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Patent Search

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Abstract:

This invention is related to the design of a Venturi model as an air inlet system for use in formula racing cars. The Venturi's throat acts as a restrictor and the role of the re is to regulate the output power and air mass flow to enhance engine performance and its efficiency. The permissible mass flow rate in the manifold would be achievable b increasing the pressure drop through the Venturi pipe. Based on the converging and diverging nozzle angles of the Venturi pipe, a detailed theoretical calculation for the tr mass flow profile and pressure performance is obtained. Using the Computational Fluid Analysis (CFD) in ANSYS software, the minimum pressure drop for the Venturi is ol The optimal design that provides a better mass flow rate (0.07 Kg/s) to the engine with minimum pressure drops (1.62 Bar) is achieved at 12 and 6 degrees of the convergi diverging nozzle angles respectively.

Complete Specification

- Claims:1. We claim a Venturi nozzle model can improve the layout of the air inlet system and its working.
2. We claim the Venturi model as a restrictor can fit better than any other type of restrictor based on the discharge coefficient parameter.
3. We claim the design of Venturi model provides minimal pressure drop achieved using converging-diverging nozzle angles at 12 and 6 degrees respectively.
4. We claim the designed Venturi intake manifold helps to achieve better efficiency of the engine both in terms of performance and mileage.
- , Description:As per the 2019 rulebook of Society of Automotive Engineers, India, a restrictor with a diameter of 20 mm must be added to the air intake system to regulate the air mass flow into the engine and increase the power output and performance of formula racing cars while improving the fuel efficiency of the car. In the earlier versions, a restrictor was not a necessary device for the formula racing cars. With the regulations, it is now must to be introduced into the air intake mechanism to improve the performance of the engine.
- A restrictor is a device that is fitted on the airflow path to regulate the mass flow into the engine. In the engine intake manifold, it is possible to use two forms of restrictor namely an orifice plate and a Venturi duct.
- Venturi duct is a small pipe with a converging and diverging segments connected through a narrow throat in the middle. It has an advantage over the orifice plate, as the airflow converges through the concentric hole which reduces the upstream pressure of the system

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