

VEHICLE SECURITY SYSTEM

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Abstract: In automobile field, the security and theft prevention are one of the main areas in current scenario. The security goals are achieved by the GSM, GPS technology. But it is commonly used for the two-wheeler and not in the four-wheeler. Using these technologies, we can only track and monitor the vehicle. Previously, GPS is used to get the current position of the two-wheeler and that data will be send to the user mobile phone through the GSM. This paper implements for theft prevention in two-wheeler using GSM, GPS. It can track, monitor and stop the stolen two wheelers too by this system. The two-wheeler position is obtained by the GPS module, which is send to the microcontroller, which then sends the message to the user smart phone through the GSM module. Here microcontroller, solenoid valves are interfaced with GSM modem and GPS module which will be fixed in the two-wheeler. User can stop the vehicle under theft by android application.

Introduction

INTRODUCING A SYSTEM IN TWO-WHEELER TO PROVIDE SECURITY AND SENDING VEHICLE INFORMATION TO THE OWNER. IN THE PRESENT DAY'S VEHICLE FUEL THEFT IS ONE OF THE MAIN CONCERNS OF MANY BIKE OWNERS. THIS MODEL DETECTOR HAS A GSM MODEM WHICH SENDS SMS TO OWNER OF VEHICLE WHEN THERE IS VEHICLE THEFT IS GOING ON. A SOLENOID VALVE IS USED TO PROTECT FUEL FROM THE THIEF'S BY MAKING A PARAMETER THAT AVOIDS THE STOLEN OF FUEL FROM THE VEHICLES. IN THIS SYSTEM, WE ARE TRYING TO MINIMIZE FUEL THEFTING & STOLING OF BIKE. ALSO, WE ARE GIVING AN EMERGENCY SWITCH FOR MAKING CONTACTS. THIS FEATURE WOULD HELP THE OWNER FOR DECISION MAKING AND TRACKING OF VEHICLE IN CASE OF THEFT AND SAVING VALUABLE LIFE, TIME AND MONEY. Gps IS USED TO FIND OUT THE POSITION OR LOCATION OF THE VEHICLE AROUND THE WORLD.

I. SYSTEM ARCHITECTURE

The below fig.1.shows the system architecture of PIC microcontroller-based vehicle security system. A simple, cost-effective solution is proposed here, by which vehicles fuel security is maintained while the vehicle owner is anywhere across the globe.

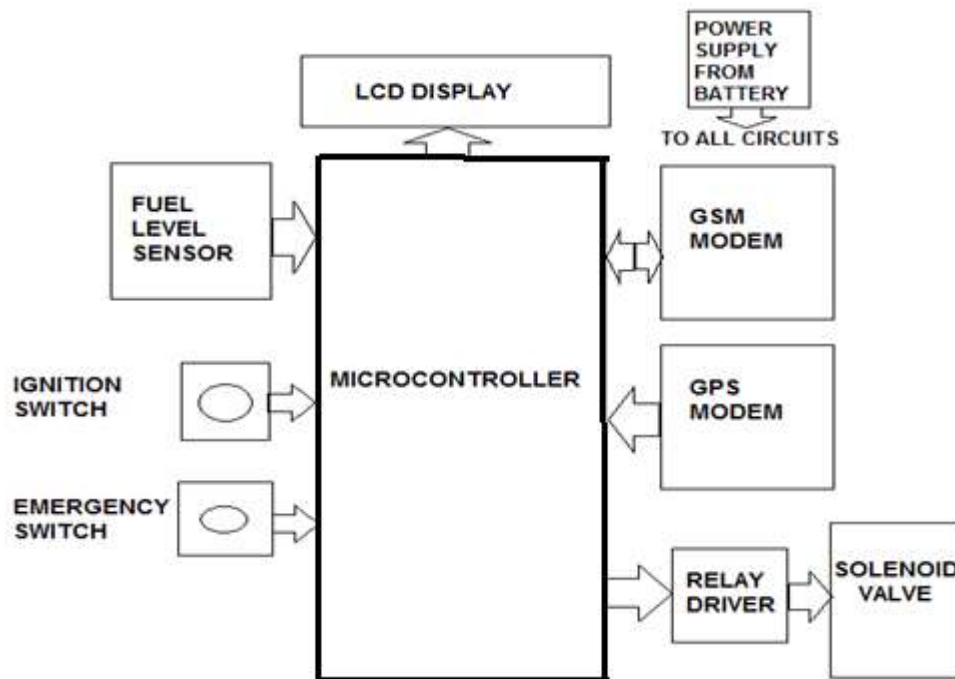


Fig1. Block Diagram Of Vehicle Security System

II. SOLENOID VALVE

A solenoid valve is an electromechanical device used for controlling liquid or gas flow. Solenoid valves make automation of fluid and gas control possible. Modern solenoid valves offer fast operation, high reliability, long service life, and compact design. When the valves are energized the plunger opens allowing media to flow through the valve in the cavity port and out the body orifice port. Turn off the power. The orifice closes and flow through the valve stops. Modern solenoid valves offer fast operation, high reliability, long service life, and compact design.

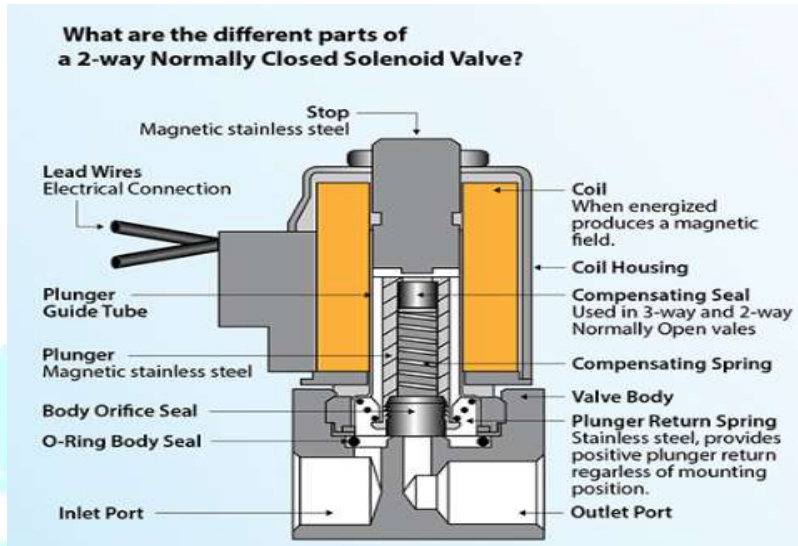


Fig. 2 Parts of Solenoid Valve

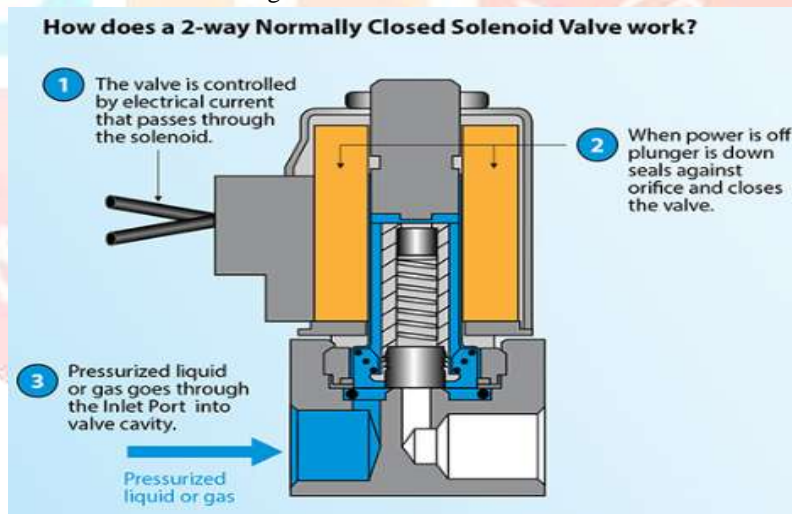


Fig. 3 Working Principle of Solenoid Valve.

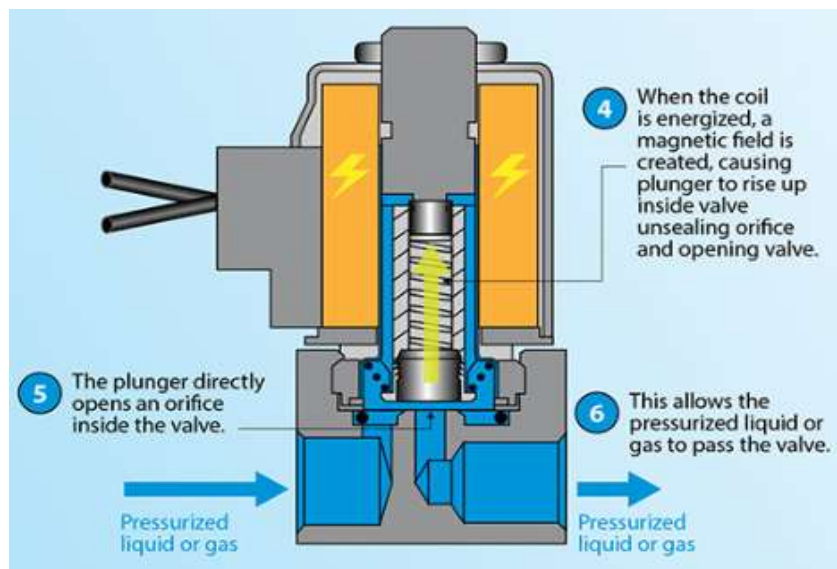


Fig. 4 Working Principle of Solenoid Valve.

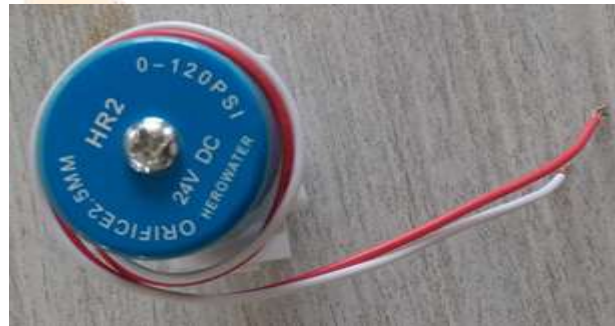


Fig. 5 Working Principle of Solenoid Valve.

III. MICROCONTROLLER-89C51

In 1981, Intel corporation introduced an 8-bit microcontroller called the 8051. This microcontroller had 128 bytes of RAM, 4K bytes of on-chip ROM, two timers, one serial port, and 4 ports (each 8-bits wide) all on single chip. At that time, it was also referred to as a "system on a chip". The 8051 is an 8-bit processor, meaning that the CPU can work on only 8-bits of data at a time. Data larger than 8-bits has to be broken into 8-bit pieces to be processed by the CPU. The 8051 can have a maximum of 64K bytes of ROM, many manufacturers have put only 4Kbytes on chip.

The major Features of 8-bit Micro controller ATMEL 89C51:

- 8 Bit CPU optimized for control applications
- Compatible with MCS-51 Products
- 4K Bytes of In-System Reprogrammable Flash Memory – Endurance: 1000 Write/Erase Cycles.
- Fully Static Operation: 0Hz to 24MHz
- Three-level Program Memory Lock
- 128 x 8- bit Internal RAM
- 32 Programmable I/O Lines
- Two 16-bit Timer/Counters
- Six Interrupt Sources
- Programmable Serial Channel
- Low-power Idle and Power-down Modes
- Extensive Boolean processing (Single - bit Logic) Capabilities.
- On - Chip Flash Program Memory
- On - Chip Data RAM

- Bi-directional and Individually Addressable I/O Lines
- Multiple 16-Bit Timer/Counters
- Full Duplex UART
- Multiple Source / Vector / Priority Interrupt Structure
- On - Chip Oscillator and Clock circuitry.
- On - Chip EEPROM.
- SPI Serial Bus Interface.

IV. GSM MODEM

The long form of GSM is Global System for Mobile communication. Most GSM uses frequency band of 900 MHz or 1800 MHz [6]. This GSM modem acts just like a mobile phone. The modem uses RS232 standard for communication. The modem can be connected to serial port of PC or to any controller. GSM modem is used to send and receive SMS or to make/receive voice calls. It can also be used as GPRS modem to use internet service. When PIC16f877 receives signal from sensors it sends AT commands to GSM modem to make a call to a predefined number stored in program.

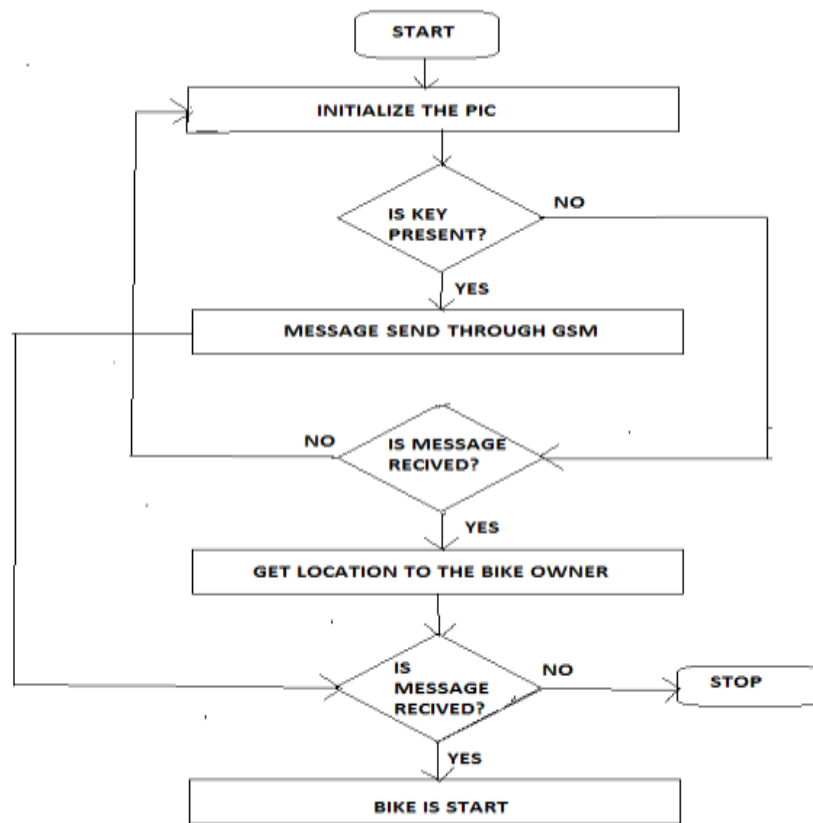
V. GPS MODULE

The Global Positioning System (GPS) is global navigation satellite system which uses a constellation of between 24 and 32 Medium Earth Orbit satellites that transmit precise microwave signals, that enable GPS receivers to determine their location, speed, direction, and time. GPS has become a widely used aid to navigation worldwide, and a useful tool for map-making, land surveying, commerce, scientific uses, tracking and surveillance, and hobbies such as geo-caching and way marking. Also, the precise time reference is used in many applications including the scientific study of earthquakes and as a time synchronization source for cellular network protocols. GPS has become a mainstay of transportation systems worldwide, providing navigation for aviation, ground, and maritime operations. Disaster relief and emergency services depend upon GPS for location and timing capabilities in their life-saving missions. The accurate timing that GPS provides facilitates everyday activities such as banking, mobile phone operations, and even the control of power grids. Farmers, surveyors, geologists and countless others perform their work more efficiently, safely, economically, and accurately using the free and open GPS signals.

VI. RELAY

A relay is a simple electromechanical switch made up of an electromagnet and a set of contacts. Relays are found hidden in all sorts of devices. When supply is given to relay, the electromagnet is on, and it attracts the armature (blue). The armature is acting as a switch in the second circuit. When the electromagnet is energized, the armature completes the second circuit and the light is on. When the electromagnet is not energized, the spring pulls the armature away and the circuit is not complete.

VII. FLOW CHART

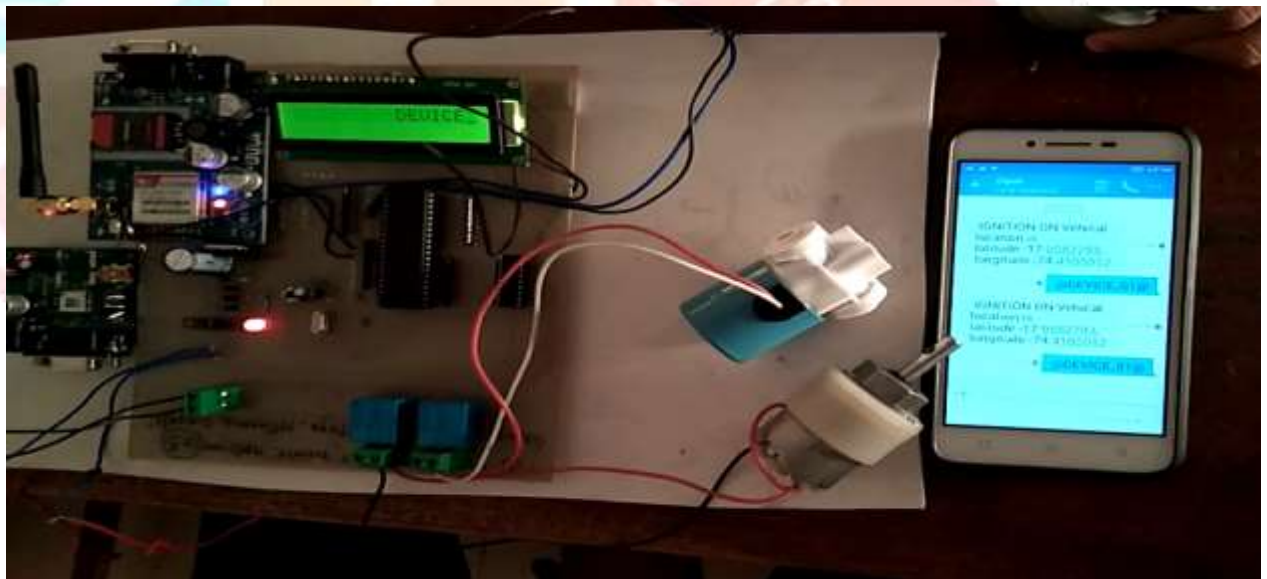
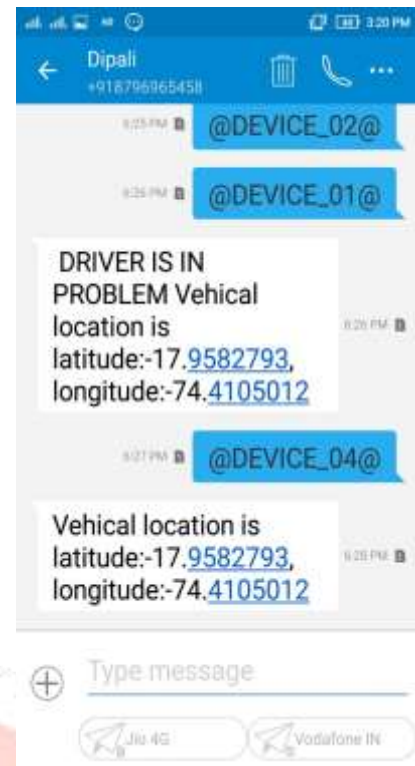
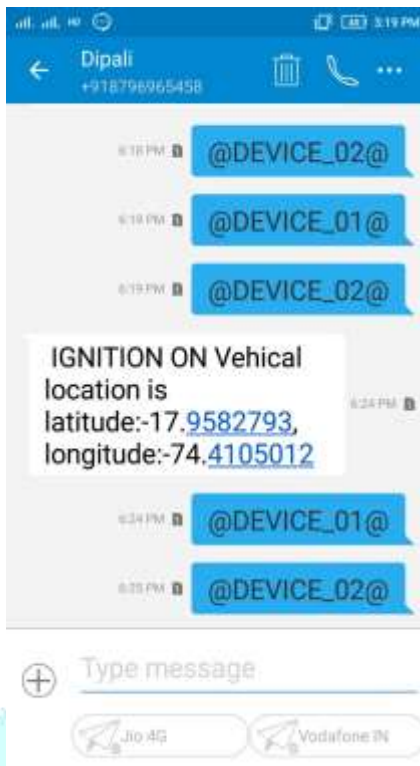


VIII. FUTURE SCOPE

- We can provide voice feedback system.
- We can use MATLAB image processing to identify the face of theft.

IX. RESULT

We successfully achieved our aim of detecting fuel theft and get its intimation on our phone via SMS and also generate alarm. Hence, by using this design for fuel theft prevention we save fuel and it can be protectant in a fuel tank. Also, we have get location of our vehicle in case of theft and also, we able to turn our vehicle OFF easily from remote location. By using the emergency switch we communicate to our contacts in danger situation using GSM module.



X. ACKNOWLEDGMENT

Today on completion of this project report, the persons we need to thank the most who have helped us throughout the making of this report and without whose help it would not have seen the light of the day.

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Prasad P. Dani, Asmita A. Katkar, Mayuri M. More

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