



SUBMERSIBLE PUMP THEFT INDICATOR

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ABSTRACT

An anti -theft system for electric motor includes controller, feedback circuit and alarm circuit. The feedback circuit continuously monitor the electric motor load, if the motor load is disconnected controller gives alarm with the help of buzzer. This paper reports the design and development of an innovative anti –theft alarm system for electric motor pumps. The pumps are frequently stolen which as serious impact on agricultural production in accordance with the advantage of current transformer, Low power slew rate limited transceiver. The system consists of three main parts a PIC microcontroller, Current transformer and signal driver and feedback circuit. The Electric Motor costs are very high, when motors are on ,it's very simple to detect the stealing of cables and motors when motors are off ,it's very difficult to detect the stealing of the motors. The unit is part of motor driving circuit, cannot be identified easily as an anti-theft electric motor by the burglar. The objective of this project is to design such a system which will try to reduce the illegal use of electricity and also reduce the chances of theft. This project will automatically collect the reading and also detect the theft This model reduces manual manipulation work and try to achieves theft control. And also we can track the motor. If the motor is pulling out of the water then GSM send message to the user and user get alert about motor is going to be stolen. Once the motor has been stolen then it is possible to track the motor by using GPS system. And that is most advantage of the this project.

Index terms- GSM and GPS ,Tracking motor, Embedded Domain.

Keywords

- **Locating stolen motor pump.**
- **Allowing to detect the position of motor pump.**
- **Provide tracking by GPS and provide path to the destination .**
- **Increase safety as well as monitor motor pump to avoid misshape.**
- **It will monitor the motor using Arduino and briefs the status.**

INTRODUCTION

Previously anti-theft devices are made to prevent theft of motor vehicle, boat and yacht, car, and truck etc. Similarly, anti-theft systems are develop to prevent theft in retail show room, library. An anti-theft device for electric water pump motor includes current transformer which is widely used for metering and protecting relays. The Electric water pump motors are installed for away on water well , water resources like rivers , canals , ponds – standing water etc. , and it is very difficult to monitor the electric water motor as they are installed at

far away distance , their monitoring is difficult as motors are in off conditions , the thieves have good chances to steal these electric water pumps as they are in off conditions , and in remote areas , which cost very high , these electric water pumps are chosen according to the need of water from 0.5 hp to 10 hp which costs near about seven thousand rupees to several thousand rupees , which will be great loss for the small scale farmers in terms of money as well as agricultural production loss. The anti-alarm system proposed in view of application in nursery, low cost green houses for vegetables production, Agro-tourism. There is no chance for the user to avoid the stealing of motor pump, if thieves try to stolen pump and cut off power supply then user get identification from GSM ,however suppose the motor is stolen then user get location and path of motor position through GPS.

EXISTING SYSTEM

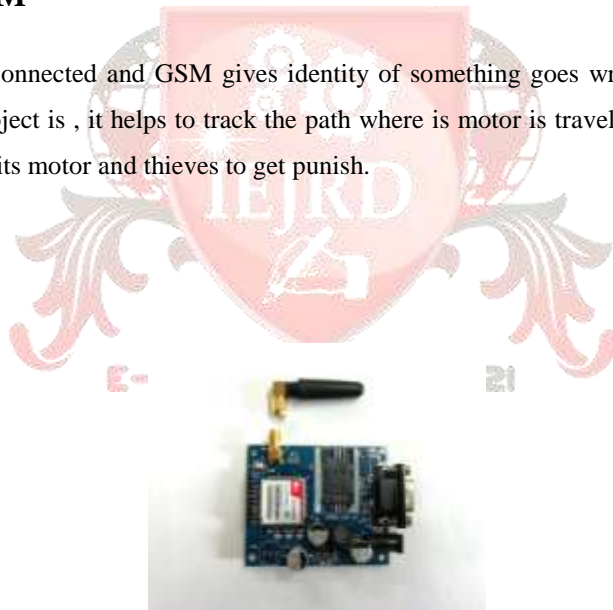
In this existing system that includes controller, feedback circuit and alarm circuit. There are so many applications where remote pumping is done with the help high cost electric motors such as irrigation, fish pond aeration, livestock watering, building and houses. This system has typical rural and remote application. This anti-theft alarm system consists of these parts, A PIC Controller, current transformer, motor on/off detection and Alarm system.

PROPOSED SYSTEM

Even if power supply disconnected and GSM gives identity of something goes wrong with motor pump. The main advantage of this project is , it helps to track the path where is motor is travelling. The motor user follow such path to bring back of its motor and thieves to get punish.

MODELS

Gsm-



The SIM 300 GSM module has been chosen to achieve the SMS functionality

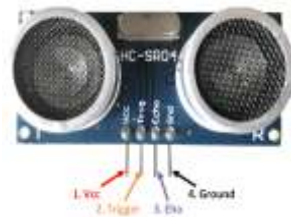
GSM MODULE SIM900A Built in RS232 to TTL or vice versa logic converter (MAX232) Configurable Baud Rate Audio Interface connectors (in and out) Input Voltage 5V to 12V DC

GPS-



GPS MODULE 165dBm tracking Sensitivity Full ESD protection in all pins Embedded with one 4 MBits flash memory USB 2.0 Full speed compliant interface.

Ultrasonic Sensor-



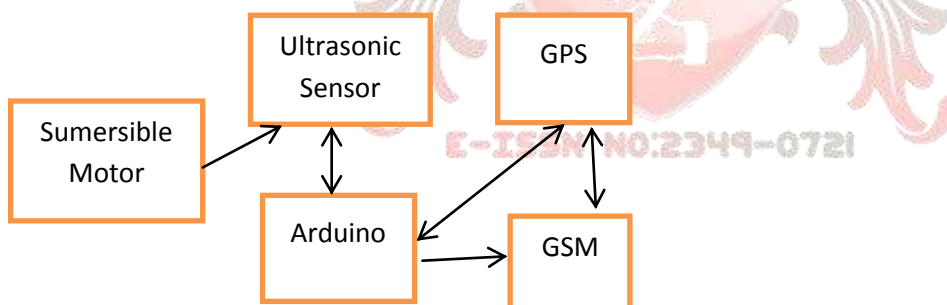
As the name indicates, *ultrasonic* / level *sensors* measure distance by using *ultrasonic* waves. The *sensor* head emits an *ultrasonic* wave and receives the wave.\

Arduino-



ARDUINO UNO ATMEGA 328 3.3V Electric current: 50mA Input Voltage: 7-12V Six 10-bit ADC inputs.

Block Diagram



BLOCK DIAGRAM DESCRIPTION

A **submersible pump**, also called an electric **submersible pump**, is a **pump** that can be fully submerged in **water**. The **motor** is hermetically sealed and close-coupled to the body of the **pump**. A **submersible pump** pushes **water** to the surface by converting rotary energy into kinetic energy into pressure energy. **GSM** is combination of TDMA (Time Division Multiple Access), FDMA (Frequency Division Multiple Access) and Frequency hopping. Initially, **GSM** use two frequency bands of 25 MHz width : 890 to 915 MHz frequency band for up-link and 935 to 960 MHz frequency for down-link. Later on, two 75 MHz band were added. What is **Arduino**? **Arduino** is an open-source electronics platform based on easy-to-use hardware and software. **Arduino** boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. The **working/operation** of Global positioning system is based on the 'trilateration'

mathematical **principle**. The position is determined from the distance measurements to satellites. From the figure, the four satellites are used to determine the position of the receiver on the earth. **Ultrasonic sensors work** by emitting sound waves at a frequency too high for humans to hear. They then wait for the sound to be reflected back, calculating distance based on the time required. This is similar to how radar measures the time it takes a radio wave to return after hitting an object. **Basic level sensors** can be used to identify the point at which a liquid falls below a minimum or rises above a maximum **level**. ... Some types use a magnetic float, which rise and fall with the liquid in the container. Once the liquid, and by extension, the magnet, reach a certain **level**, a reed magnetic switch is activated.

RESULT

The system will automatically detect if motor is disconnected from the circuit and gives alarm. When the owner kept the pump in inside the water. Then any one accessed the pump it sends signal to the owner that it is being stolen. If he again sends the SMS to the motor pump to stop then the operation cutoff, power supply become switched off and buzzer will give a loud alarm such that he will left the motor pump in the same location, with the help of reset SMS it will come to its original mode. And even if the motor has been stolen then user get its exact location on Google map, by GPS.

CONCLUSION AND FUTURE SCOPE

The system is expensive enough, efficient, low power consumption easy to use to protect the electric water pumps which are installed at remote location from theft. It also detects functionality of motor. Now these days it is possible to detect the position as well as performance of the water pump. User can monitor the performance of the machine and even if a machine can going to steal then also user get data from the Android and through GPS we can find it out where is the location of machine or pump.

The future scope of the system is including electrical parameters to be consider before the motor going to stolen. It means if thieves cut or disconnect the power supply within a fraction of time alarm will ON ,on the desired location of user. So that probably possible to avoid stolen of motor.

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