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Optimizing Design and Performance of Hybridand Electric Vehicles: Configurations, Topologies, and Future Prospects

Pranav Kumar[1] and Barkha Khambra[2]
MTech Scholar, NRI Institute of Information Science and Technology Bhopal, M.P., India[1]
Assistant Professor, NRI Institute of Information Science and Technology Bhopal, M.P., India[2]
kumarpranav550@gmail.com and barkhasaxena21@gmail.com

Abstract: *Hybrid Electric Vehicles (HEV), Fuel Cell-based vehicles, and electric vehicles are the primary trends in the automobile industry, and they are emerging as viable alternatives to traditional vehicle systems. In the near future, these technologies will fundamentally transform the industry's outlook. As technology evolves, there will eventually be a need for technological research and development. The structure of this work is such that it proposes an optimal design method for the various configurations used. The first section provides a quick introduction to the various technologies, followed by the various configurations used in vehicle design. The third section describes the impact of different configurations on vehicle performance and how they are controlled in real time.*

Keywords: design strategies, component, HEVs