

“MOTOR PROTECTION FROM THEFT BY USING ARTIFICIAL INTELLIGENCE AND GSM TECHNOLOGY.”

¹ Prof. Khandekar Nagnath Vyankati ² Prof. Kishor P. Jadhav
³ Prof. Avinash A. Suryagan
⁴ Mr. Sahil Ramjan Shaikh, ⁵ Mr. Aniket Mohan Ohal, ⁶ Mr. Nitin Rajendra Devkar

1,2&3 -Assistant Professor

4,5,6 -UG Students of Department of Electrical Engineering

^{1&2} SKN Sinhgad College of Engineering Korti, Pandharpur, Solapur, Maharashtra, India

³ FTC College of Engineering Sangola, Solapur. Maharashtra, India

ABSTRACT

The project has been developed to operate a pump for theft identification system using GSM devices, such as mobile device. This project is specifically designed to operate remote located submersible pumps and motors for benefit of farmers, agriculture people and industries where wireless pump and motor control required. Our project is designed with advanced micro controller technology and quality process.

One authentication procedure is also there such that owner has ultimate theft control. If owner allows other users to ON/OFF the pump, then only it can be operated by particular that user. One list of authenticated users will be handled such that if owner authenticate to user to handle the pump module. then will not inform the owner anymore to authenticate the registered user. This authentication is required for preventing the misuse of this module.

Keyword: *Aurdino IDE, GSM Module, ATmega328P, Submersible Water Pump, LM317 Voltage Regulator, Water Level Sensor, Arduino Code.*

I. INTRODUCTION

Nowadays theft protection is very important factor while protecting our devices and our basic so as to protect the things from theft we need to different aspects regarding the particular application here we are going to present an idea where we are going to protect the commercial or agricultural water pump to protect motor from theft we are having many aspects are there but the major area of theft is by cutting the wires connected to motor the wires are made up of copper.

So theft is more concerned about that wires and they can easily have said that wire with a good amount of money so to protect the wire as well as sometimes that helped the whole motor. Also support to protect these two things or there we need to develop such circuitry which will intimate us about the theft to detect theft we need to monitor. The wire connection between the main switch box for starter Box with the motor to monitor the motor status we also have to apply some kind of a sensing element which will sense the motor movement. If motor get lifted from the bottom so that the theft detection will become an early prediction for our system and owner will get the reply to owner should get this message alert immediately.

For that purpose, we need to give and wireless communication to the system and on that wireless communication user will get the alert working to detect motor movement and wire cut between the main wire. We need to have some sensing element for that purpose we have used and magnetic type of sensor with float. So when the sensor with motor is dipped into the water the sensor float will ab side and the sensor get activated. Whenever a thief will lift the motor outside the water the float will go down and it will detect the sensor will detect the motor theft in this way motor theft will work also we have place and wire for the sensor with wires of the motor.

So that if it will cut the wire of the motor then the sensor wire will also get corrupted and other circuitry will detect that signal and the theft will be detected. We have used and Arduino Pro Mini microcontroller which will continuously monitor the status of the sensor and sensor wire.

Then it will immediately detect that and then this controller should have to send the message to the owner. So

that we have used GSM technique over here we are using GSM modem SIM 800 L in this system which will work as a communication medium will have to put and SIM card into this GSM model and whenever the theft is detected the controller or Arduino prominent will send the signal to this GSM module.

GSM module send the message to a pretty define number which is stored into the programming then immediately the alert will be send to the set number, SMS alerts will be sent over there. We have used an indication LED on our system where and Green LED indicates that everything is ok and whenever it will detect the fault or have it will light up the red LED. Which will indicate that theft is detected by the system in this way this system will work.

II. LITERATURE REVIEW

Recent work carried out in GSM based motor pump controller is reviewed as follows.

Snehal R. Mulmane and R.S. Khamitkar are presented the user friendly, reliable and automated 3- phase water pump control system for farmers. Here the automation process is done through the wireless GSM technology. Automation of water pump includes monitoring of availability of proper electric supply, water level inside the reservoir, flow rate of water through pump and also taking care of short circuit conditions related to irrigation pump. The microcontroller AT-Mega 16 is the heart of this system.

The design of this system is very much sensitive and should be handled with most care because the microcontroller is a 5 volts' device and it is employed to control high voltage 3-phase irrigation water pump. The major advantage of this device is, it is very user friendly as the status of the motor can be known by a simple LED indication and more over the device is very economical and can be brought available to the common man. Most of the figures included in this paper are simulated using proteus simulator. Avr studio is used for atmega 16.

Kamrul hassan and et al., are presented the control system efficient and dynamic. As the name suggested the automatic control is for controlling the motor from remote place, look over its operating conditions, get feedback from the motor itself. Our target is to control the motor from distant place by mobile DTMF tone and also get feedback by SMS while it is in on or off condition. We also ensure the safe operation of the motor by detecting the voltage of the source and ensure feedback from system while it is over or under voltage. Again we also get these feedbacks by SMS as well. GSM network is everywhere in our country that's why we choose GSM network to operate our motor also transfer feedback information through it.

We also use GSM network because if we use it then we don't need to establish extra equipment for networking. To transmit feedback signals we use GSM modem at the motor end also generate control signal by mobile DTMF because it is very easy to generate DTMF by mobile station and send feedback SMS by modem as well. In industrial sector we hope our project is become handy and cost effective to operate motor and give its protection.

Kaustubh bawdekar and rajkrishna das are presented the detect any attempt to steal the inventory from an agricultural land. We have used an rfid reader and tag, arduino uno microcontroller, a GPS and a GSM module. Additionally, we have also developed an android application that lets the user track the whereabouts of his inventory, in the event of it being stolen. In the app a message will be sent at a fixed interval, the message contains GPS co-ordinates of the missing inventory and an alert message.

Concluding Remark:

The Mobile phone application will provide real time monitoring of the anti-theft as well as generate an anti-theft alarm should the need be. In this project we try to minimize the cost of the monitoring system. Main objective is to design a system that can be easily installed and to provide platform for Further, enhancement.

III. PROBLEM STATEMENT:

Generally submersible water lifting pumps/motors not always in near to the farmer. So switching operation of pumps, sometimes there is chances to theft of motor or pump.

IV. OBJECTIVES:

- ❖ To development of the working model of our project.
- ❖ To make a study about the construction and working of various parts of our project.
- ❖ To help the farmer and industrial water supply system.
- ❖ To protect our industrial and irrigation water supply motor or water supply system.

V. PROPOSED METHODOLOGY

The wire connection between the main switch box for starter Box with the motor to monitor the motor status

we also have to apply some kind of a sensing element which will sense the motor movement. If motor get lifted from the bottom so that the theft detection will become an early prediction for our system and owner will get the reply to owner should get this message alert immediately.

For that purpose, we need to give wireless communication to the system and on that wireless communication user will get the alert working to detect motor movement.

We need to have some sensing element for that purpose we have used and magnetic type of sensor with float. So when the sensor with motor is dipped into the water the sensor float will up side and the sensor get activated. Whenever a thief will lift the motor outside the water the float will go down and it will detect the sensor will detect the motor theft in this way motor theft will work also we have place and wire for the sensor with wires of the motor.

We have used and Arduino Uno microcontroller which will continuously monitor the status of the sensor and sensor wire.

Then it will immediately detect that and then this controller should have to send the message to the GSM module. So that we have used GSM technique over here we are using GSM modem SIM 800 L in this system which will work as a communication medium will have to put and SIM card into this GSM model and whenever the theft is detected the controller or Arduino prominent will send the signal to this GSM module.

V.I BLOCK DIAGRAM:

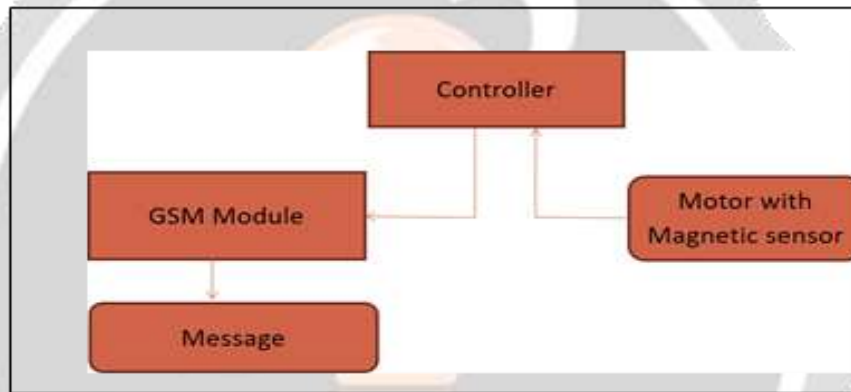


Figure V.I.1 Block Diagram.

V.II WORKING:

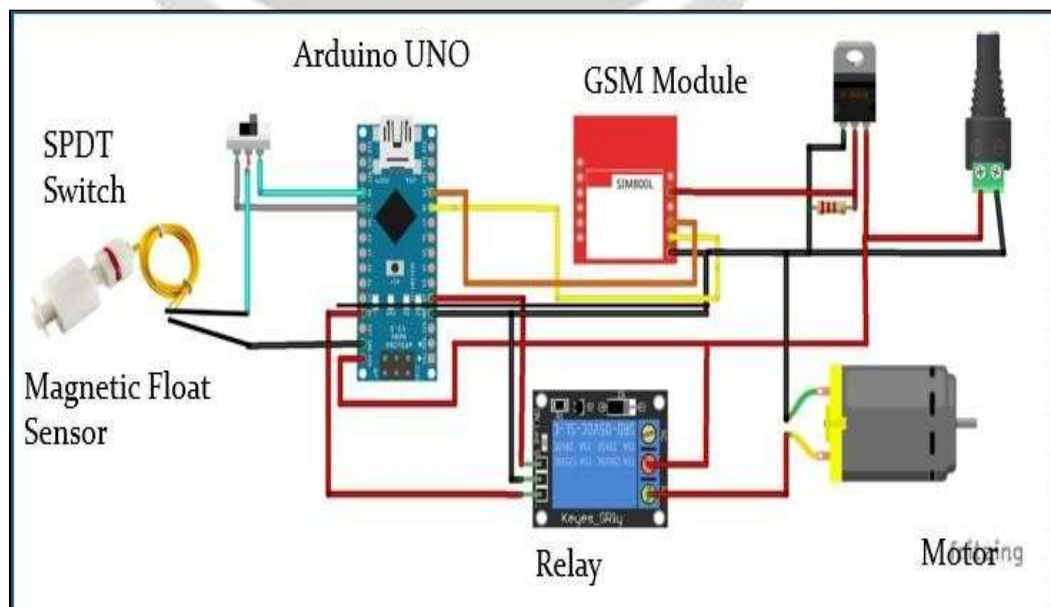


Figure V.II.1 Motor Protection from Theft

In this Project We have used Arduino Uno microcontroller which will continuously monitor the status of the sensor. Then it will immediately detect that and then this controller should have to send the Signal to the GSM module. So that we have used GSM technique over here we are using GSM modem SIM 800 L in this system which will work as a communication medium will have to put and SIM card into this GSM model and whenever the theft is detected the controller or Arduino prominent will send the signal to this GSM module. GSM module send the message or call to a Set number which is stored into the programming then immediately the alert will be send to the set number, SMS or Call alerts will be sent over there.

The user will get the alert working to detect motor movement we need to have some sensing Element for that purpose we have used magnetic type of sensor with float. So when the sensor with motor is dipped into the water the sensor float will up side and the sensor get activated. Whenever a thief will lift the motor outside the water the float will go down and it will detect the motor theft and send SMS or Call in this way motor theft will work.

Also we can control the motor ON/OFF with the help of SMS with related feedback system. We have used an indication LED on our system where Red LED indicates that motor is on/off. in this way this system will work.

REQUIRED SOFTWARE:

The software program is written in Arduino programming language. Arduino IDE is used to compile and upload the program. ATmega328P on Arduino Uno board comes with a pre-programmed bootloader that allows you to upload new code to it without using an external hardware programmer. Connect Arduino to the PC and select the correct COM port in Arduino IDE. Compile the program/sketch. Select the correct board from Tools Board menu in Arduino IDE. Upload the sketch to the internal memory of the microcontroller.

V.III REQUIRED HARDWARES:

**Figure VIII.2** Hardware Details

IX. Conclusions:

The project is designed to protect our agricultural as well as industrial water supply system. The use of this project is to get the call and SMS at the time of theft of motor. Also we can control the motor ON/OFF with the help of SMS with related feedback system. This system provides safety and security purpose.

X. APPLICATIONS:

Our project should use for following various applications like as:

- Prevent Agricultural motor protection from theft.
- This system is used for safety and security purpose.
- Used for other applications.

XI. REFERENCES

1. Kamrul Hassan and et. al., "GSM Based Automatic Motor Control and Protection System", International Journal of Advancements in Research & Technology, Volume 2, Issue2, Feb ruary-2013
2. Biswarup Nandi and et. al., "GSM Based Pump Automation", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 5, Issue 9, September 2015
3. Snehal R. Mulmane and R.S. Khamitkar, "Automation of Water Pump Controller for Irrigation Using ATMEGA 16" IOSR Journal of Electronics and Communication Engineering, PP 128-134
4. Kaustubh Bawdekar and Rajkrishna Das, "Theft Detection and Alert System" International Journal of Innovative Research in Science, Engineering and Technology, Vol. 5, Issue 8, August 2016
5. Khaled M. and et. al., "Design a Remote Control System for Submersible Pumps Based on GSM-SMS" American Journal of Engineering and Technology Research Vol. 16, No.2, 2016.

