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## (57) Abstract:

Conventional braking systems rely on the principle of friction to slow down or stop a vehicle, while electromagnetic brakes operate on a frictionless basis. Electromagnetic braking systems utilize the principles of electromagnetism and Eddy currents to achieve their braking action. This system employs magnetic force to carry out braking, and the power required for braking is transmitted manually. It combines electrical and mechanical concepts to function effectively. The main objective of introducing the electromagnetic braking system is to achieve efficient braking and reduce the occurrence of automobile accidents. Additionally, this braking system requires less maintenance compared to conventional braking systems. In this system, the primary focus is on supplying electricity to the coil, which generates a magnetic field across the armature. When current flows through the coil, it attracts the armature towards the coil, thereby creating torque and bringing the vehicle to a halt. To contribute to sustainability efforts, this work explores the use of ferromagnetic scrap materials for recycling purposes in the electromagnetic braking system. By utilizing these recycled materials, the overall environmental impact can be reduced, while still achieving effective braking performance.

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