

# AUTOMATED PETROL BUNK

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**Abstract - Automation plays an important role in 21st century. The principal point of this project is to structure a framework which is prepared to do consequently deducting the measure of the petrol dispensed from user card dependent on RFID innovation and send the data of transaction of petrol and the sum to the proprietor through the Internet of Things (IoT). Liquid dispensing systems are normally found in our day by day life in better places like workplaces, Bus stands, Railway stations, Petrol syphons. Here we are going to display the modern era petrol dispensing system which is intended to be working with a prepaid card utilizing RFID innovation technology. The undertaking primarily points in structuring a prepaid card for petrol bunk framework and furthermore petrol dispensing system utilizing RFID innovation. In current days the petrol stations are worked physically. This petrol pumps are tedious and require more labour. To put petrol stations in the far-off zone is all around expensive to give the superb office to the clients. Every one of these issues are dealt with by the utilization of unmanned power pump which requires less time to work and it is viable and can be introduced anyplace.**

**Key-Words: RFID, IOT, Microcontroller, APR3383, LDR**

## I. INTRODUCTION

Today practically all petrol pumps have a controlling unit to play out the undertakings like dealing with the electrical pump, drive the presentation, measure the stream and respectively turning off the electrical pump. Yet at the same time, an individual is required to gather the cash and have a perception over the accumulation and dissemination of petroleum at every petrol bunk. This venture goes for structuring a framework to wipe out this human collaboration as that there is no requirement for laborers to fill the petroleum and watch every oil bunk independently. In this framework, all drivers have a smart card and all the data are exchanged to a single proprietor through IoT. There are different highlights of our project.

This will be consisting of prepaid card, RF modems, microcontroller, keypad, display and solenoid valve. This framework will decrease labour and will spare time. The client will simply enter the price from

keypad and vehicle will be loaded up with petroleum. RFID based robotized petrol bunk is to decrease human work and build up an auto-guided mechanism and to actualize the undertaking task successively by utilizing RFID innovation. These frameworks are very dependable and less tedious gadgets.

IOT is used to monitor each activity in the petrol bunk and also maintain it from a far distance (like ordering for petrol from the industry etc. The components used in this project are microcontroller, Wi-Fi module RFID tags, Power supply, an LCD display, a Solenoid valve and RFID reader. Petroleum-based products are one of the significant and uncommon manifestations of nature.

## II. LITERATURE SURVEY

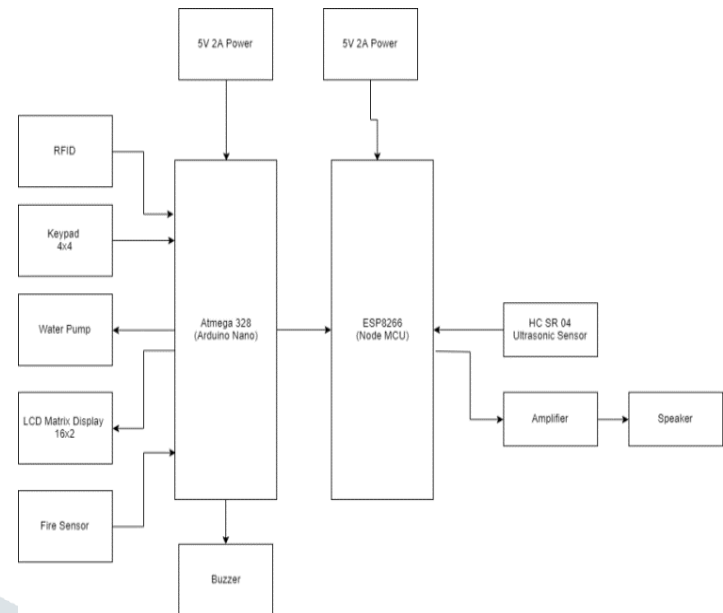
In the year 1883, sylvanius F. Bowser concocted a thought drawn water from a well by utilizing a wooden plunger. Around 1885, he utilized this thought if there should be an occurrence of petroleum pump and turned into the organizer of S.F.Bowser Pump Company. In the year 1890, he began to pump gasoline fuel alongside the kerosene and thusly the principal gas pump was concocted. The organization S.F.Bowser proceeds with the refining, improvement. This "filling station" was sold to general stores in the year 1893. Prior to 1893, the driver used to fill the vehicle tanks by utilizing "drum and measure" strategy. This process was quite lengthy, improper and dangerous. In the wake of developing "filling station pumps," this procedure become refreshed and individuals began to be utilized "filling station" to administer the petrol and kerosene. After these different advancements made and the modern petrol pump is created which are

stepping now daily<sup>[5]</sup>. Aside from this, we have included some new highlights into the current framework, for example, fire identifier, an ultrasonic sensor to quantify the level of the petroleum in petrol stack and furthermore IoT is utilized to screen the transactions remotely<sup>[1]</sup>.

### III. EXISTING SYSTEM

In beginning days, the petrol pumps were disseminating petrol utilizing labour to particular client vehicles and were thoroughly relies upon man's steadfastness who was carrying out this responsibility. Anyway, today petrol distribution system is having a few hindrances with respect to steal of petrol, unapproved petrol selling and wastage of the workforce and so on.

Petrol bunks were totally operated by humans. The automated petrol bunk existing are provided with RFID Technology but has security issues of malfunction and lack of monitoring technology. And it would require human effort to check the petrol reserve and dispense information's.



### IV. PROPOSED SYSTEM

We propose a system where client will simply enter the price from the keypad and the vehicle will be loaded up with petrol. It automatically detects the petrol level and makes the whole system automated. RFID based automated petrol pump is to lessen human work and build up an auto-guided system and to actualize the undertaking successively by utilizing RFID innovation. These frameworks are exceptionally reliable and less tedious gadgets. IOT is utilized to monitor every movement in the petrol bunk and furthermore maintain it from a far separation (like requesting for petroleum from the industry and so on). Petroleum products are one of the valuable and rare creations of the nature hence our system greatly reduces stealing of petrol and wastage of the same.

Fig1: Block diagram of the proposed system

#### Hardware used are:

1. At-mega 328(Arduino Nano)
2. ESP8266 (Node MCU)
3. RFID
4. LCD Matrix display 16\*2
5. Fire Sensor
6. Keypad 4\*4
7. Buzzer
8. Ultrasonic Sensor
9. Amplifier
10. Voice module

### V. IMPLEMENTATION

The proposed system consists of a RFID module and an IoT including voice module (APR 33A3), microcontrollers, LDR, Ultrasonic sensor Sensor, Petrol tank, fire sensor, IR sensor. Fig 1 elaborates the interconnection and interfaces of above components that make up the product. The Arduino Nano and ESP8266 - 12E are interconnected through serial interface and these two modules holds the overall control of the mechanism. The information gathered by the Arduino is transferred to the ESP8266-12E and the

ESP8266-12E transfers the information to the thingspeak platform through internet. An ultrasonic sensor detects the petrol in the petrol stack and this information is also transferred in the same manner as the transaction information is transferred<sup>[3]</sup>.

**VI. DESIGN METHADODOLOGY**

**VII. ADVANTAGES**

1. Human effort will be greatly reduced.
2. Time consumption is very less.
3. Real time observation over transaction.
4. Complete automation of entire system.
5. No employees hence no employer cost.
6. Proper lane control will be provided.
7. Alarm if any security breach appears.

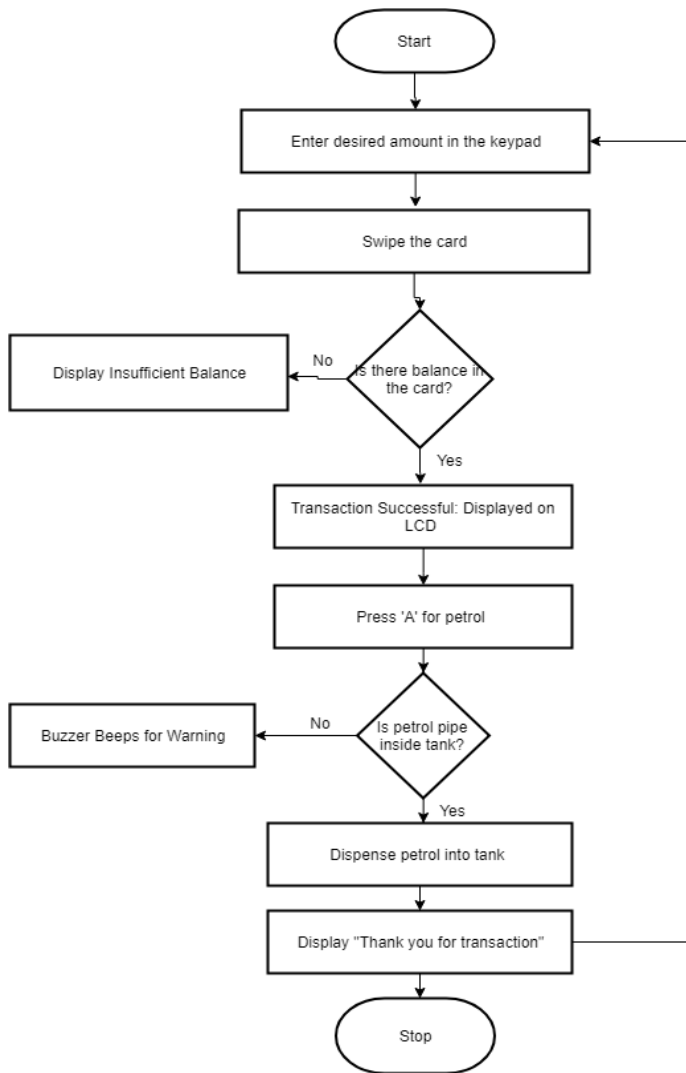


Fig2:design flow of the system

The fig 2 shows the flow of process in the proposed system. The system follows serial flow of process that is it checks for each condition before it executes any thread or process. The first process in the flow is waiting until a user comes and enter the amount of petrol he/she desire, once the user enters a particular value system asks to swipe the card which is his license itself, these instructions are vocally provided and displayed on the LCD screen. Here come two conditions, if the user card holds sufficient fund the transaction would occur and the petrol will be dispensed. Else if the card does not have sufficient amount then the transaction fail information would appear on the screen. All these transaction information's are transferred through internet to the owner. and the cycle continuously repeats

**VIII. RESULT**

Thus, the user enters the amount and provides smart card and biometric. The amount gets deducted and the petrol or diesel pipe will automatically come near to the petrol tank of the vehicle. The user inserts the pipe and the petrol gets discharged.

At the owner end when a transaction takes place, all information will be sent through IOT to the owner's application and his transactions list will be updated.

The list will look in this manner,

**Owner Interface**

Bunk 1

Bunk 2

Sl.No	Amount	Petrol Quantity(in liters)	Time
1	100	1	20:00
1	100	1	20:00
1	100	1	20:00

The amount of petrol discharged along with time will be displayed in the transaction list. When the petrol or diesel in the tank reaches the minimum level, the owner gets the notifications and he can order the petrol.

**IX. FUTURE SCOPE**

If the government or some higher companies take interest in implementing such a project, entire chain of petrol bunks can be interconnected and these systems would be successful in providing 24 hours service. With the interconnection of these system user may track which petrol bunk would be near to him or which would have sufficient petrol reserve. In future the biometric scanner and password can be added where the vehicles number will be compared with number stack which will be containing all the theft. If the number in both stacks matches then a photo of the vehicle and the location will be sent to the nearest available police station.

## X. CONCLUSION

The RFID system dispenses the exact measure of fuel as entered by the client which lessens the wastage of fuel and furthermore diminishes the labour. If the customer tries to swipe with the unapproved card, the RFID framework rejects the card. Along these lines, the system is so verified. To acquire the best execution the RFID readers and tags must be in great quality and for IOT interface there must be an amazing internet association.

## XI. REFERENCES

- [1] O. O. Edward, "A research using remote monitoring technology for pump output monitoring in a distributed fuel station in Nigeria," *International journal of Advances in Engineering and Technology*, vol.no. 6, pp. 2408-2415, January 2014.
- [2] Z. Cekerevac, S. Matic, D. Duric and D. Celebic, "Fuel dispenser control system as the technical solution for preventing non-authorized fuelling," in *eleventh International Scientific Conference devoted to Crises Situations Solution in Specific Environment*, Zilina, 2006.
- [3] M. A. Kulkarni and S. S. Taware, "Embedded security system using RFID & GSM," *International Journal of Computer Technology and Electronics Engineering (IJCTEE)*, vol. 2, no. 1, pp. 164-168, 2011.
- [4] Patil Aishwarya M., Phuke sayali J., Tapase snehal B., "College access and student attendance using 'RFID' technology.
- [5] A. H. Jadhav, K. D. Pawar, P. M. Pathare, P. Patil and R. S. Pawar, "Multi-Automized fuel pump with user security," *International Journal of Scientific and Technology Research*, vol. 3, no. 5, May 2014.
- [6] D. B. A. Johnson, P. Jaska, J. Nalla, N. V. K. Reddy and R. Tadisina, "Improved customer service using RFID technology," *Review of business Information Systems*, vol. 14, no. 3, 2010.