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## A Review on Analysis and Optimization of Engine Mounting Bracket

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Abstract: The engine mounting bracket is a vital component in the automotive industry, serving to support the engine and connect it to the vehicle chassis while mitigating the transmission of vibrations and noise. The engine mounting bracket is a fundamental component in automotive powertrain systems. As automotive design advances toward improved performance, fuel efficiency, and reduced emissions, the need for lighter, stronger, and more efficient engine mounting systems has become increasingly important. This review paper aims to provide a detailed overview of the various techniques employed in the analysis and optimization of engine mounting brackets, focusing on enhancing their mechanical performance and weight reduction. The paper explores various analytical and computational approaches, particularly computer aided design (CAD) and finite element analysis (FEA), which is widely used for modelling and assessing stress distribution, deformation, and modal characteristics. The paper discusses the static analysis and modal analysis performed on the engine mounting bracket. Optimization techniques such as topology optimization, shape and size optimization, and the use of alternative materials are explored for improving strength-to-weight ratio and reducing overall mass without compromising structural integrity. This review aims to guide future research and development efforts toward the creation of more efficient and reliable engine mounting systems.

**Keywords**: Engine Mounting Bracket, Finite Element Analysis (FEA), Static Analysis, Modal Analysis, Topology Optimization, Weight Reduction

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