

Fuel Allocation and Lockout System

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ABSTRACT

In transport and Logistics business with the fierce competition, avoiding fuel theft through monitoring and management is a major concern throughout the world. In this paper the development of a secure fuel dispensing system with a digital fuelling record book is presented for the use of fleet based companies. The vehicle identification is done by the use of Wi-Fi. A fuel lockout system is implemented to shut down the fuel pump. The system uploads the fuel data to a server in custom hourly intervals chosen by the user.

Keywords: Arduino, Flow sensor, Keypad, Solenoid valve, Wi-Fi module, LCD, Relay.

I. INTRODUCTION

Fuel theft is a major problem for companies that use fleet vehicles since a lot of people see diesel as a form of currency. These vehicles run on company fuel and the fuel is bought in bulk and kept in tanks on site. With the hike in fuel prices, fuel theft has been on the rise. Since it is so easy to steal fuel from the tanks or vehicles for personal use, an efficient fuel tracking and allocation system is needed. A common practice of fuel theft is where drivers fill up a vehicle and then the fuel pump attendant giving false slips and getting cash in return.

The fuel-dispensing system must be able to distinguish vehicles owned by the company, dispense a certain amount of fuel into the vehicle and record the event on a server with details such as the vehicle that was fuelled and the amount of fuel dispensed into the vehicle. This information must be sent to the user or owner's mobile phone the minute that the vehicle was refuelled.

BLOCK DIAGRAM

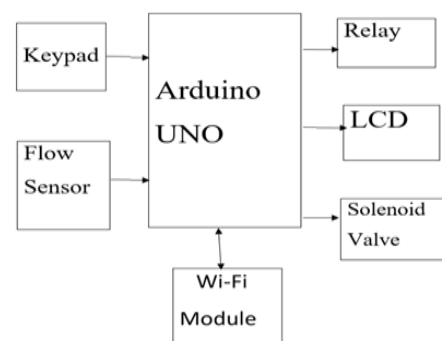


Figure 1 : A basic block diagram of fuel allocation and lockout system

II. OPERATION

- Program dump into the Arduino by using embedded C through the cable.
- With the help of keypad we can enter the data to fill the fuel tank which can show on LCD.
- Later the data sends to the owner of the vehicle and relay will be on.
- Flow sensor allows the fuel to fill the tank upto the data entered by the user & automatically locks the system and relay will be off if extra fuel consumes

III. PROPOSED METHOD

Further options such as GSM, GPS tracking, fuel consumption calculations, odometer readings and fuel tank capacity could be considered to dramatically decrease fuel theft.

These added functionalities can ensure that a vehicle cannot be refuelled with more than its capacity compared with the vehicle's fuel consumption as well as the distance the vehicle travelled, thus the system will be able to calculate whether fuel was stolen directly from the vehicle's fuel tank. All paragraphs must be indented. All paragraphs must be justified, i.e. both left-justified and right-justified.

IV. RESULT

Owner of the vehicle gets the information in the form of either normal message or twitter message which shows below figures

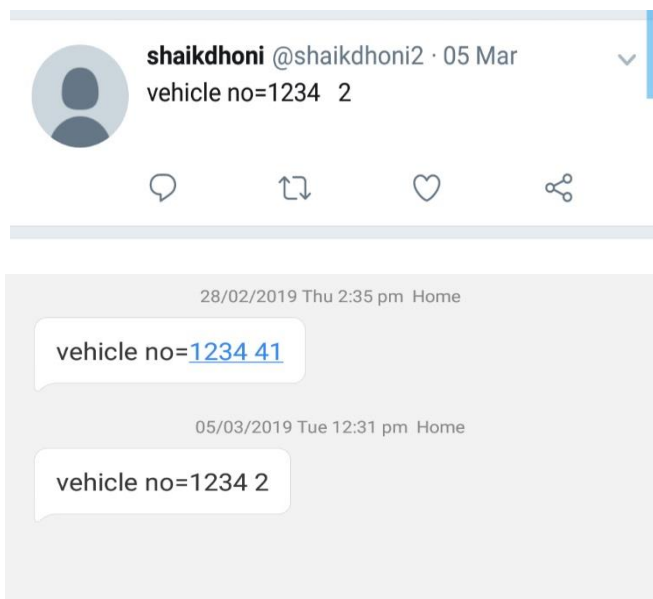


Figure 2 : A sample message information

ADVANTAGES

- Able to record fuel data correctly.
- It is easy to identify the vehicles.
- Applies the lockout method.

- Notify the user through SMS.
- Fuel theft is not possible.

V. CONCLUSION

The system designed is to be used as a secure fuel dispenser as well as a log book generator for fleet based companies. It was successfully demonstrated that by the use of the selected technologies a tamper proof system can be established where fuel theft is impractical. The system in its current state is able to log fuel data correctly, identify vehicles, apply the lockout method, notify the user via SMS and upload data to the server.

VI. REFERENCES

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Cite this article as :

P. Mounika, K. Shaikshavali, K. Rajeswari, K. Naveena, G. Pradeep Kumar, "Fuel Allocation and Lockout System", *International Journal of Scientific Research in Science and Technology (IJSRST)*, Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 6 Issue 2, pp. 275-276, March-April 2019. Available at doi : <https://doi.org/10.32628/IJSRST196246>
Journal URL : <http://ijsrst.com/IJSRST196246>