

Automatic Water Supply Connectivity based on Presence of Human Being

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Abstract – Water is the important aspect in living of the human beings. But wastage of water is seen in many rural areas. Scarcity of water is being observed in many cities due to the carelessness of human beings. This is one of the motivation for this study to provide techniques to save water for the future. The present study involves automatic water supply connectivity control on closing of the main door to maintain the water level and to limit the wastage of water. The main valve is turned off when the flat owner locks the doors electronic latch, the Arduino controller system turns off the main solenoidal valve and the GSM module sends a message to the flat owners mobile.

Simultaneously, the arduino passes signal to the GSM module to send the message to user mobile.

Key Words: Solenoid lock, Arduino, GSM module, solenoidal valve

1. INTRODUCTION

Water is one of the basic need of the humans. Without water there is no life. Humans rely on water for living, without food human beings can live for few days but without water humans cannot live. But then too the wastage of water is being observed in many areas. In many urban areas scheduled water supply is followed. This project is applicable in such areas. It has been observed that often people leave tap open and go for their work or sometimes to native places. And when the scheduled water is supplied due to taps left open the water is wasted. In this project, the supply to the house is cut-off using main valve that is controlled by condition of the main door lock. The system will monitor the door lock as soon as the door is locked the arduino system will give signal to relay which in turn will turn off the main valve, so if by chance any of the tap is left open there will be no wastage of water in the absence of humans in the house.

2. PROPOSED WORK

Water scarcity is the major issue faced in many rural and urban areas. This project works on preventing wastage of water. The system contains arduino which is connected to the door lock. When the door is locked with the key the arduino gets this signal. The arduino processes this signal and commands to the relay to cut-off the water supply, where the relay cuts off the power supply to solenoid valve and the water supply is cut-off.

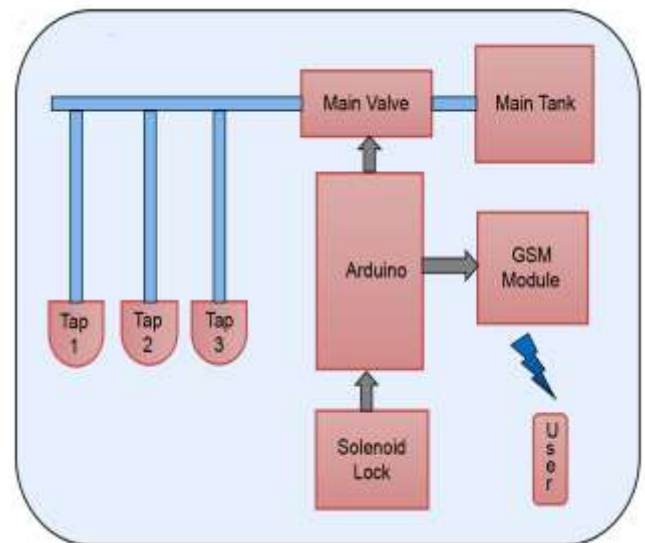


Fig.1 Block Diagram

2.1. Solenoid Lock



Fig.2 Solenoid Lock

Solenoid lock has a very strong metal body with small rectangular hole on one side of the body, this hole is used for the movement wherein the slanting metal slug is moved inside and outside the lock for the locking purpose. Solenoid lock works on 09V dc supply. When the dc source is applied to the solenoid lock the metal slug goes inside and remains inside for the proper opening and

closing of the door. And when the dc source is disconnected the metal slug comes outside the lock and locks the door.

2.2 Solenoid Valve

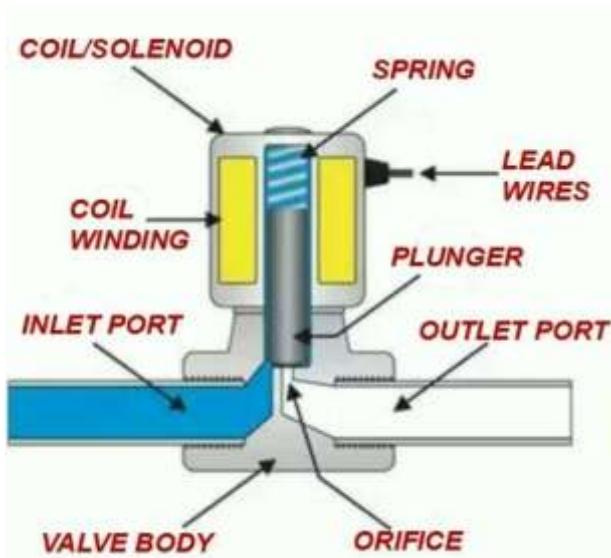


Fig.3 Construction Diagram of Solenoid Valve

The solenoid valve works on 12V dc supply. The solenoid valve works on the solenoid coil which controls the plunger movement up and down. The lead wires are connected to the relay from where the solenoid valve gets the current supply for working. Initially, the plunger is at the lowest position where it closes the outlet port preventing the water to flow from inlet port to outlet port. When the current is applied to the coils, they are energized and magnetic field is generated. This magnetic field pulls the plunger upward direction letting the opening for the orifice and we get the water at the outlet port of the valve. When the current supply is cut-off the coils are de-energized and the magnetic field loses and the plunger drops to the downward direction closing the orifice and blocking the water supply from inlet port to the outlet port.

3. Project model

This is the model of the project. The model consists of an Arduino, GSM module and relay circuit. The Arduino is connected to the relay and GSM module and also to the solenoid door lock. When the door is locked with key the arduino gives the signal to the relay to cut-off the power supply from the solenoid valve. As soon as the relay get the signal from Arduino it cut-off the power supply to the solenoid valve. When solenoid valve is the water cannot pass through it and there will be no wastage of water.

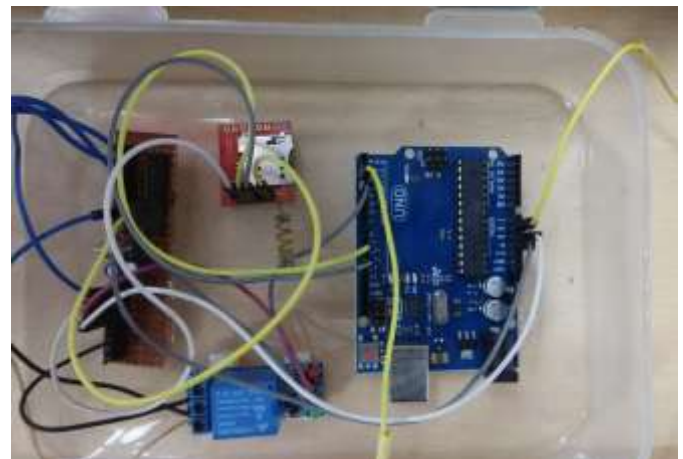


Fig.4 Project Model

4. Result

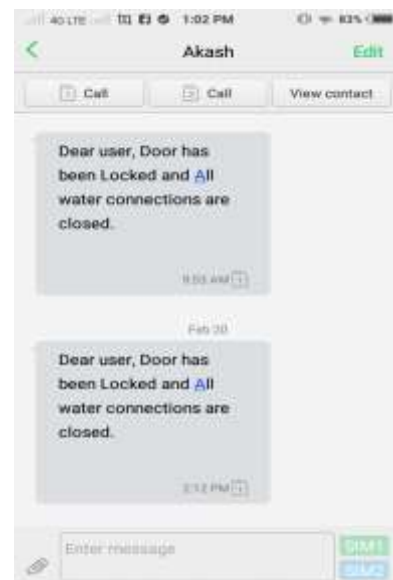


Fig.5 Message from the System to User Device

This is the message that system sends to the user unit when the system cut-offs the water supply when the main door is locked of the house.

5. CONCLUSION

The water that is wasted by leaving the taps open in the house can be saved using this project as this project shuts the main water supply of the house using the main valve when the door is locked by the person. This project prevents from wastage of water.

6. REFERENCES

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