iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.51596

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

Fabrication of Hybrid Engine Vehicle

Dr. A.H. Ingle[1], Dilip Patle[2], Shashank Dhawade[3], Shahrukh Khan[4], Habib Quraishi[5], Swapnil Ingole[6]
[1, 2, 3, 4, 5, 6]*Department of Mechanical Engineering, Smt.Radhikatai Pandav College of Engineering,Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur*

Abstract: ***A hybrid vehicle uses two or more distinct types of power, such as internal combustion engine + electric motor, e.g. in diesel-electric trains using diesel engines and electricity from overhead lines, and submarines that use diesels when surfaced and batteries when submerged. Other means to store energy include pressurized fluid, in hydraulic hybrids.***
A water-fuelled car is an automobile that hypothetically derives its energy directly from water. Water-fuelled cars have been the subject of numerous international patents, newspaper and popular science magazine articles, local television news coverage, and websites. The claims for these devices have been found to be pseudoscience and some were found to be tied to investment frauds.[1] These vehicles may be claimed to produce fuel from water on board with no other energy input, or may be a hybrid claiming to derive some of its energy from water in addition to a conventional source (such as gasoline).
Water is fully oxidized hydrogen. Hydrogen itself is a high-energy, flammable substance, but its useful energy is released when water is formed. Water will not burn. The process of electrolysis can split water into hydrogen and oxygen, but it takes as much energy to take apart a water molecule as was released when the hydrogen was oxidized to form water. In fact, some energy would be lost in converting water to hydrogen and then burning the hydrogen because some waste heat would always be produced in the conversions. Releasing chemical energy from water, in excess or in equal proportion to the energy required to facilitate such production, would therefore violate the first or second law of thermodynamics.
Keywords: Ammonia hydroxide, Hydrogen-Hydrogen-Oxygen (HHO) generator, Hybrid Vehicle(HEV), potassium hydroxide (KOH)

I. INTRODUCTION

A hybrid vehicle uses two or more distinct types of power, such as internal combustion engine+ electric motor, e.g. in diesel-electric trains using diesel engines and electricity from overhead lines, and submarines that use diesels when surfaced and batteries when submerged. Other means to store energy include pressurized fluid, in hydraulic hybrids Hydrogen and HHO generator are seen by many as one of the key solutions for the 21 century, by allowing a clean efficient production of power to reduce air pollution from several primary energy sources such as fossil fuel. Even though energy systems based on hydrogen can build bridges to the future, but the challenge of planning a cost-effective, and efficient transition is hugely difficult. Furthermore, very large capital and human investments will need many years before coming to make a great achievement. However, starting to explore this path result in a more sustainable future. In a fact, hydrogen is not a primary energy source. It is an energy carrier. Initially, it is produced by using technologies existing energy systems such as the gamification technology based on different conventional primary energy carriers and sources like coal and natural gas, or by building a renewable energy system that is more sustainable and reliable will benefit from solar and wind energy by using electrolysis technologies. Many experiments were carried out to optimize the performance of a dry HHO cell through changing the variety of setups such as alternating the distance between the plates, by using different electrolyte concentrations, and different current values. The electrolytes with different concentrations, and how much of the current value across the electrolyte to produce hydrogen in a cell are focused by Rusdianasari & Dewi. Abhishek et al have studied the basic properties of gas generated through electrolysis of water and then used this gas in the bike as a fuel supplement with gasoline by mixing it with air. The HHO reactor was made from high grade stainless steel and NaOH was used as an electrolyte. If there is a possibility to produce, hydrogen through water electrolysis by using a Dry HHO Cell and studying its potential by a design, a building, an experiment, and also trying development in the cell to produce much more hydrogen for longer period.

II. OBJECTIVE

1) Implementation in the existing technology.
2) To show the innovative idea on existing system.
3) To make use of HHO cell that is readily available and chipset.
4) To prepare and efficient and cost effective system.

©IJRASET: All Rights are Reserved

III. RESEARCH METHODOLOGY

A hybrid automobile is a vehicle that uses a combination of multiple sources of energy. It could be for instance a combustion engine, electric motor and an accumulator, fuel cells, ,electro motor and an accumulator, combustion engine and flywheel etc. to name a few.



Fig a. vehicle

It's the combination of a combustion engine, electromotor and an accumulator that is the most wide spread and effective for LCE. That's why we are going to focus on this concept and will describe its advantages.

The effectiveness of today's combustion engines runs in a range of 30-40%. Gas (petrol) engines' effectiveness is on the bottom on the range while the diesel enginesare somewhat better. This value is mostly based on the effectiveness of the thermodynamic cycle itself which has some clear physical limitations. Therefore we cannot expect to see much of an improvement in the future. The main problem is that the current effectiveness is at its maximum and is reached only when the engine works under optimal conditions.

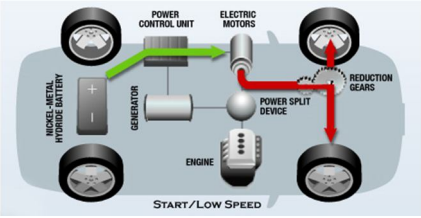


Fig b. hybrid engine arrangement

This effectiveness can therefore be reached only rarely under the normal working conditions and the overall effectiveness then is significantly lower. The extreme case here is an operation in idle position when the engine consumes fuel while the car doesn't perform any activity. As the combustion engine can acceptably perform only at a limited range of RPM the use of transmission is necessary.

The transmission brings another not insignificant energy loss. The number of gears is usually also limited which creates yet another reason why the engine cannot work at its optimum conditions. There are also continuous transmissions but their effectiveness is even somewhat lower.

The picture illustrates a schema of a series hybrid vehicle.

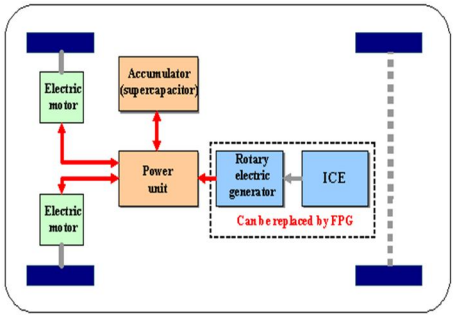


Fig c. a series hybrid vehicle

It is clear that the use of LCE in mass production is ideal. It can increase car's effectiveness as well as decrease its weight. More compact design then allows for a less traditional placement of the unit - for instance under the vehicle floor.

IV. DESIGN OF COMPONENTS

Charles H. Garrett allegedly demonstrated a water-fuelled car "for several minutes", which was reported on September 8, 1935, in The Dallas Morning News. The car generated hydrogen by electrolysis as can be seen by examining Garrett's patent, issued that same year, This patent includes drawings which show a carburetor similar to an ordinary float-type carburetor but with electrolysis plates in the lower portion, and where the float is used to maintain the level of the water. Garrett's patent fails to identify a new source of energy.

Stanley Meyer's water fuel cell

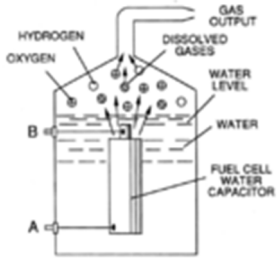


Fig d gas formation of HHO

Stanley Meyer's water fuel cell

At least as far back as 1980, Stanley Meyer claimed that he had built a dune buggy that ran on water,] although he gave inconsistent explanations as to its mode of operation. In some cases, he claimed that he had replaced the spark plugs with a "water splitter", while in other cases it was claimed to rely on a "fuel cell" that split the water into hydrogen and oxygen. The "fuel cell", which he claimed was subjected to an electrical resonance, would split the water mist into hydrogen and oxygen gas, which would then be combusted back into water vapour in a conventional internal combustion engine to produce net energy. Meyer's claims were never independently verified, and in an Ohio court in 1996 he was found guilty of "gross and egregious fraud. He died of an aneurysm in 1998, although conspiracy theories claim that he was poisoned.

V. ASSEMBLY OF HYBRID ENGINE

I advocate either 2 scrubbers or a scrubber and another additional safety measure to prevent too much water vapour or any electrolyte getting into the engine. I utilise a water/vapour trap as a secondary measure. It is simple to make: the inlet has a tube to the bottom of the container and the gas then filters upwards through 2 foam rubber discs before venting through the gas-out fitting.



Fig e complete mounting of HHO cell

As an additional safety feature I have also placed the gas inoculation point under the air filter so that the gas has to travel upwards to enter the intake manifold (aided by some vacuum from the intake manifold). Any water/electrolyte that makes it this far will simply drip into the bottom of the air filter housing where it will simply drain away through the drainage holes in the bottom of this housing.

VI. RESULT AND CONCLUSION

The real system implemented by our team is shown in fig.7 where hydrogen gas is produced by using12.5 g/litre KOH as catalyst with distilled water which forms 0.15 litre H2/min and assumed to increase with the increase in KOH concentration, and/or the number of plates.

1) HHO (Oxy-Hydrogen) is non-toxic gas, used as a supplement to any traditional fuels such as Petrol (Gasoline), Diesel, Heavyoil, Acetylene, Propane, Kerosene, LPG etc to...

2) WORKING PRINCIPLE of Hydro-Gen 1HHO added in to the air intake manifold and injects into the cylinders(where HHO mixes) with the fuel, ignites – results complete combustion ofthe Hydrocarbon fuel, lowering emission and increasing fuel efficiency.

3) PRODUCTION PRINCIPLE 1 of HHO Titanium Electrolyzer separates clean soft water (H2O) into Hydrogen &Oxygen gases using DC amps. The Chemistry HHO + H2O is… 2H2O + DC

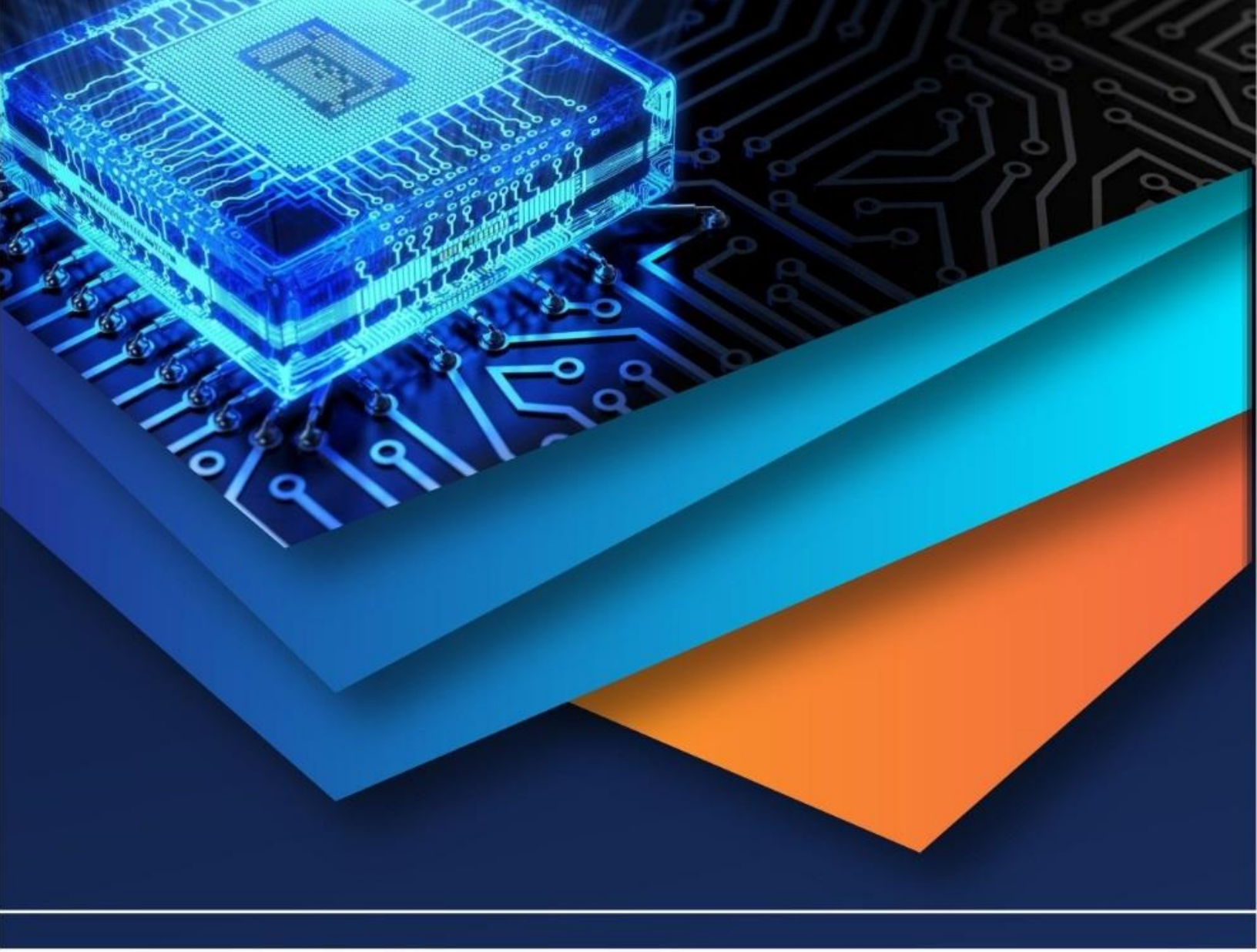
4) TITANIUM over Steel Electrodes1Titanium PPME/PPE Cells construction – No by-product Clean water always. Purest form of HHO. □results… No corrosion gases. & No hexavalent chromium. maintenance. No flushing or disassembly ever required. Case studyrust, No sludge. of corrosion in metals Titanium Brass Stainless Steel .

5) FUEL SAVINGS 1Additional fuel burning – resulting fuel saving Engine Make Cummins up to 30% depending on the condition of the Engine CC 20000engines and running platform. The practical Installed On Feb. 17, 2011test result from our valued customer Avg. before Hydro-Gen 2.06 UPL Fuel is … Avg. on Hydro-Gen 2.4 UPL Fuel Avg. on Hydro-Gen 16.5 in %.

REFERENCES

[1] D. Cocco and V. Tola, "Use of alternative hydrogen carriers in SOFC-MGT hybrid power plants", Energy Conversion and Management 50 (2009), 1040- 1048.
[2] A. Boretti, Comparison of fuel economies of high efficiency diesel and hydrogen engines powering a compact car with a flywheel based kinetic energy recovery systems, Int. J. Hydrogen Energy 35 (2010) 8417–8424.
[3] C.M. White, R.R. Steeper, A.E. Lutz, The hydrogen-fueled internal combustion engine: a technical review, Int. J. Hydrogen Energy 31 (2006) 1292–1305.
[4] F. Ma, M. Wang, L. Jiang, J. Deng, R. Chen, N. Naeve, et al, Performance and emission characteristics of a turbocharged spark-ignition hydrogen-enriched compressed natural gas engine under wide open throttle operating conditions, Int.J. Hydrogen Energy 35 (2010) 12502–12509.
[5] F. Ma, M. Wang, L. Jiang, R. Chen, J. Deng, N. Naeve, et al, Performance and emission characteristics of a turbocharged CNG engine fueled by hydrogenenriched compressed natural gas with high hydrogen ratio, Int. J. Hydrogen Energy 35 (2010) 6438–6447.
[6] F. Ma, Y. Wang, S. Ding, L. Jiang, Twenty percent hydrogen enriched natural gas transient performance research, Int. J. Hydrogen Energy 34 (2009) 6523–6531.
[7] F. Ma, S. Ding, Y. Wang, M. Wang, L. Jiang, N. Naeve, et al, Performance and emission characteristics of a Spark-Ignition (SI) Hydrogen-Enriched Compressed Natural Gas (HCNG) engine under various operating conditions including idle conditions, Energy Fuels 23 (2009) 3113–3118.
[8] F. Ma, H. Liu, Y. Wang, Y. Li, J. Wang, S. Zhao, Combustion and emission characteristics of a port-injection HCNG engine under various ignition timings, Int. J. Hydrogen Energy 33 (2008) 816–822.
[9] F. Ma, Y. Wang, H. Liu, Y. Li, J. Wang, S. Ding, Effects of hydrogen addition on cycle-by-cycle variations in a lean burn natural gas spark-ignition engine, Int. J. Hydrogen Energy 33 (2008) 823–831.
[10] F. Ma, Y. Wang, H. Liu, Y. Li, J. Wang, S. Zhao, Experimental study on thermal efficiency and emission characteristics of a lean burn hydrogen enriched natural gas engine, Int. J. Hydrogen Energy 32 (2007) 5067–5075.
[11] F. Ma, Y. Wang, Study on the extension of lean operation limit through hydrogen enrichment in a natural gas spark-ignition engine, Int. J. Hydrogen Energy 33 (2008) 1416–1424.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)