

Horizontally Opposed Engine (Boxer engine)

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Abstract

In the present scenario, maintaining the center of gravity of vehicle is a serious problem because of the engine size. This can be easily balanced by using horizontally opposed engine/boxer engine. Horizontally Opposed engine is one of the types of internal combustion engines. It is also called as 'Boxer /Flat engine'. The pistons face away from each other in 180 degree symmetrical layout around the crankshaft and work to balance out each other's vibrations. The main feature of this engine is that it has low center of gravity than any other engine configurations (Inline or V-type engines). Low center of gravity of engine lowers the center of gravity of entire car. Hence vehicle using them will have better stability and control during cornering. The open and exposed design of the engine allows air cooling as well as water cooling, and in air-cooled applications fins are often cast into the external cylinder block walls to improve the engine cooling. It generally consists of 4, 6, 8 or 12 cylinders. The boxer engines usually find applications in racing cars. They are presently used in automobile companies like Porsche, Ferrari, and Subaru-Toyota. And also they are used as some aircraft engines. Due to their higher manufacturing cost it has limited use in automobile industries. My objective is to study and review a research paper on boxer engines and compare its performance, safety with the other traditional engines and obtain 'engine power curve vs rpm' between boxer engine and other engines. And also to study about the benefits of development of this engine for passenger car application. The research paper I will be reviewing and presenting is-'Advanced engine dynamics using Multi Body Systems: Application to twin cylinder boxer engines', written and presented previously by Yannick Louvigny-Automotive Engineering-University of Liege, Belgium at 1st Joint International Conference on Multibody System Dynamics held on May 25-27,2010,Lappenranta,Finland.