

IMPROVED DESIGN OF CONVENTIONAL IC ENGINE BASED VEHICLE IN TO HYBRID FUEL VEHICLE FOR FUEL ECONOMY

ALAN JUSTIN¹, ALEX AUGUSTINE², LINERSON DAVIS³ & DR. JENO PAUL. P⁴

^{1,2,3}Dept. of Electrical and Electronics Engineering

Adi Shankara Institute of Engineering and Technology Ernakulam, India

⁴Professor - Dept. of Electrical and Electronics Engineering

Adi Shankara Institute of Engineering and Technology Ernakulam, India

ABSTRACT

Nowadays fuel prices are increasing day by day. But millions of vehicles operating all over the world are using petrol and diesel. It is very difficult to change from conventional vehicles into electric vehicles immediately. Nowadays HHO generator is more attractive to researchers. Indian government also announced 2021 budget to develop and install the hydrogen stations for several hundred crores. Conventional hho generator consumes high power and has low hydrogen production which gives only 40 percent of fuel economy. This project proposes an efficient way of converting the conventional vehicle into a hybrid fuel vehicle that will provide high mileage for conventional vehicle, thereby reducing fossil fuel consumption and save a lot of money. The proposed system uses a power full li-ion battery bank of 12 volts and 60 AH Pack. This act as a fuel (electric source) which stores the energy from outside the vehicle. This energy can be obtained from the solar electric system. The battery voltage is boosted up to 30 volts by using a boost converter rating of 30 amps. This converter voltage is a variable, so based on the design of HHO generator the voltage can be modified. The output of boost voltage is fed to a high power MOSFET which acts on the switch. This switch is controlled by a decade counter. The MOSFET output is connected to ultracapacitor to store the high voltage from boost converter and maintain constant. Due to this decade counter action the ultra capacitors charge continuously and hence limited and constant current is drawn from the lithium battery bank. Output of the ultracapacitor is connected to another high current MOSFET which is in synchronization with the first decade counter, so once the primary counter is charges the first ultra capacitor, then only the second counter will activate the second mosfet and get connected to the HHO generator first cell. During this time high current and high voltage say 15 to 20 v flows to the HHO cell causing large quantity of hydrogen to split from the solution. During this continuous operation of subsequent cells high volume of hydrogen will be generated. This will be fed to bubbler and temporary storage and there by fed to the convention IC engine air intake manifold. Because of the Presents of temporary storage, consumption can be reduced for IC engine fuel from starting onwards.

KEYWORDS:

Hydrogen Hydrogen Oxygen(HHO), Internal combustion(IC), Metal Oxide Semiconductor Field-Effect Transistor(MOSFET)