

A Study on the Ducted fan and its types

Swastik Pradhan

School of mechanical engineering, Lovely professional university, Punjab 144411

Swastik.22644@lpu.co.in

Abstract

For a ducted fan car that performs Eco-friendly on roads, the ducted fan car must be less pollution in the nature is the most important factor. A significant awareness has been observed regarding the usage of such a technology. This project has a review of such ducted fan car. A car that functions fully depends on ducted fan speed should not only complete the jobs that are desired of them but also somehow establish a connection between themselves and the person operating them. A lot of research has been done of these kinds of car and a lot of work still needs to be done. In order to a car to reduce the fuel consumption and pollution control, it should also be capable of high-speed vehicle.

KeywordDucted Fan, Air car, Flying car

Introduction

This is the car which runs with ducted fans instead of fuel and gases. In this main source to move the car is the ducted fans. They drag the air from the front and release from the back with some certain force. Then the tires of this will be in motion. This is the basic concept of this project. Here we are using the ducted fans along with the motors that are used to run them and joystick to the control the motion, speed, and directions with required program for that [1]. The main purpose to design the project is to avoid the pollution caused by the burning of fuels on the road. Required parts: Ducted fans, Motors each draw 120 amps current at 22 volts i.e. 10,000 watts, chassis of the car, circular iron material to fix the fans, 4 tyres, joystick, Jumper wires.

Existing Cars

Air car

The existence of heavier-than-air vehicles capable of flying in the air is, of course, well known. Such vehicles include conventional airplanes with wings, helicopters and the like, and ground-effect vehicles. The prior art does not disclose an air car of the type disclosed herein capable of flying at substantial distances above the ground and controllable in a manner set forth below.[2 5]

Flying car

As anyone who has driven on roadways near any major city in the world will attest, people of today are very mobile and the number of land vehicles on the roads, both major roads and secondary roads, is increasing at nearly alarming rates. Roads are becoming more and more congested with each passing day. The roadways are shared by commuters, police and fire departments, rescue squads, as well as the military. This adds still further to the congestion on the roadways. The congestion is not only frustrating to those trapped in it, it is wasteful of time and energy.[3 4]

Pressure-jet and ducted fan hybrid electric car

Hybrid electric vehicle capable of air travel or flight by means of ducted fans, augmented by pressure jets for enhancement and steering. In particular, the present invention relates to a passenger vehicle that is capable of both ground travel and of travel through the air. A hybrid system allows a driver to selectively switch between an electric drive and an electric drive combined with a combustion engine drive for extended ground travel.[4]

Working Principle

A ducted fan is an air moving arrangement whereby a mechanical fan, which is a type of propeller, is mounted within a cylindrical shroud or duct. The duct reduces losses in thrust from the tips of the propeller blades, and varying the cross-section of the duct allows the designer to advantageously affect the velocity and pressure of the airflow according to Bernoulli's principle. A jet fan is a stationary ducted fan used to move air through buildings or tunnels. Ducted fans normally have more and shorter blades than conventional propellers and thus can operate at higher rotational speeds [5].

Conclusion

In this work, we have accomplished our prime objectives of understanding the types of ducted fan car and exploring how those characteristics can be altered. The study of ducted fans was studied through research of existing work. Ducted fans are unique in the form of air vehicle design. Ducted fan cars are mainly reducing the pollution in the environment and also the fuel less vehicles. There should be a capacity in the ducted fan car to get information from the surroundings while pursuing the required object.

References

1)Geranio, Nick, and Robert K. McBride. "Counter rotating ducted fan flying vehicle." U.S. Patent 6,457,670, issued October 1, 2002.

2) Smith, Lonnell E. "Air car." U.S. Patent No. 4,043,421. 23 Aug. 1977.

3) Long, Larry D., and Terry L. Sturgeon. "Flying car." U.S. Patent 6,745,977, issued June 8, 2004.

4) Lay, J.E., Lay Joachim E, 1992. *Pressure-jet and ducted fan hybrid electric car*. U.S. Patent 5,141,173.

5) Yoeli, Raphael. "Ducted fan VTOL vehicles." U.S. Patent No. 7,857,253. 28 Dec. 2010.

