

## Hydrogen Generator

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Using hydrogen as an additive to enhance the conventional gasoline engine performance has been investigated for decades. The purpose of this study is to develop a portable hydrogen generator system. The system has three main components, a reactor vessel, a water supply and a control system. The hydrogen is generated from water molecules reacting with electric current activated by steel plates that are inside the reactor vessel. We designed the control system to determine the quantity of water poured into the reactor vessel in order to generate the desired quantity of hydrogen. The developed hydrogen generator will be connected to a car intake manifold with a constant load. The experimental results will be tested and try to achieve our goal to maintain constant hydrogen output. Therefore, the proposed system is useful as a hydrogen generator.

Our intended object is to create a hybrid system capable of running on gas mixed with hydrogen on demand. We intend to introduce an HHO system on any combustion engine to create hydrogen due to electrolysis. The Hydrogen will be burned as fuel simultaneously as it produces. By burning hydrogen will run more clean and lean, this will allow us to produce more hydrogen at the same time we are powering the wheels of the car.

Our expected outcome will benefit the environment, the customer's pocket, as well as their driving experience. Horsepower and engine performance will increase. Through this process more gas will be used and burned, not just blown out into the environment. Moreover, by introducing hydrogen into the combustion chamber, the burn speed of the gasses present will greatly increase. These factors will have an expected impact in gas mileage by up to 60%. This also implies that the engine will run more effectively for long run. Based on our research HHO gas will also help run the engine sounder and produce lower sound emissions, i.e. less energy losses in the system.

Hydrogen gas introduced in a combustion chamber will have a positive impact on the environment. The traces of water will help the engine cool down and run at a lower temperature. This reduces carbon dioxide emissions and will actually expel some oxygen back into the environment. Moreover, hydrogen is a nontoxic gas that disperses in air rapidly.

HHO generators are beneficial to the consumer on saving money. Not only it is low-cost to implement such system in an engine, but also like it is stated before, it will increase gas mileage, having to fill up the tank less frequently. Moreover, some states offer tax credits to encourage people to make devices that improve combustion efficiency.