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Oxy-HYDROGEN as Combustion Catalyst

Amit Patil[1], Pranav Surve[2], SiddheshBhalekar[3], SaketAutade[4], OmkarGhogale[5]
Assistant Professor[1], Student[2, 3, 4, 5]
Department of Automobile Engineering
Saraswati College of Engineering, Kharghar, Navi Mumbai, India

Abstract:
In this paper, an attempt has been made to review the use of oxygen and hydrogen gases as a combustion catalyst. The main constituent "HYDROGEN" can be used as a catalyst due to its excellent combustion properties. Hydrogen is considered as the cleanest fuel for Internal Combustion Engines, among alternative fuels. Potentially high efficiency and theoretically zero pollutant emissions make hydrogen very attractive. The innovation in this project is to increase the efficiency of an SI engine with less carbon deposits and emissions.

I. INTRODUCTION

The current way of providing the world's energy demand, based on fossil fuels is becoming increasingly untenable. Global Warming and local pollution hot spots associated with fossil fuel usage are significant environmental and societal problems. The attractiveness of Oxy-Hydrogen lies in various methods to produce it. The idea is to produce the Oxy-Hydrogen gas by means of ELECTROLYSIS of water. The gas when produced will mix with the incoming charge or the Air-Fuel mixture. This gas will be injected into the combustion chamber by means of a Carburettor.

II. SUMMARY

The idea of this project came from the threat posed by climate change whereas the different plans put out to take carbon out of fuels and also the increase in air pollution. After searching thoroughly on internet and reference books we came across some previous projects that were related to our project problem definition.

III. LITERATURE

In 1806 Francois Isaac de Rivaz was credited for successfully inventing and constructing the first successful internal combustion engine in 1806. The engine was powered by a mixture of hydrogen and oxygen. The hydrogen gas was contained in a balloon and the ignition was an electrical Volta starter. As of the 21st century development, there are vehicles running on Hydrogen Fuel Cell which uses hydrogen as its onboard fuel for motive power. The power plants of such vehicles convert the chemical energy of hydrogen to mechanical energy either by burning hydrogen in an internal combustion engine, or by reacting hydrogen with oxygen in a fuel cell to run electric motors. As of 2014, 95% of hydrogen is made from natural gas. It can be produced using renewable sources, but that is an expensive process. The drawbacks of hydrogen use are high carbon emissions intensity when produced from natural gas, capital cost burden, low energy content per unit volume, production and compression of hydrogen, and the large investment in infrastructure that would be required to fuel vehicles. Hydrogen fuel cells are relatively expensive to produce, as their designs require rare substances such as platinum as a catalyst. Whereas the flammability limits of hydrogen are wide and high flame speeds hinder the safety of vehicle and passengers. In order to overcome the disadvantages mentioned above about the Hydrogen powered vehicles in the present invention we used the setup ELECTROLYSIS OF WATER to provide on-demand oxygen and hydrogen where it can be used when it is needed and does not required to be stored. The hydrogen-oxygen gases blend with the normal fuel, and upon combustion, rapidly ignite acting as a "combustion catalyst", making the fuel burn faster, more thoroughly, and much cleaner. The Oxy-Hydrogen gas upon exploding simply reverts back into water in microseconds, which then turns into superheated steam, cleaning the inside of the engine of carbon deposits and sludge. Since the gas causes the existing fuel to burn faster and more complete, there is LESS waste, and the energy is extracted where it matters most-"inside the engine'. This is why it results in extra mileage, better engine response, and lower emissions-by increasing combustion efficiencies.

IV. REFERENCE

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