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Design analysis and fabrication of electric all-terrain vehicle for E-baja

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Abstract:

An all-encompassing engineering project, the Design Analysis and Fabrication of an All-Terrain Vehicle (ATV) aims to provide a flexible off-road vehicle that can reliably and efficiently traverse a variety of terrains. The main steps in the design process—the stages of conceptualization, analysis, and fabrication—are described in this abstract. In the initial stages, goals for the project are established, design elements are conceived, and feasibility studies are carried out to make sure the vehicle satisfies performance standards. Next, in-depth engineering evaluations are carried out to enhance the robustness and user comfort of the ATV's design. These analyses include structural, dynamic, and ergonomic assessments. In order to achieve high-quality construction, the fabrication stage includes material selection, component manufacture, and assembly processes. It makes use of sophisticated fabrication techniques and manufacturing technologies. Safety, sustainability, and economy of cost are all taken into account during the project's design and production phases. The culmination of these efforts results in the development of an innovative All-Terrain Vehicle optimized for the E-Baja competition, poised to deliver exceptional performance and reliability in off-road environments while showcasing the potential of electric propulsion in motorsport applications. After all of this work, a cutting-edge all-terrain vehicle that can function superbly and dependably in a variety of difficult conditions has been created.

Keywords:

All-Terrain Vehicle (ATV), Design Analysis, Fabrication, Off-road Vehicle, Engineering, Feasibility Studies, Structural Analysis, Dynamic Analysis, Ergonomics, Material Selection, Electric ATV.