

***Comparison of Carbon Impacts of Electric Vehicles and Gasoline Vehicles
Towards a Zero Emission Transition***

by

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ABSTRACT

This study examines the comparison of carbon dioxide (CO₂) emissions between electric motorcycles and gasoline motorcycles in support of the transition to zero emissions. CO₂ emissions from fossil fuel-powered vehicles are one of the largest contributors to air pollution and global warming. Therefore, this research aims to measure and compare the emissions produced by both types of vehicles. The testing was conducted on a 1 KW electric motorcycle and a gasoline-powered Supra X 125 motorcycle. The testing method used the Life Cycle Assessment (LCA) Tier 1 with an emission factor of 2.1 kg CO₂ per liter of gasoline and 0.9 kg CO₂ per kWh of electricity. Measurements were taken at various distances (20 km, 30 km, and 40 km) and speeds (30 km/h and 40 km/h). The results show that electric vehicles significantly reduce CO₂ emissions by up to 50% compared to gasoline vehicles. At a speed of 30 km/h, the gasoline motorcycle produced 1.26 kg CO₂ over a distance of 20 km, while the electric motorcycle only produced 0.54 kg CO₂ for the same distance. These findings indicate that electric vehicles have great potential in reducing carbon emissions and supporting the achievement of future zero-emission targets.

Keywords: *carbon emissions, electric vehicles, gasoline vehicles, zero emissions, LCA.*