Design and Fabrication of Digital Mileage Measuring Device for Vehicle

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Abstract—There has been major development in the field of two wheelers with respect to every aspect of the vehicle. One of the major aspects of the vehicle that is responsible for making vehicle most famous and popular is the mileage of the vehicle. Device to measure mileage has to design in order to verify the company mileage commitment made by the automo-bile company. In our project we have designed and fabricated a model of digital mileage testing machine using tachometer. This device is used to measure mileage as on go for every load of fuel consumed. The model has been calibrated and tested for various condition.

Keywords- Mileage, Vehicle, Measuring. Fuel Consumption

1. INTRODUCTION

Fuel mileage in vehicles alludes to the connection between the separations headed out by a car to the measure of fuel devoured. In the ebb and flow situation of climb in fuel costs, the vast majority of the vehicle drivers look for economical fuel utilization. In addition, in this day and age fuel sparing is likewise a significant factor. For a creating nation, where individuals are increasingly fixated on mileage, manual numerical estimations are done to know the mileage of a specific vehicle. In traditional fuel mileage count technique, the outcomes are acquired by two progressives refueling of the tank and furthermore by the in-vehicle parameters. At present fuel mileage pointers are made accessible to most recent motorbikes running on fuel infusion innovation just and these are definitely not open in carburetor-based motorbikes. Thinking about these circumstances, we have built up a low Fuel measuring framework are intended to successfully gauge and deal with the utilization of fuel inside the transportation.

They are commonly utilized for armadas of vehicles, including railroad vehicles and airplane, just as any vehicle that expects fuel to work. They utilize different techniques and innovations to screen the utilization of fuel. This data can be then put away in electronic frameworks with information to illuminate client. This empowers utilization control, cost investigation.

Mileage is as significant term utilized as for any vehicle. Mileage is the separation gone by a vehicle devouring one liter of fuel. Most definitely, the normal of vehicle ought to be greatest. The need of normal testing machines emerges from following focuses.

1. The producer must know the eco-friendliness of vehicle at standard conditions just as at stacking conditions.

2. In the administration station, after the administration of vehicle it is important to know the normal of the vehicle. Of, leaving it to client to run it until one liter of fuel is singed after an overwhelming since quite a while ago run. This machine devours only 50 ml fuel and inside a time of 5 minutes at certain predefined conditions for example making on street load conditions, the mileage is known to us. The making of burdens incorporates the heap of Vehicle, driver, load because of air obstruction, street contact and so on. The formatter will need to create these components, incorporating the applicable criteria that follow.

2. DESIGN AND FABRICATION

When the engine is started the fuel starts to flow from the main tank to the secondary tank and then to the en-gine. When we want to know the mileage of the vehicle the regulator of the main tank must be closed so that the fuel will starts to flow from the secondary tank. The distance traveled by the vehicles will be noted down by the help of the proximity sensor. The proximity sensors placed parallel to the wheel, will read the rotation of the wheel. The Arduino board takes the information from the sensor and converts the input to the readable form. Maintaining the Integrity of the Specifications.
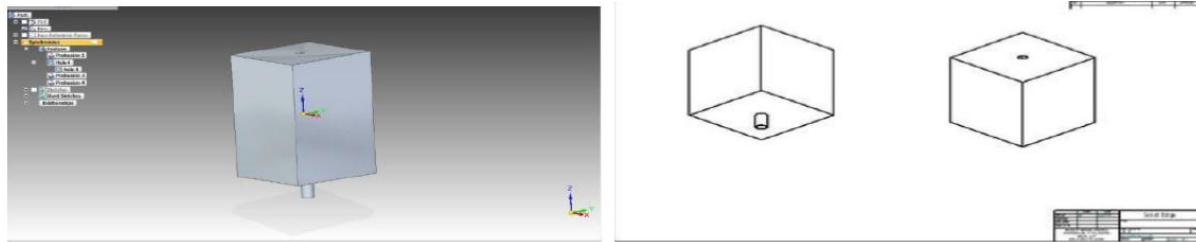
Fig.1- Modelling of the secondary tank using Solid Edge.

Figure-1 shows the design of the secondary tank used to moderate the flow of fuel from the tank. Based on the design made, a model was fabricated using an TVS scooter 60cc 2 stroke engine incorporated with secondary tank. Figure-2 shows the fabricated model.

Fig.2- Fabrication of the planned model

3. TESTING AND DISCUSSION

A 25ml of fuel and made the engine to run in variation of speed until the fuel gets over in the tank, then the distance covered by the engine was noted down. The process was repeated again to check for the amount of error in it. In the second trail 50 ml of the fuel as taken in the tank and made the engine to run in different speed till the fuel gets over. The process was carried out again to check for error.

Finally, the error was found to be minimum in that trial. In order to find out that if any error is present in the constant speed of the engine and in large amount of fuel presence in the tank the 3rd trial was done at 100ml of fuel and the speed was kept constant. The error was found to be less. Table 1 gives the trails take for different fuel input.

TABLE-1- TRAILS TAKE FOR DIFFERENT FUEL INPUT.

Trails	Fuel	Distance
1	25ml	0.8km
2	25ml	1km
1	50ml	1.68km
2	50ml	1.8km
1	100ml	3.4km
2	100ml	3.6km

Initially the mileage of the vehicle was tested for the constant fuel of 1 litre with the load. The obtained mile-age was around 28 to 30 km and the process were repeated for 3 times. The engine was removed and the test was conducted on only engine without any load. The mileage obtained was around 34 to 36 km.

This device will help getting real time mileage measurement while riding the vehicle itself. This will help the rider to analyse the vehicle during travel. The calibration was done initially by incorporating predetermined amount of fuel and measuring the distance using odometer.

CONCLUSIONS

Mileage of the vehicle is one of the most important parameters for a person to consider while purchasing a vehicle. In order to make the people to know their vehicle mileage this project, a model of digital mileage meas-uring device is designed, fabricated and calibrated

The digital meter is programmed based on the trials taken during calibration. The device has to be, calibrated based on trials for different engines and its specifications toolbar.

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