



SELF SERVICE AUTOMATED PETROL PUMP USING FINGERPRINT BASED RFID TECHNOLOGY

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Abstract

Today, everything has been digitized, and the entire gasoline pump has a design that can display the task of controlling the pump, driving the display, quantifying the flow rate, and turning off the pump. To collect the cash, still someone is mandatory and there is a chance of many human errors. So, the main aim is to propose a system is to avoid human errors. My proposed system is petrol pump automation, which can deduct gasoline from the user card based on RFID technology without human intervention. Today, fluid supply systems are common in different places in our daily lives. Here, we will introduce the modern gasoline distribution system. To place petrol stations in remote areas is extremely precious to supply outstanding capacity to the clients. All these troubles can be solved by using this gasoline pump automation technology, which requires shorter operating time, higher efficiency and can be installed anywhere. This self-service gasoline pump device also provides customers with the protection of fueling at the gas station without any involvement of the service provider, so the risk of carrying money every time is minimized.

Keywords: RFID, DC motor, LCD, Relay

I. Introduction

The rise in the amount of vehicles in the country in current days has led to the traffic jams in each and every city. The transportation of vehicles at gas stations has caused a lot of difficulties anywhere in India. Usually drivers pay the money with cash. But sometimes, they may pay more amounts due to lack of small money change on hand [III]. This Automatic fuel Pump is designed to reduce manual work and build up an automatic system to execute the task one after the other with RFID technology. These systems are very much dependable and a smaller amount time overwhelming strategy[I]. The components used in this project are 8051 Microcontroller, RFID tags,

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Power supply, an LCD display, a Motor driver and RFID reader. Fuel goods are one of the expensive and unusual manifestations of the nature. The appropriate, utilize and delivery is a most significant job to carry on these supplies [IX]. A fuel area is a help which sells fuel and oils by means of fuel allocators or in any case called program are utilized to push Diesel, lamp fuel, and so on, into vehicles and to investigate the monetary expense of the made items disseminated in this way [I]. Businesses are occupied in downtown and rural public transportation as well as other transportation companies, big fuel consumers need to organize the liberation of fuel to avoid or at least reduce the abuse of petroleum products [IX]. The urgent situation of RFID technology has distorted the conventional approach of information gathering. RFID tags have more qualities like non-contact, reading speed, no wear, long life, customer friendly and the safety purpose than the traditional information collection method [V]. We have seen the use of RFID in vehicle identification, tollgate money collection, and traffic management [IX]. This article offers the execution of fingerprint based RFID technology is to reduce manpower at the time dispensing the fuel and human error while collecting the cash at all our Indian cities.

II. Existing System

In recent days the petrol bunks are managed physically [III]. Normally in petrol bunks there is a person to person communication. Approximately all petrol bunk has a microcontroller to handle the electrical supply, trip the screen and also execute all tasks. But still a person is necessary to collect the cash [V]. These fuel stations are requiring more time and require more manpower. In order to reduce manpower I have proposed one system. This system is designed to reduce this human relations and errors.



Fig.1: Existing system of Petrol Bunk

Therefore, there is no need for workers to refuel [V]. In this system, all drivers have an RFID card, which can be recharged by us or some places. The gasoline pump is equipped with an RFID reader, which will read our fingerprint and enter the amount, the motor will start, and gasoline will be injected into the gasoline tank from the fuel dispenser [IX].

III. Proposed System

The most important era, my proposal system is based on fingerprint technology [III], designing a skilled system that can deduct the amount of gasoline from the user card without human intervention.



Fig. 2: Proposed System of Petrol Bunk

Liquid distribution systems are usually set up in many other places in our daily life, such as offices and gasoline pumps. Here, we will introduce a new era, that is, a gasoline dispensing arrangement, which is operated by a prepaid card using fingerprint RFID technology [IX]. This article focuses on the design of rechargeable RFID cards and the gasoline distribution system based on fingerprint-based RFID technology. The buyers who want to profit from this service must complete the payment themselves through the electronic clearing system. By using this we can save more time and reduce human errors and also we can get required amount of fuel [III].

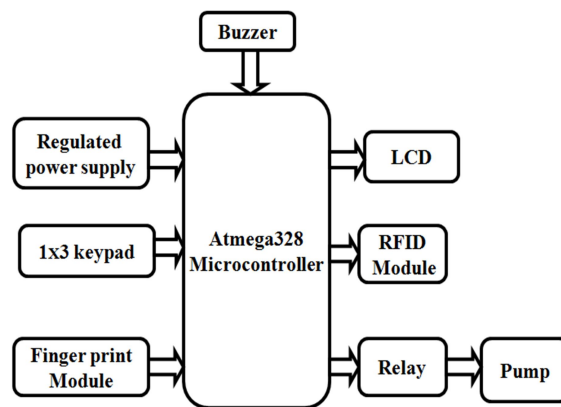


Fig.3: Block diagram of proposed system

In this Hardware tools and their Description mentioned below:

- ◆ Regulated Power Supply
- ◆ Arduino (ATMEGA 328) Microcontroller
- ◆ Fingerprint Module
- ◆ RFID Module
- ◆ Buzzer
- ◆ Push button/ Control switch
- ◆ LCD(2*16)
- ◆ Relay
- ◆ AC 230 cooler pump

IV. Design Flow of the Proposed System

To manage this structure first, we have to take this in Admin mode. In this mode, we must go through the data to the fingerprint sensor's record. For this, we must collect our fingerprint impressions to access our secure system [IV].

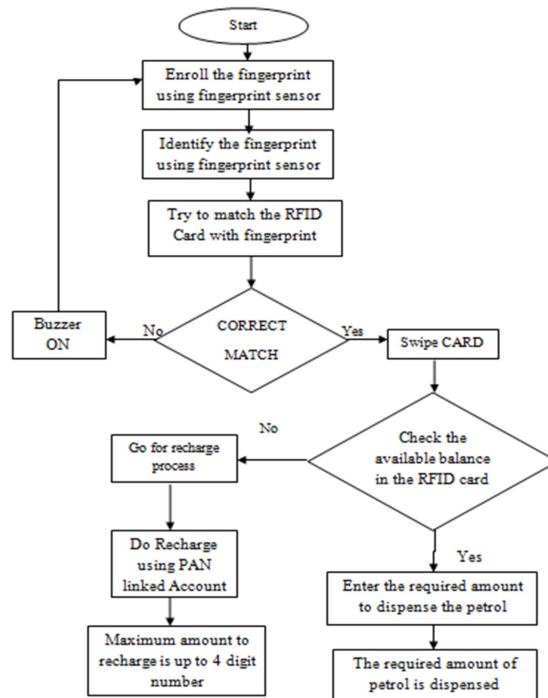


Fig. 4: Flow chart of the system working procedure

The Consumer has to set his/her finger on the fingerprint module. Then we have to enroll our Fingerprint. The most important quality or area of expertise of the fingerprint is that it is unique. It provides our system for high level safety than any other systems [II]. This can be done one time or for every new entry, but they have to be adding their fingerprint in the card and in this we have used the arrangement in the

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mode of Normal one. In this mode, the systems will correlate the received fingerprint input with the fingerprint input stored earlier [VII]. If the opening met with the recollection then it sends positive signal and identity number of that person and in case of mismatch it sends error signal. Then the fingerprint sensor sent final output to the microcontroller. Then the microcontroller analyzes these output data. If the signal from the fingerprint module is positive, it will open the Relay and Motor [II]. However, if an error output is received, the Buzzer will be turned on. Next, the system asks for the quantity and it displays the total balance. If the card does not have sufficient balance, then we go for the recharge process. Then the required quantity of fuel is dispensed.

V. Hardware Implementation and Results

In this planning, we've utilized Fingerprint and RFID card reader to swipe, also used LCD display to see the balance amount in the display [VIII]. And we have used the keypad to enter the amount for dispensing the fuel in our tank. This structure accepts only the certified Fingerprint based RFID card and it will workthrough microcontroller accepting esteem from the keypad that shows the buyer demand [VI]. And consumers have the correct quantity of the petroleum.

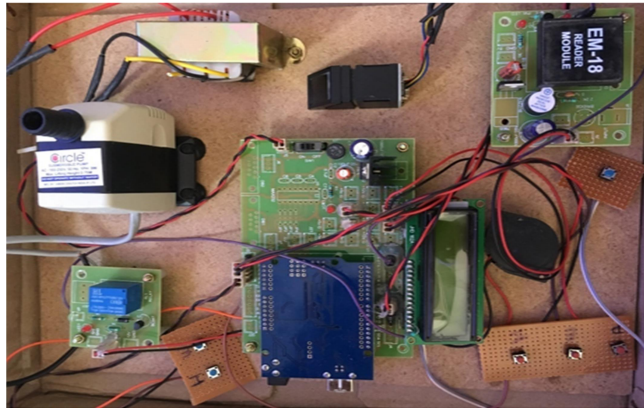


Fig.5: Fingerprint based RFIDmodule with the hardware equipment



Fig.6:dispensing the required amount of petrol

VI. Conclusion

This Fingerprint based RFID system is a versatile technology where we can save our time, money, etc., This Fingerprint based RFID structure is recycled in several purposes based industries and real time appliances. In our proposed Fingerprint based RFID arrangement, it will directly disburse the correct amount of fuel required by the customer need and it will diminish the abuse of the fuel. As well as if the unauthorized customer tries to swipe anyone's card, the RFID framework dismisses the card so this scheme is completely protected. To gain most excellent presentation the Fingerprint based RFID per users and labels always has to be good in excellence.

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