

Enhancing Energy Efficiency in Electric Vehicles: The Role of the Torque Converter in Sustainable Mobility

The article explores the use of torque converters (gearboxes) in electric vehicles to optimize energy efficiency and sustainable mobility. A cargo tricycle was modified to include a 1000 W electric motor and a bicycle gear system. Tests conducted on a 12 km circuit showed that the first gear (higher torque and lower speed) consumed less energy compared to higher gears, which provide lower torque and higher speed. The results indicated that torque variation significantly influences energy consumption, with higher gears increasing consumption without a corresponding increase in average speed. It was concluded that the inclusion of a gearbox can be advantageous for electric vehicles, providing flexibility and better performance in different usage conditions. Future studies will aim to optimize the relationship between inclination, speed, gear ratio, and consumption.

Keywords: Electric vehicles; Efficiency; Torque converter; gearbox.

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Session Classification: Poster Presentation