

Regenerative Braking System

Prof. P. D. Garge¹, Mr. Sairaj Khedekar², Mr. Swarnim Kate³, Mr. Dhirajkumar More⁴,
Mr. Prathmesh Patil⁵

Assistant Professor, Mechanical Engineering, NBSSOE, Pune, India¹

UG Student, Mechanical Engineering, NBSSOE, Pune, India^{2,3,4,5}

Abstract: Most brakes commonly use friction between two surfaces pressed together to convert the kinetic energy of the moving object into heat, though other methods of energy conversion may be employed as all the energy here is being distributed in the form of heat. Regenerative braking converts much of the energy to electrical energy, which may be stored for later use. Driving an automobile involves many braking events, due to which higher energy losses take place, with greater potential savings. With buses, taxis, delivery vans and so on there is even more potential for the economy. As we know regenerative braking, the efficiency is improved as it results in an increase in energy output for a given energy input to a vehicle. The amount of work done by the engine of the vehicle is reduced, in turn reducing the amount of energy required to drive the vehicle. The objective of our project is to study this new type of braking system that can recollect much of the car's kinetic energy and convert it into electrical energy or mechanical energy. We are also going to make a working model of regenerative braking to illustrate the process of conversion of energy from one form to another. Regenerative braking converts a fraction amount of total kinetic energy into mechanical or electrical energy but with further study and research in near future it can play a vital role in saving the non-renewable sources of energy.

Keywords: Regenerative, Braking, Hybrid Vehicles, Kinetic Energy Recovery System (K.E.R.S.), Flywheel, Motor, Hydraulic Power Assist, etc.

REFERENCES

- [1] Ravikant K. Nanwatkar, Dr. Deepak S. Watvisave, "Analysis and Simulation of Hybrid Energy Storage System for Electric Vehicle" in July 2021| IJIRT | Volume 8 Issue 2 | ISSN: 2349-6002.
- [2] Allen E. Fuhs, Hybrid Vehicles – The future of personal transportation.
- [3] Mehrdad Ehsani, Yimin Gao and Sebastien E. Gay., Modern Electric, Hybrid Electric, and Fuel Cell Vehicles.
- [4] Chibulka. J, "Kinetic Energy Recovery System by means of Flywheel Energy Storage", Advanced Engineering, Vol. 3.
- [5] Ranjan Kumar, Department of Mechanical Engineering, Indian School of Mines, Dhanbad, "Regenerative Brake: To Harness the Kinetic Energy of Braking" JETIR (ISSN-2349-5162).