FAST LANE FUEL DISPENSER (FLFD)

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Abstract- **To fill the fuel tank without human interaction using Radio-Frequency Identification (RFID) Card which is prepaid with a minimum balance. The information such as user and vehicle details, amount paid and the balance in the account will be shared with the user. The proposed system is to set up a framework to fill the fuel tank from the fuel dispenser. The RFID card reader is used to verify all the details of the user. The system displays the modern-era petrol dispensing system which is intended to be working with a prepaid card. The system can improve the fueling process in order to make it much easier, more secure, and more reliable. It also avoids the black selling of fuels in the absence of a serviceman and reduces the risk of carrying money every time.**

Keywords-**RFID, RFID Reader, Fuel Dispenser, Prepaid Card.**

I. INTRODUCTION

Everything has been digitized in many existing frameworks, practically all petroleum siphons have a controlling unit to play out the undertakings like dealing with the electrical siphon, driving the presentation, measuring the stream, and as needed be switched OFF the electrical siphon. Yet, at the same time, an individual is expected to gather the cash and there is a plausible case of numerous human blunders. In this proposed system petroleum siphon robotization framework, utilizing RFID cards to get petroleum at various gas station of different petroleum organization the nation over. Here, all the gas stations are combined to create a single web server and a secret code to access it is known exclusively to petroleum organizations.

Whenever we need to refuel the tank, we simply need to put the RFID card close to the RFID reader. At that point, the microcontroller peruses the information from the RFID reader and plays out the activity as indicated by the client prerequisites. This advanced system gives security to the clients by confirming the subtleties of whether the number in the RFID card coordinates with the code which is identified by the ZigBee chip while going into the fuel station.

This framework comprises an Arduino UNO

microcontroller, RFID module, LCD show, Keypad. At the point when the RFID reader reads the card, it requests the secret code. If the wrong secret key is entered beyond two times, it doesn't permit the client to fill the fuel. Furthermore, when the right secret key is placed into the framework, the framework requests the sum and it additionally shows the equilibrium sum on LCD. On entering the sum, the engine turns over and petroleum gets filled in the petroleum tank from the fuel gadget. After this cycle closes, the data for example, balance sum, inexhaustible date, and bill to the client for their reference is displayed and sent to their mobilenumber.

II. LITERATURE SURVEY

A. To Observing Client records the utilization of netserver:

As per Fawzi Mohammed Munir and Mohannad M Hasan (2015): In this review, a RFID fundamentally based thoroughly gas distributing Framework transformed into proposed which stressed controlling the buyer data set the utilization of net server. Here an information base made the utilization of MYSQL incorporates all records of the clients. Clients the utilization of this gadget for the essential time needs to make a record wherein the administrator needs to shop the records of buyer comprehensive of the Vehicle Id, Client call and their specific identification to later be utilizedby RFID reader in bunks.

B. Unique finger impression-based RFID:

As per Anjali et al. (2020): In this Review, Self-administration petroleum bunk with a Unique finger impression-based RFID innovation was proposed. Here the client needs to set the finger impression on the module, after that the total character of the individual is put away in the data set alongside his/her finger impression as one-of-a-kind personality. So unapproved personals can be stopped utilization likewise how much petroleum bay and outletalongside cash can be made due.

C. RFID and GSM Innovation framework:

As per Naresh Jogi et al. (2012): In this Review, a brilliant petroleum siphon that utilizes RFID and GSM innovation were proposed. Here each client will be given a PF Card called Petroleum Filling card, they need to swipe that card in order to continue further. The integrated LCD Show will provoke the client to the secret word. Assuming that the client enters the wrong secret word, "WRONG Secret word" will be shown else LCD will incite the client for sum. Assuming there is low equilibrium in cards, the "LOW Equilibrium" text will be shown on LCD.

D. Mechanized petroleum siphons utilizing Hub MCU and Arduino Mega:

Corresponding to R. Deepa. (2019) In this review, an RFID-based petroleum siphon including Arduino mega and Hub MCU was proposed. In this Venture, IoT innovation is utilized to screen the petroleum and keep up with them.

EXISTING FRAMEWORK

Currently, the petrol bunks are the cash. These fuel stations require more time and manpower. In order to do this, the system is designed to reduce human relations and errors. Normally in petrol bunks, there is person-to-person communication. Approximately all petrol bunk has a microcontroller to handle the electrical supply, trip the screen, and also execute all tasks. Still someone is needed to collect.

ARDUINO MEGA

The Arduino Mega is a microcontroller-based board connected with ATmega2560. It consists of 16 analog pins, 54 digital I/O pins, 16 simple pins, 4 UARTs (gear successive ports), a 16 MHz crystal oscillator, a USB, an ICSP header, a power jack, and a reset button. The board contains 5 ground pins which can be used when necessary. The board supports the microcontroller with everything that it needs. The power supply can be ensured by connecting it to the computer using a USB cable. It can also be connected using a battery or adapters. The board is of a length of 101.5 mm and the width is 53.3 mm.

LCD MODULE

A 16x2 alphanumeric LCD module is used to display numbers, alphabets, and special characters. As shown in the figure below, the higher bit data lines of LCD pins such as pin 11,12,13, and 14 are interfaced to digital pins of Arduino such as pin 8,9,10 in 4-bit mode. The LCD's RS and E pins are connected to pins 12 and 13. To perform a write operation on anLCD, connect the read/write pin to the ground.

PROPOSED FRAMEWORK

A. Enrollment and Authority

An RFID card is given to every client. At the point when client drives into a petroleum siphon and swipes the card on

the RFID reader introduced at the bunk, it shows the introductions of LCD and GSM units. From this, the client can gather that the framework is working appropriately. Once validated by client, the LCD prompts the client to enter the measure of petroleum in liters. When number of liter is entered, the balance sum in the card is checked. Assuming equilibrium is adequate, the fuel is filled for the entered number of liters. When the quantity of liter is entered the engine siphon turns over running and fuel begins streaming out of the line associated with engine. When the entered liter is reached the siphon switches off and the fuel quits streaming out of the line. The exchanges subtleties of the amount of fuel filled, sum deducted and remaining equilibrium is shown in the LCD also sent as SMS to client's mobile number. Assuming that equilibrium is deficient, it shows "Low Balance", re-energize your card" message on LCD as well as sends it as SMS to the phone. Re-energize choice is made accessible through client advanced cell. After the successful re-energize, the client can go on with the transaction of fuel filling.

B. Implementation and Working

Figure 1: Flow diagram of proposed system

The gasoline pump is equipped with an RFID reader, which will read and check for the balance amount. Once the amount is entered the motor will start, and the gasoline pump can be released and it can be injected into the gasoline tank from the fuel dispenser. After this process, it sends information such as the balance amount, renewable date, and bill to the user for their reference. This petrol pump system consists of a microcontroller (Arduino mega) along with a Node MCU module for IoT Communication, an RFID module, an LCD display, Keypad, Start Switch, a buzzer, a motor driver circuit, and a pump. This framework will decrease labor and will spare time. The client will simply enter the price from the keypad and the vehicle will be loaded up with petroleum. RFID-based robotized petroleum siphon is to diminish human work and develop an auto-directed component and realize the endeavor task progressively by using RFID advancement.
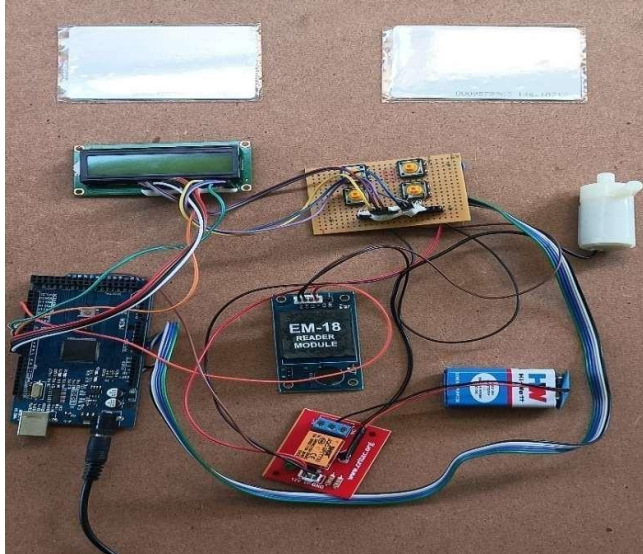
III. RESULTS AND OUTPUT

FIGURE 2: INTERFACING WITH LCD

FIGURE 3: INITIAL STAGE

Figure 5: Amount Processing

Figure 6: Fuel Processing
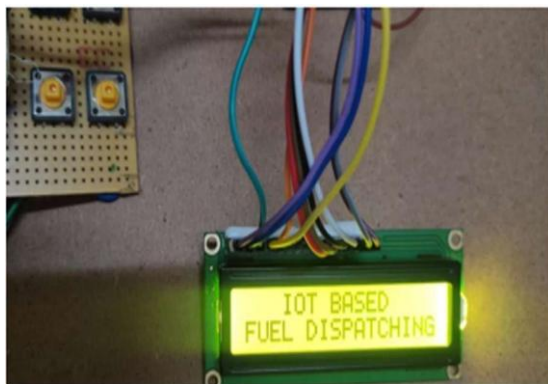

Figure 7: Fuel Dispatching

CONCLUSION

FIGURE 4: RFID CARD READING

This framework interfaces the gas stations of various organizations on a solitary web server and the access for it is safeguarded by a secret word and this secret word is just known to the petroleum organizations. On this web server, we are keeping up with the apportioned petroleum data and accessible equilibrium of the customers. And, surprisingly, this data is sent to the customer's cell phone. This framework gives the component of prepaid cards and it likewise gives the position customers to access the petroleum in all the gas stations the nation over through a solitary RFID card. One more significance of this framework is to give security to the customers rather than conveying the cash without fail.

FUTURE SCOPE

This system is intended for security frameworks that can be accessed only by the respective users and authorities. The automated gas station was expected throughout the years to satisfy the necessity of customers over the wide region. The idea of an Automated gas station isn't restricted to regular gas stations, yet it tends to be appropriate for the accessibility of food grades at specific regions. It can make humans more secure from burglary, misrepresentation, and some other undesirable occurrences by the utilization of plastic cash.

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