

Study & Modification of an Air Compressed Engine

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Abstract— The Compressed Air Vehicle is an eco-friendly vehicle which works on compressed air. A Compressed Air vehicle uses air as a fuel. An Air Powered Vehicle uses the expansion of compressed air to drive the pistons of an engine. An Air Driven Engine is a pneumatic actuator that creates useful work by expanding compressed air. There is no mixing of fuel with air as there is no combustion. Developing a whole vehicle to run on pneumatic systems will prove an outright tedious and without doubt a costly affair, modification of current internal combustion engines to run on compressed air by an tadpole design this paper explores.

Keywords: Air Compressed Engine

I. INTRODUCTION

A. Compressed Air Engine Basics

One of the major problems most developing countries facing now a days is pollution and the major source of which is automobiles running on the roads. Concerning resource availability there has been a strong warning that petroleum resources may be depleted in the relative near future. Gasoline which has been the main source of fuel for the history of cars, produces carbon monoxide, nitrogen oxides and unburned hydrocarbons which are the main pollutants and are responsible for bad effect of pollution. There comes need to think about alternatives such as Biodiesel and Natural gas, electric cars, hybrid cars, hydrogen fuel cells but these alternative fuels also have some drawbacks. One possible alternative fuel is the compressed air. Fossil fuels (i.e., petroleum, diesel, natural gas and coal) which meet most of the world's energy demand are being depleted rapidly. Also, their combustion products are causing global problems, such as the greenhouse effect, ozone layer depletion, acid rains and pollution which are posing great danger for environment and eventually for the total life on planet. These factors are leading automobile manufactures to develop cars fueled by alternatives energies. Hybrid cars, Fuel cell powered cars, Hydrogen fueled cars will be soon in the market as a result of it. One possible alternative is the air powered car. Air, which is abundantly available and is free from pollution, can be compressed to higher pressure at a very low cost, is one of the prime option since

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atmospheric pollution can be permanently eradicated. Whereas so far all the attempts made to eliminate the pollution has however to reduce it, but complete eradication is still rigorously pursued. Compressed air utilization in the pneumatic application has been long proven. Air motors, pneumatic actuators and others various such pneumatic equipment's are in use. Compressed air was also used in some of vehicle for boosting the initial torque. Turbo charging has become one of the popular techniques to enhance power and improve the efficiencies of the

automotive engine that completely runs on compressed air. There are two ongoing projects (in France, by MDI and in S. Korea) that are developing a new type of car that will run only on compressed air. Similar attempt has been made but to modify the existing engine and to test on compressed air. The Compressed Air Powered Vehicle works on the principle of the Compressed Air Technology (CAT). Principle: Compressed normal air in a cylinder the air would hold some energy within it. This energy can be utilized for useful purposes. When this compressed air expands, the energy is released to do work. A pneumatic motor (Air motor) or compressed air engine is a type of motor which does mechanical work by expanding compressed air Linear motion can come from either a diaphragm or piston actuator, while rotary motion is supplied by(Adder et al 2011) either a vane type air motor, piston air motor, air turbine or gear type motor



Fig. 1: Hero Honda Passion plus Model 2006

II. DESIGN OF CAM SHAFT



Fig. 2: Cam Shaft after Modification

This is the exhaust stroke. From the above discussion, it is seen at the beginning that the inlet valve opens and compressed air enters the engine cylinder, pushing the piston downwards (TDC to BDC) and causing the cranks to begin revolving. When the piston is at BDC, the crank

completes its 180 degree revolution. Subsequently, the piston begins to move upwards (BDC to TDC), causing the exhaust valve to open and the compressed air to exit from the cylinder. The crank then finishes another 180 degree revolution and so completes one total revolution (360). Hence in this case, both the intake and exhaust valves open and close once while cranks and crank shaft revolve 360°.

III. CONCLUSION

The major project work entitled “AIR COMPRESSOR VEHICLE” has been carried out as a part of my project B.tech in MECHANICAL ENGG at Nova College of Engineering & Technology.

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