ANALYSIS OF VEHICLE MILEAGE USING INTERNET OF THINGS

Prof. N.S.Dongare[1],Gulve Sagar H[2]., Patil Chandrashekhar B[3]., Pawar Vivek V[4].,
Shrawane Shubham K[5].

[1]*Assistant Professor, Mechanical Department, Shreeyash College of Engg.& Tech. ,Maharashtra, India*
[2]*U.G. Student, Mechanical Department, Shreeyash College of Engg.& Tech. ,Maharashtra, India*
[3]*U.G. Student, Mechanical Department, Shreeyash College of Engg.& Tech. ,Maharashtra, India*
[4]*U.G. Student, Mechanical Department, Shreeyash College of Engg.& Tech. ,Maharashtra, India*
[5]*U.G. Student, Mechanical Department, Shreeyash College of Engg.& Tech. ,Maharashtra, India*

ABSTRACT

There have been major developments in the field of two wheelers with respect to every aspect of the vehicle. Some literature gives the mileage testing concept at unloading condition and also how to identify the distance travelled by vehicle with analog meter. Vehicle servicing is possible by calculate the travelled kilometer and no notification to vehicle holders. There is no digital display which shows the exact amount of fuel level in fuel tank, mileage at running condition of vehicle at loading as well as at unloading condition. The whole concept is related with the Mechanical as well as Electronics Engineering, i.e. Mechatronics. The various mechanical and electronic components like fuel supply device, infrared sensor, and color identify strip, mechanical fixtures, Battery, LCD etc. are used for assembling the complete unit. There is no GSM based notification alert regarding reservoir level. There is no device which shows the future distance travelling by vehicle. Modify the analog meter in digital meter which gives exact fuel level in fuel tank of Vehicle. The objectives are sent the parameters such as mileage, distance travelled, fuel consumed, etc. on user's mobile phone by using the Internet of Things based G.S.M model. C++ programming is used for calculating different parameter like mileage, fuel level, and future distance.

Keyword: - *Internet of things, Mechatronics. G.S.M Model.*

1. Introduction

The machine is fabricated and assembled according to design, with flexible features. By standing the vehicle on main stand and within 10-15 min. we can find the mileage of the vehicle with high accuracy. The machine was tested and found to work as expected. The project Analysis of vehicle mileage through I.O.T is intended to be employed at two wheeler service stations, as well as manufacturers and Pre delivery inspection section (PDI).[1] Mileage is as important term used with respect to any vehicle Mileage is the average distance traveled by a vehicle consuming one liter of fuel. As far as economy is concerned, the mileage of vehicle should be maximum.[2] All the vehicles in India consist of analog meters hence it is not possible to precisely know the amount of fuel currently in the vehicle and also it is not possible to cross check the quantity of fuel filled in the petrol bunk. In this project we focus on creating a digital display of the exact amount of fuel contained in the vehicle stank and also help in cross checking the quantity of fuel filled at the petrol bunk. Finally once the fuel is filled at a bunk the device also sends an SMS to the vehicle owner indicating the amount, quantity, distance, and mileage.[3]

1.1 Need

Mileage is as important term used with respect to any vehicle. Mileage is the distance traveled by a vehicle consuming one liter of fuel. As far as economy is concerned, the mileage of vehicle should be maximum. The fuel efficiency of vehicle can be found out at standard conditions as well as at loading conditions. Instead of, leaving it to customer to run it until one liter of fuel is burnt after a heavy long run. This device consumes just hundred milliliter fuel and within a period of few minutes at certain specified conditions i.e. creating on road load conditions, the mileage is known to us. The creation of loads includes the load of Vehicle, driver, load due to air resistance, road friction etc., from previous literature which found that there no fuel level sensor is manufactured which shows the fuel level in digital, as well as there no mileage testing device which shows the mileage a running condition. This parameter is send through GSM system on required device. In the recent times we are constantly hearing about petrol pump frauds. Most of the petrol bunks today have manipulated the pumps such that it displays the amount as entered but the quantity of fuel filled in the customer's tank is much lesser than the displayed value.[4]

1.2 Motivation

As per the previous literature there are many system which works on the concept of Internet of Things like auto maintenance alert, aware from any future problems, machine to machine working etc. All the above literature survey found that there is requirement of mileage and fuel quantity alerts. This is possible through internet of thing system. Using GSM modem, all display contents are to be send on required device. This device also calculates the future distance the vehicle is going to travel in remaining quantity of fuel.

2. Literature Review
Gauthier D. describes the invention which relates testing devices and particularly to such devices as are adapted to accurately determine the relation between the fuel consumption and the mileage of motor vehicles and the like the principal object is to provide a testing device
Goode F.G. had invented a novel apparatus for measuring the mileage of a motor actuated vehicle per unit of fuel consumed.
Butler,F.G.found the gasoline mileage indicator system which gives instantaneous mileage readings. A sending unit attached to a flow meter in the fuel line provides a signal to a gauge which registers fuel flow.
Wortmann F., Fluchter K. had put up application for IOT technologies are as numerous as they are diverse, as IOT solutions are increasingly extending to virtually all areas of everyday. The most prominent areas of application include, e.g., the smart industry, where the development of intelligent production systems
Qi an X. and Zhang J. has given the traditional IOT is formed by three layers. The bottom is perception layer, whose function is cognizing and collecting information of objects.

2.1 Observations from Literature Review

The above literature established on different concept and system. Some literature gives the mileage testing concept at unloading condition and also how to identify the distance travelled by vehicle with analog meter. There is many innovation in fuel level sensor but there is only analog meter is used. From above survey find that there is vehicle servicing is possible by calculate the travelled kilometer and no notification to vehicle holders.

2.2 Research Gaps

There is no digital display which shows the exact amount of fuel level in fuel tank, mileage at running condition of vehicle at loading as well as at unloading condition.
There is no GSM based notification alert regarding reservoir level.
There is no device which shows the future distance travelling by vehicle.

3. Objectives

Modify the analog meter in digital meter which gives exact fuel level in fuel tank of Vehicle in numerical format.
Calculate the mileage of running vehicle by consuming one liter of fuel.
Display the various parameter of mileage testing device such as mileage, distance, fuel consumed, etc.
Send the parameters such as mileage, distance travelled, fuel consumed, etc. on user's mobile phone by using G.S.M model. Know the fuel efficiency of vehicle at standard as well as loading conditions.

3.1 Process

Fix the IR sensor to the rod of rotating disk. Keep minimum gap between IR Sensor and Radium Strip. Connect the four pin RMC of IR Sensor circuit to the PCB. Sense the rpm of the disk by using IR sensor. IR Sensor interfaces with microcontroller attached to it. Connect the Gear Motor to the Rotating disk using screws. Connect the 9 V batteries to Gear Motor. Make the necessary connections of fuel gauge system. The fuel gauge resistance is connected to the PCB. Check whether the readings are zero. If not, reset it. All three values will be displayed (Distance, Remaining fuel level & mileage) on LCD display. This information is send to mobile number with three emergency messages via; Reservoir, One liter and half liter.[5]

Fig -1 Mileage Testing device.

4. CONCLUSIONS

It has been concluded that the modification of analog meter in digital meter which gives exact fuel level of vehicle is obtained. Also the various parameter of mileage testing device such as mileage, distance, fuel consumed, etc. has been displayed. The fuel efficiency of vehicle at standard as well as loading conditions has been achieved. The parameters such as mileage, distance travelled, fuel consumed, etc. on user's mobile phone by using the Internet of Things based G.S.M model is obtained. It also displayed the approximate distance which can travel from remaining fuel.

6. REFERENCES

[1] Francis A.R., Homer B., Howard B., Busman R., (2011) "Auto mechanics which the Spark Ignition Engine: Means controlling ignition on automated concept." Journal of Urban Technology, 18(2), pp. 1-16.

[2] Burdick S., Falkner R., Galbraith J., Johnson B., Kim R., Kroc L., (2004)"Analog interfacing to embedded microprocessor systems Elsevier". Electronic Journal of e-Government, 11(1), pp. 326-336,

[3] Miedzinski V.V. and Kristiansen M., (1982) "Investigations of Discharge Phenomena When Switching Intermediate and Heavy Loads. IEEE Transactions on Components, Hybrids, and Manufacturing Technology", Journal of, Issue 2 pg. 231- 237. ISSN 0148-6411

4] Honiara J., Kobayashi K.T., and Kawakita C.,(1992) "Magnetic and mechanical design of ultra-Infrared rays. IEEE Transactions on Components, Hybrids, and Manufacturing Technology", Volume 15, Issue 2, pg. 172-176. ISSN 0148-6411 DOI 10.1109/33.142891

[5] Jioghlou D. and Copeland M., (1982) "speed measurements on magnetic reeds" IEEE Transactions on Magnetics, Volume 4, Issue 2, pg. 179- 183. ISSN 0018-9464