outlet, the water sensors are first attached. The Arduino receives a signal from the sensor when water enters the pipe. The sensor near the outlet receives the signal from Arduino, which checks the water level in the tank. If there is no water in the tank, the Arduino sends a signal to the relay, which activates the motor and begins pumping the water. When the tank is entirely filled, the sensor recognizes the water level as full and sends a signal to the Arduino. The motor is then turned off by Relay after receiving the signal from Arduino. The GSM module notifies the user of the moment that water will arrive and fill the tank. Additionally, the Arduino helps to prevent water waste and saves electricity. The Arduino Integrated Development Environment (IDE) software is used to load a programme onto the Arduino Uno board that reads the input value and the operation [1].

IV. PROPOSED WORK

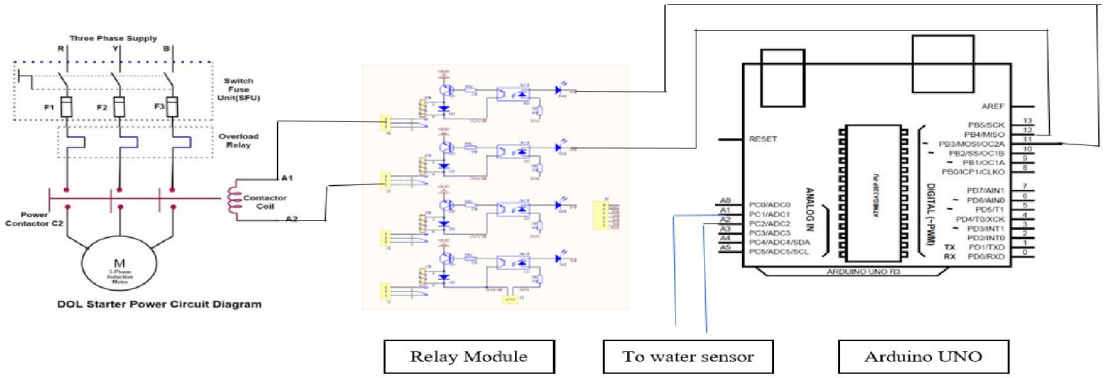

Figure: Schematic Diagram

The entire system is automated and under regulated operation. To verify whether there is water available, no one needs to be present at the tank's site. The key benefit of that is that the user is not informed to start the motor when water is entering the water inlet. When they reach the following situations, it automatically turns ON. When there is water in the pipeline but the tank is full, the motor cannot run or start at that moment. It's always in the relaxed position.

In another scenario, if the tank is empty but there is no water in the intake pipeline, the motor will be in the idle position

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due to the water inlet sensor's availability. Arduino instructs the relay to remain in the idle state and signals that there is no water in the inlet pipe.In the third scenario, if the tank is only partially filled, the system still notifies the user of the proportion of water that is still in the tank. Every level's accompanying irrigation monitoring controller implements the control strategy [3].

V. RESULT

- If there is water in the water pipe line at that moment, the water sensor detects it and provides a signal to the Arduino, which then transmits the signal to the relay module.
- When the tank is empty, the water pump turns on automatically and sends the message "water pump is turn ON" to the system user via the GSM system.
- If the tank is full, the water sensor measures the level of water in the tank and sends a signal to the Arduino, which turns off the water pump automatically and notifies the user through GSM that the water pump is off.
- By utilising this technology, we will cut down on water waste and save money on electricity.

VI. CONCLUSION

- The method for saving water and power and reducing their wastage is presented in this paper.
- We can learn about the current state of the water and electricity shortages from research and surveys.
- By preserving it, this significant issue of scarcity is resolved.
- This model will run automatically because of how easily it can be used.
- Commercial, industrial, and agricultural applications can all make use of this model.

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