

Design and Manufacturing of Chassis for Range Extended Hybrid Electric Vehicle (HEV)

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Abstract: *This research focuses on the development of an optimized chassis framework for a Range-Extended Electric Vehicle (REEV), transitioning from conventional modified car frames to purpose-built tubular space frames. Leveraging advancements in Computer-Aided Design (CAD) and Computer-Aided Engineering (CAE), the study prioritizes structural integrity, weight reduction, and compliance with stringent safety standards.*

A comprehensive literature review establishes the foundation for chassis design methodologies, vehicle dynamics, and structural engineering principles. The research systematically addresses deficiencies in existing chassis structures by optimizing material selection, structural geometry, and weight distribution. The methodology encompasses detailed dimensioning of primary and secondary chassis members, computational analysis through dynamic simulations, and impact assessments to validate real-world performance.

The results demonstrate significant improvements in structural robustness and weight efficiency, reinforcing the feasibility of the proposed design.

The study concludes with a detailed cost analysis and performance evaluation, offering valuable insights for future advancements in electric vehicle chassis development.

Keywords: Hybrid electric vehicle, Chassis, Design calculation Design, Manufacturing, analysis, testing, Material Selection, Impact Analysis

