Advanced Fuel Transmitter

Author: Mr.Nilay Awasthi

B.Tech (Electronics& Communication Engineering)

First Year

2017-2021

Amity University Mumbai

Abstract

This paper deals with the idea of an Advanced Fuel Transmitter. The idea behind in bringing up this proposal is lack in the efficiency of current fuel transmitted system which results in often accidents due to manufacturing defects and more often intensifying the damage caused during the accident.

Keywords

- Generation of Idea
- Need to adapt the advanced technology
- Flaws in the current fuel transmission system
- Advanced Fuel Transmitter
- Multidirectional view of Advanced Fuel Transmitter

Introduction

Generation of Idea

Our world is advancing to a smarter tomorrow with advancements in the older technology for a better and safer future. We often in our daily life come across vehicles accidents be it in either of the extremes. Considering that not all accidents are due to manufacturing defects. The ones which are not due to manufacturing defects, in most of accidents the intensity of the damaged is magnified due to failure in the current fuel transmission system used. Due to not regular check of fuel flow to engine, sometimes there is excess flow of fuel or at times creating irregularities in the flow pattern. By advancing to a solution oriented future, I came up with this idea of Advanced Fuel Transmitter, by which I will try to solve the above problems to a maximum extent.

Advanced Fuel Transmitter

An attempt to a smarter approach in redesigning the fuel transmission process in the vehicle. With the use of integrated electronic circuit comprising of a microprocessor and a microcontroller, which will overlook the entire process and proper execution of the algorithms, a solution oriented system is designed.

©Copyrights reserved@Nilay Awasthi
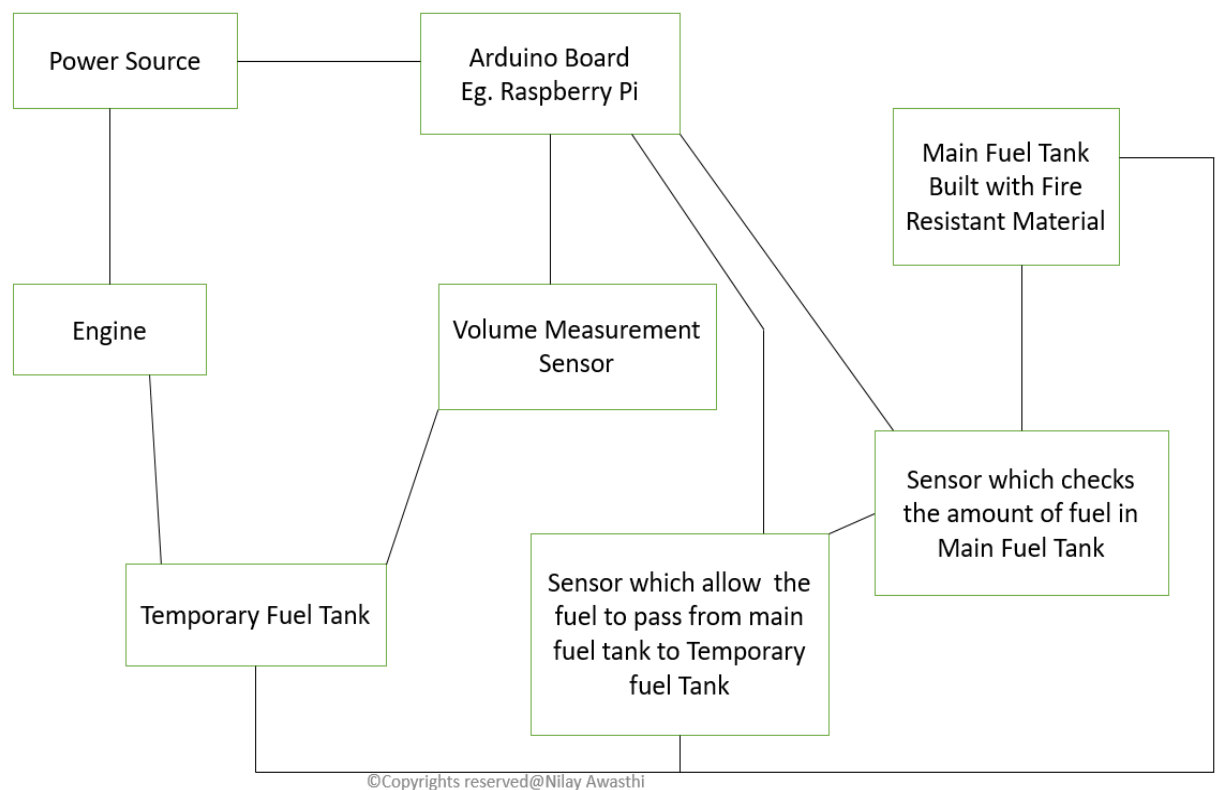
The above is the block diagram of the Advanced Fuel Transmitter.

Procedure

It is quite evident from the above mentioned block diagram, the blueprint of the Advanced Fuel Transmitter. Firstly the whole system is connected to the power source, and an Arduino Board like Raspberry Pie, etc. is used as a microcontroller, governing the entire flow of algorithms. Different types of sensors are used which are designed for a particular purpose.

When the power source is activated, the whole integrated circuit is in active state. The Arduino Board is coded with required algorithms. The Temporary Fuel Tank is directly connect to the engine. It has a capacity of certain volume of fuel to store which depends on the load of the vehicle but it is a constant for a vehicle. The volume of fuel contained in the Temporary Fuel Tank is measured with use of sensor. Volume is taken as a measuring quantity as when the vehicle is in motion only the volume of fuel in the tank can be measured accurately and not like other quantities like heights and weight. The functioning of the Volume Measurement Sensor is controlled by Arduino Board. The Temporary Fuel Tank is connected to the Main Fuel Tank, which is made of Fire Resistant Material. There is a sensor which checks the amount of fuel left contained in the Main Fuel Tank and even this sensor is controlled by the Arduino Board. There is a sensor which allows the fuel flow from the Main Fuel Tank to the Temporary Fuel Tank and even its working is governed by the Arduino Board.

When the vehicle starts moving, certain amount of fuel is used, the whole circuit is designed in such a way that certain amount of fuel is always maintained in the Temporary Fuel Tank. When the vehicle starts moving, the level of fuel in the Temporary Fuel Tank comes down and the volume of fuel left in the Temporary Fuel Tank is measured by the Volume Measurement Sensor and the logic is sent to the Arduino Board that the Temporary needs to be refilled with that much amount of fuel which is taken by the engine. Then the two sensors i.e. the sensor which checks the amount of fuel in the Main Fuel Tank and the sensor which allows the fuel flow from the Main Fuel Tank to the Temporary Fuel Tank are activated. Signals is sent from the Arduino Board to the sensor which checks the amount in the Main Fuel Tank, to check the amount of fuel and if fuel is present in the tank then the logic is generated and sent back to the Arduino Board, further a logic is sent by the Arduino Board to the sensor to allow the fuel flow from the Main Fuel Tank to the Temporary Fuel Tank and only that much amount of fuel is allowed to flow which is equal to the amount of fuel taken by the engine from the Temporary fuel Tank. Then the Temporary Fuel Tank is refilled.

Multidirectional View of Advanced Fuel Transmitter

As we all know we need to upgrade and get adapted to newer technologies when we think the old one is getting outdated with the needs of present. Same is the case with the failure of current used Fuel Transmission System and we should adapt to Advanced Fuel Transmitter and why do we need to. So here the reasons,

Firstly, the problem faced was the intensity magnification of the damage caused during the accidents. Accidents are like an Impulse i.e. huge amount of force acting for short period of time. According to basic physics rules when some force is acting, heat is absorbed or either released and if this heat comes in contact with the fuel tank, which happens in most of the times, then the intensity of the damaged caused by the accident is magnified by the explosion which will take place when the heat comes in contact with the fuel. Like we all know every system is not 100% efficient, it's not possible to make a system which will release no heat while working rather what can be done is to decrease the intensity

magnification. In the concept of Advanced Fuel Transmitter the significance of the Temporary Fuel Tank is to decrease the intensity magnification. Unlike, in the current used Fuel Transmission System where the Main Fuel Tank is in direct contact with the Engine, in the Advanced Fuel Transmitter, the Main Fuel Tank is not in direct contact with the engine, so the heat which will be generated during the accident will not be in direct with the Main Fuel Tank. Moreover the Temporary Fuel Tank contains only certain amount of fuel so even if excess heat is produced and it reaches the Temporary Fuel Tank the intensity of damaged caused will be diminished to a lot extent, as major amount of fuel is contained in the Main Fuel Tank. If the system fails to function and heat manages to come in contact with the Main Fuel Tank, then to avoid damage magnification, the Main Fuel Tank is made of Fire Resistant Material. Hence the problem of intensity magnification is solved.

Secondly, the factor dealing with the cost of making of the system, as by the introduction of new components like the Temporary Fuel Tank, etc. the cost of making will increase but if all of us will tend to adapt to a safer technology, which will be for betterment of the society for its future. So factor dealing with the cost will no longer be a priority.

With the use of sensors and the integrated circuit, a regular check of flow pattern of fuel can be done, in order to avoid interrupted flow of fuel to the Engine.

Regular checks will be taken to check the proper working of the integrated circuit in order to provide better efficiency of the designed circuit.

Conclusion

From the above discussion of the concept of Advanced Fuel Transmitter, it is quite evident that why we need to adapt to this technology. With the Multidirectional analysis of the concept its clear about the flaws in the current used Fuel Transmission System and how with the use of Advanced Fuel Transmitter the problems can be solved. The problem of intensity magnification is resolved with the use of Temporary Fuel Tank and the integrated circuit. Moreover the problem of interrupted flow of fuel to engine i.e. at times excess flow or at times lesser amount of flow of fuel is resolved with the use of sensors and the integrated circuit.