

FUNCTIONALITY TESTING OF THE ELECTRICAL SYSTEM IN A HYBRID CONVERSION VEHICLE

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ABSTRACT

This study aims to evaluate the functionality of the electrical system in a hybrid vehicle converted from a conventional motorcycle. The conversion utilizes a 3000-watt BLDC motor supported by a lithium-ion battery-based electrical system and components such as a controller, MCB, and power indicator. Dynamic testing was conducted with varying loads (65 kg, 70 kg, and 75 kg) and distances (1–3 km) at a constant speed of 20 km/h. Results showed that higher loads and longer distances increased power consumption. Battery output was greater than controller output due to internal power usage for system activation. The difference remained within the 5% error tolerance range, indicating reliable system performance. This study confirms that the electrical system in a hybrid conversion vehicle functions optimally and offers a viable, environmentally friendly, and cost-effective transportation alternative.

Keywords: *hybrid conversion vehicle, electrical system, BLDC motor, lithium-ion battery, power efficiency.*

