IOT BASED CASH LESS PETORL PUMP

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ABSTRACT:

Today almost all petrol pumps have a controlling unit to perform the tasks like managing the electrical pump, operate the display, gauge the flow, and then switch the electrical pump off as necessary. However, someone still needs to collect the money. The main goal of the project is to create a dispensing system that can automatically distribute gasoline for the amount specified by the client. The majority of sites we visit on a regular basis, including offices, bus stops, train stations, schools, etc., have fuel distribution systems. Here, we'll advocate for a petrol delivery method from the present period. In India, there have been numerous issues brought on by the dispensing of fuel to such a large number of automobiles at the fuel stations. The driver of the car must pay for petrol in cash and may be required to pay more than the amount of fuel provided because the station owner does not have access to small change. Utilizing RFID technology, the RFID Based Automated Petrol Pump will eliminate manual labor, create an auto-guiding system, and carry out each operation in turn. These devices require less time to use and are very reliable.

I.INTRODUCTION OF PROJECT

In India, there have been numerous issues brought on by the dispensing of fuel to such a large number of automobiles at the fuel stations. The vehicle driver has to pay for fuel with cash money and may have to pay more than the amount of dispensed fuel due to the lack of small money change available with station operator. Petrol is one of the things which we need in day-to-day activities may be directly or indirectly. Fuel stations are currently manually operated. These fuel pumps take more time and manpower to operate. It is very expensive to place fuel stations in remote areas in order to provide excellent service to customers. All of these problems are solved by the use of unmanned petrol pumps, which require less time to operate and are effective and can be installed anywhere the customer self-going to avail the services the payment is done by electronic clearing system.

Cash Less Petrol Pump is used to reduce human work, to develop an auto-guided mechanism and to implement the task sequentially by latest technology. These dispensing systems are very dependable and time-efficient machines. The major components used in this project are – Atmega328 Microcontroller, Power supply, a Motor driver, an LCD display, Resistors, Capacitors.

II.LITERATURE SURVEY

In several projects and autonomous systems that call for a straightforward, inexpensive micro-controller, ATmega328 is frequently employed. 1KB Electrically Erasable Programmable Read-Only Memory is available in the ATmega328 (EEPROM). This functionality indicates that the microcontroller can still store data and output results after receiving an electric source, even if the power is turned off.

Moreover, ATmega-328 has 2KB Static Random Access Memory (SRAM). ATmega328 has several different features which make it the most popular device in today's market. These

features consist of advanced RISC architecture, good performance, low power consumption, real timer counter having separate oscillator, 6 PWM pins, programmable Serial USART, programming lock for software security, throughput up to 20 MIPS etc.

Everything is digital now. Nearly all Petrol pumps in many current systems feature a controlling device to manage the electrical pump, run the display, measure the flow, and then turn OFF the electrical pump. However, a person is still needed to collect the money, and there is always a chance for human error. In this suggested Cash Less Petrol pump automation system, we can access petrol at various Petrol stations operated by various petroleum firms.

III.DESIGN OF HARDWARE

This chapter briefly explains about the Hardware. It discuss the circuit diagram of each module in detail.

ARDUINO UNO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. Uno board has a resistor pulling the 8U2 HWB line to

ground, making it easier to put into DFU mode. Arduino board has the following new features:

• 1.0 pin out: added SDA and SCL pins that are near to the AREF pin and two other new pins placed near to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible both with the board that use the AVR, which operate with 5V and with the Arduino Due that operate with 3.3V. The second one is a not connected pin, that is reserved for future purposes.

• Stronger RESET circuit.

• Atmega 16U2 replace the 8U2.

"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.

Fig: ARDUINO UNO

POWER SUPPLY:

The power supplies are designed to convert high voltage AC mains electricity to a

suitable low voltage supply for electronic circuits and other devices. A power supply can by broken down into a series of blocks, each of which performs a particular function. A d.c power supply which maintains the output voltage constant irrespective of a.c mains fluctuations or load variations is known as "Regulated D.C Power Supply".
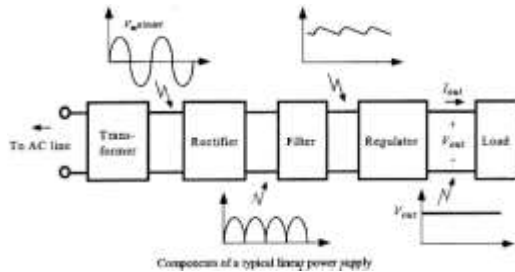

Fig: Block Diagram of Power Supply

LCD DISPLAY

A model described here is for its low price and great possibilities most frequently used in practice. It is based on the HD44780 microcontroller (Hitachi) and can display messages in two lines with 16 characters each. It displays all the alphabets, Greek letters, punctuation marks, mathematical symbols etc. In addition, it is possible to display symbols that user makes up on its own. Automatic shifting message on display (shift left and right), appearance of the pointer, backlight etc. are considered as useful characteristics.


Fig: LCD

BUZZER

Digital systems and microcontroller pins lack sufficient current to drive the circuits like relays, buzzer circuits etc. While these circuits require around 10milli amps to be operated, the microcontroller's pin can provide a maximum of 1-2milli amps current. For this reason, a driver such as a power transistor is placed in between the microcontroller and the buzzer circuit.
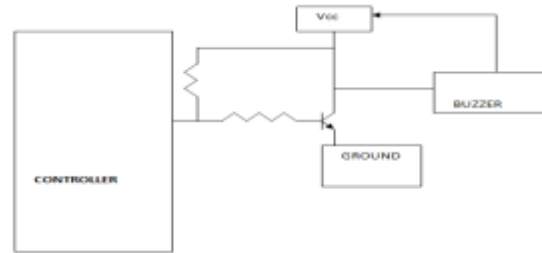
WIFI MODULE:

The **ESP8266** is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability produced by Shanghai-based Chinese manufacturer, Espressif Systems.[1]

The chip first came to the attention of western makers in August 2014 with the **ESP-01** module, made by a third-party manufacturer, Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at the time there was almost no English-language documentation on the chip and the commands it accepted.[2] The very low price and the fact that there were very few external components on the module which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, chip, and the software on it, as well as to translate the Chinese documentation.[3]

The **ESP8285** is an ESP8266 with 1 MiB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi.[4]

The successor to these microcontroller chips is the ESP32.

RFID (RADIO FREQUENCY IDENTIFIER)

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. Most RFID tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a (RF) signal, and other specialized functions. The second is an antenna for receiving and transmitting the signal. Chip less RFID allows for discrete identification of tags without an integrated circuit, thereby allowing tags to be printed directly onto assets at a lower cost than traditional tags.

Tag   Interrogator   Computer
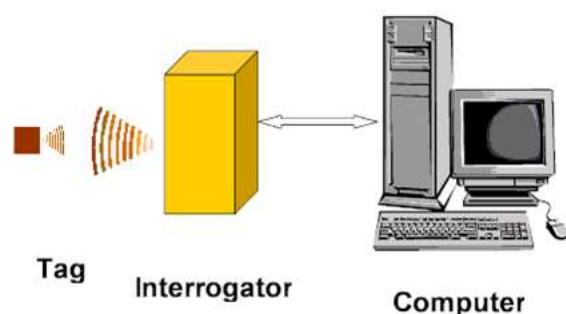
L293D:

The L293 and L293D are quadruple high-current half-H drivers. The L293 is designed to provide bidirectional drive currents of up to 1 A at voltages from 4.5 V to 36 V. The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V. Both devices are designed to drive inductive loads such as relays, solenoids, dc and bipolar stepping motors, as well as other high-current/high-voltage loads in positive-supply applications. All inputs are TTL compatible. Each output is a complete totem-pole drive circuit, with a Darlington transistor sink and a pseudo- Darlington source. Drivers are enabled in pairs, with drivers 1 and 2 enabled by 1,2EN and drivers 3 and 4 enabled by 3,4EN. When an enable input is high, the associated drivers are enabled, and their outputs are active and in phase with their inputs. When the enable input is low, those drivers are disabled, and their outputs are off and in the high-impedance state. With the proper data inputs, each pair of drivers forms a full-H (or bridge) reversible drive suitable for solenoid or motor applications.

Mini Submersible Pump

Submersible pumps in general are designed to be fully submerged into the water. Submersible pumps are placed within the reservoir of water that requires pumping out, which is why they are normally used for drainage in floods, sewerage pumping, emptying ponds or even as pond filters. In this article, the mechanism of a smaller type of submersible water pump called the mini submersible pump will be specifically addressed. A mini submersible pump is a smaller version of the submersible water pumps which is lightweight, small size, low consumption, and makes little noise. A mini submersible water pump is used widely in household for cooking,

cleaning, bathing, space heating, watering flowers, etc. A mini submersible water pump is a centrifugal water pump, which means that it uses a motor to power an impeller that is designed to rotate and push water outwards. The motor is located in a waterproof seal and closely connected to the body of the water pump which it powers. Filtration pumps found inside aquarium fish tanks utilize a type of mini submersible water pump. The mini submersible water pump is installed inside the actual fish tank to pump the water out where it is needed.

Advantage and Disadvantage of Mini Submersible Pump: Min submersible water pumps are very efficient as well because they do not require a lot of energy to vacuum in water within which they are submerged. However, known disadvantages of mini submersible water pump are that seals tend to corrode over time which allows water to potentially seep into the motor. When this happens, the motor could be rendered useless, and accessing and repairing becomes extremely difficult.

IV.BLOCK DIAGRAM:
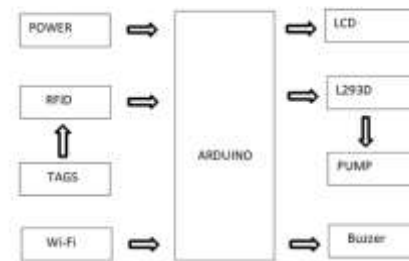
V.CONCLUSION

This project is meant for security systems whose access is only for respected authorities. The corresponding amount is calculated & deducted from his petrol card. The electrical pump is then turned ON according to the entered amount, fills the tank and automatically turns OFF. Our electronic system performed as expected. We were able to implement all the functions specified in our proposal. The biggest hurdle we had to overcome with this project was interfacing the micro controller with the hardware components. We feel that this electronic system is very marketable because it is easy to use, comparatively inexpensive due to low power consumption, and highly reliable. By using this project one can design a secured system. User will login in to the online portal with mobile number and password. After login he will select the amount of the petrol in liters and so that amount will get automatically gets deducted and he will get one secrete code. He has to enter that code at petrol pump then hardware unit will contact online server and then get amount for petrol pump for that user and release that much amount of petrol for that user. That secret key will be unique for each user. Amount of petrol will be calculated with the flow sensor and the pump will, be used to dispense the petrol, relays will be used to start and stop the pump.

FUTURE SCOPE

Unmanned petrol station was required for over the years to fulfil the requirement of consumers over the wide area. Unmanned petrol station concept is not limited petrol station, but it can be applicable for the availability of food grades at long distinct area. It can make human safer from robbery, fraud, and any other unwanted incidences by the use of plastic money. Project mainly focus to reduce the waiting time and provide faster way to carry to purchasing of petrol at Petrol station. It has been observed that the proposed system is extremely beneficial as it provides the secure and cashless digital system, which avoids fuel the fts in recent digital India concept.

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