

Abstract Submitted
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Studies of Efficiency in a Regenerative Braking System¹ ALEXANDER BAHRIM, GLEB TCHESLAVSKI, Phillip Drayer Department of Electrical Engineering, Lamar University, CRISTIAN BAHRIM, Department of Physics, Lamar University — A regenerative braking system (or RBS) is an energy recovery mechanism, typically associated to slowing down a moving vehicle or object by converting its rotational energy into electric power that can be either used immediately or stored. We built an RBS by connecting the shaft of a motor with a steel flywheel and a turbine generator. This motor-flywheel-generator (MFG) system is used to study the efficiency in energy conversion from the rotational energy of the flywheel into electrical energy stored by a large capacitor (or battery). The paper will present the building steps of an RBS, including the design of a circuit convertor of AC power from the turbine, into DC power stored by capacitor, and the efficiency in energy conversion for various rotations per minute (RPM) regulated by a computer driven ClearPath motor. Our system reached 30% efficiency at 1,000 RPM, and through the extrapolation of our data, it indicates an astonishing 51% efficiency at 2,000 RPM, which corresponds to real-world applications.

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