IOT BASED CASHLESS PETROL 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 labour, create an auto-guiding system, and carry out each operation in turn. These devices require less time to use and are very reliable. RFID tags, an 8051 microcontroller, a power supply, an LCD display, a motor driver, and an RFID reader are all used in this project. One of nature's valuable and uncommon inventions is petroleum. To survive these products, it's crucial to use and distribute them properly.*

Key Words: *Microcontroller, Dispensing system, Automated Petrol Pump system.*

1. INTRODUCTION

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.

2. PROBLEM STATEMENT

Most of the people uses the credit or debit cards to pay at the petrol pump that is one part of cashless payment but that will be good mode if you are the owner of the car. But what If you have given your car to driver to fill the petrol pump or your car is working with Cab service company like OLA, UBER then how you will manage to fill the petrol. So here we are proposing system where you can make the payments remotely without giving cash to your driver. Hope this solution will fulfill the requirement of the above problem.

3. 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.

4. METHODOLOGY

The main aim of the project is to design a dispensing system which is capable of automatically dispensing the petrol. The general process of dispensing petrol includes: making payments through android application, Random unique code generation, automatic dispense of petrol. Unique code provided to model will be validated through server by fetching data from database.

(a) Android application.

User has to login through a portal to register himself/herself. As soon as the user logs in, he/she has to select nearest petrol pump listed by the application. The list is provided through Global Positioning System (GPS). As soon as the user selects desired petrol pump, he/she has to select the available time slot and quantity. After selecting time slot and quantity, the user has to make payment. A unique code will be generated and stored in the database. The user will receive this code through SMS on the registered mobile number.
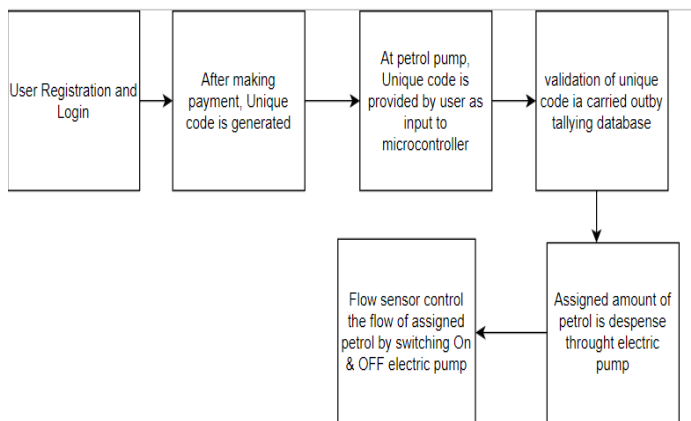

Chart -1: Flowchart

(b) Hardware

User has to enter the generated code at petrol pump. As soon as the user enters the code, hardware unit will contact online server and then get quantity of petrol that is specified by the use. After this, the pump will release that much amount of petrol for that 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. If the user enters wrong code for 3 consecutive times, then buzzer will turn on. The ATmega8 is an 8-bit CMOS microcontroller with low power consumption based on the AVR RISC architecture. The ATmega8 delivers throughputs approaching 1 MIPS per MHz by executing strong instructions in a single clock cycle, allowing the system designer to balance power consumption vs processing performance.
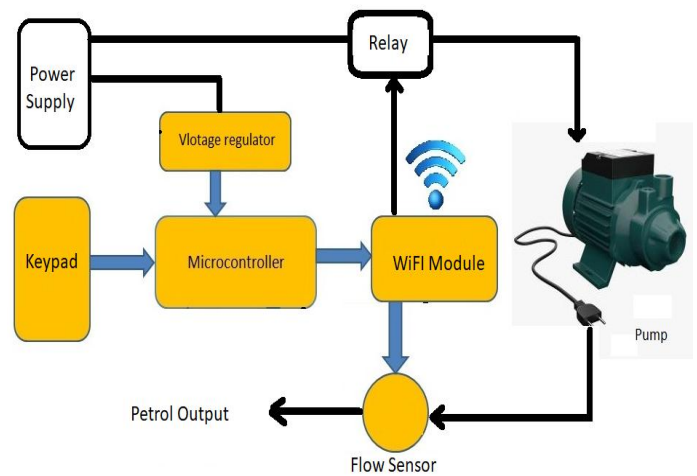

Chart -2: Hardware Flowchart

Hardware requirement:

- At mega 328 Microcontroller
- Wi-Fi module
- LCD Display
- LED's
- Buzzer
- power Supply
- Keypad 4X3
- Resistors
- Capacitors
- Flow sensor
- Relays
- Pump

Software Specifications:

- Arduino Compiler
- SQL database management System

5. ADVANTAGES OF PROPUSED SYSTEM

This method will allow the gasoline pump to run continuously without the need for human intervention. There will be a centralized server with a database of the customer's details such as name, random code, and so on that will handle the monetary operation of the system. The initiative brings the notion of a cashless India to life. This method can be automated, in which the consumer pays money online through a portal, after which the system

generates a random code and provides it to the customer. Smart gas pumps are automated gasoline machines that solve all of the present system's shortcomings. A smart fuel pump is a self-contained unit with a manual interface. Using a unique algorithm, the smart fuel machine automatically identifies the amount entered by the user.

6. 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.

7. 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.

REFERENCES

[1]. O. O. Edward, "A research using remote monitoring technology for pump output monitoring in distributed fuel station in Nigeria," International journal of Advances in Engineering & Technology, vol. 6, 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 11th International Scientific Conference devoted to Crises Situations Solution in Specific Environment, Zilina, 2006.

[3]. Patil Aishwarya M., Phuke sayali J., Tapase Snehal B., "College access and student attendance using 'RFID' technology.

[4] A. H. Jadhav, R. S. Pawar, P. M. Pathare, K. D. Pawar and P. Patil, "Multi-Automized fuel pump with user security, "International Journal of Scientific & Technology Research, vol. 3, no. 5, May 2014.

[5]. P. Jaska, D. B. A. Johnson, 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.

[6] O. O. Edward, "A research using remote monitoring technology for pump output monitoring in distributed fuel stations" International journal of Advances in Engineering & Technology, held on January 2014.

[7] F. Don, "Electronic Prepaid Car Parking: An Introduction and Brief Look at Potential Vulnerabilities," in SANS Institute infoSec Reading Room, 1.4b ed. 2004. [8] N. Jeevagan, P. Santosh, R. Berlia and S. Kandoi, "RFID based vehicle identification during collisions," in IEEE Global Humanitarian Technology Conference San Jose, CA, 2014.

[9] Patil Aishwarya M., Phuke sayali J., Tapase snehal B., "College access and student attendance using 'RFID' technology.