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Field Force Braking: Using Electrical Induced Currents to Stop an Object

Changing brake pads is something every automobile owner will eventually have to do. Some vehicles have the need for special brake pads which can costs hundreds, an average automobile's break job is $150.00. Replacing a brake pad usually takes an hour for each pad. If the rotors gained any damage the time and money increases immensely.

In hybrid or electric vehicles, if one of the regenerative braking motors fails, repairs could end up costing thousands of dollars. Magnetic braking is very cost effective and very efficient and is contactless, no abrasive parts. The first thought of a magnetic braking system appeared when I learned about eddy currents and how they produce a drag effect. I then wondered if there was a way to make a braking system with eddy currents. I built three prototypes, two in which were more of a concept; the third, and final, prototype was able to produce results. The prototypes all contained a non-magnetic metal that was conductive (i.e. Copper and Copper/Aluminum alloy). The data I received from the final prototype shows that contactless magnetic braking is possible. Induced electrical currents from my field force braking system could replace an alternator in any automobile. Removing an alternator from a vehicle causes an engine to work less, and as a result produces fewer emissions.