Divestment of Air Car

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Abstract
The traditional cars expensively burn fossil fuels and highly consuming vast quantity of non-renewable energy sources. Emission product of these cars exacerbates heat balance of earth environment due to greenhouse effect. To plunge sustainable and green development, here some other engine required innovating, which is run on something abundant, something renewable energy sources. So compressed air vehicle might be one game changer alternative.
Keywords: *Compressed Air Vehicle, Nonrenewable energy,*

1. History

The concept of compressed air car is not very new. Firstly this new concept was applied on locomotive in early 19th century. But this concept came into existence in 1687, when Dennis Paper described about compressed air vehicle at Royal society London.
In 1872 Mekarski air engine was single stage engine used in locomotive for street transportation.
In 1892 Robert Hardie suggested a new idea of heating off compressed air of storage tank while applying brake by which range of the vehicle increased by regenerative braking. By using the engine as a compressor during deceleration, air and heat were added to the tanks, increasing the range between fill-ups.
In 1898 second stage engine was developed by Hoadley and knight and suggested that longer time air kept in storage will more heat absorb by air thus range might be increased. Charles B. Hodge will always be retaining for his contribution in compressed air car

2. Introduction

First of all, it's essential to understand that what is compressed air vehicle and why we need this. Air car is new advanced and Futuristic vehicle which is totally consume air as a fuel. But most advantageously it is work on zero emission. The traditional engine which we know, run on conventional energy sources, by the burning of fossil fuel in the combustion chamber of cylinder of engine. In air car engine, Power is developed by expanding action of air in the cylinder of engine

Figure1. Air Car

Two technologies have been developed in compressed air vehicle for different needs.

[1] Single energy source engine.

[2] Dual energy source engine.

In single energy compressed air vehicle only air is using as a fuel. And this car gets power from only two strokes. But this single energy source engine suitable for city use only when maximum speed of vehicle reaches at 50 km/h. such type of vehicle is very handy and useful where polluting car will be banned in near future.

In dual energy compressed air vehicle the fossil fuel is using as a power source, but there at the time of braking action wheels energy drive hydraulic system which pushes compressed air in tank at the time of DE acceleration and when car again accelerate it work oppositely.

3. Working

The principal of new engine working on four strokes but in compressed air engine, compression and power stroke is removed. In intake stroke the air is taken from compressed air tank through the pressure regulating valve, which create appropriate amount of pressure. This pressure regulating valve replaces spark plug in compressed air engine. Here also one PLC circuit which regulates supply of electrical flag to plunger, by which air supply in valve is to be controlled.

In exhaust stroke the used air simply exhausted. But major thing is that the opening and closing valve in the cylinder of engine is open and close at the same time. And this is achieved by modified cam shaft.

Compressed air is stored in carbon fiber material which is very lite and durable. Carbon fiber material safely holds the air at 4500psi pressure.

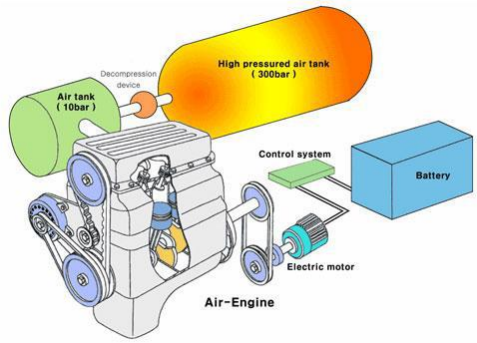
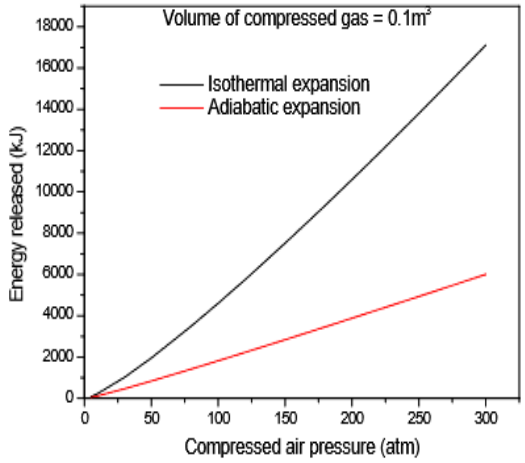


Figure2. Engine setup of air compressed vehicle.

The energy output of compressed air in engine we can understand by this graph.



Adiabatic: a process which has no cooling and heat does remain same.
Isothermal: a process gives perfect cooling in which no change in temperature of air. If there no heat loss so temperature will be high in cylinder which increase compression work requirement for its maximum value and in isothermal it's just opposite**.** The output from engine can get in two motion form**.**
Rotary motion
Linear motion

4. Advantages

- Air compressed vehicle is very light due to elimination of ignition system, cooling system.
- The air compressed vehicle run on zero emission.
- These vehicles not waste braking energy. And use into regenerative braking.
- The number of refueling station is very low at present scenario.
- Refueling is very fast compare to batteries system

5. Disadvantage

- Energy density of compressed air vehicle not remains constant throughout the discharge.

- Due to very light weight body, accidental damage high.

6. Future Directions

There can be a lot changes to improve in compressed air vehicle
Improve aerodynamic design by which confrontation air also be utilize as a fuel.
Combination of energy like solar, wind energy can also use.

7. Conclusion

The conventional energy sources limited in nature and the excessive use of these sources gives unwanted problem to humanity. For carry on the same growth, now we must look for eco-friendly, abundance availability of energy sources and compressed air vehicle is a one inchoate step toward sustainable and for green development.

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