IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 7, April 2025
Impact Factor: 7.67

Design and Dynamic Analysis of Flywheel for Light Weight

Dr.N.G. Jawarakar[1], Murkute Prashant Vitthal[2], Barbade Mayur Ashok[3], Mhetre Pandurang Kumar[4], Jagdale Rahul Shrimant[5], Borse Jayesh Babulal[6]
Professor, Department of Mechanical Engineering [1]
Students, Department of Mechanical Engineering[2,3,4,5,6]
JSPM's Rajarshi Shahu College of Engineering, Pune, India

Abstract: *As one of the growing energy storage technologies that are currently accessible in various stages of development, particularly in advanced technological fields, flywheels function as kinetic energy storage and retrieval devices with the capacity to deliver high output power at high rotational speeds., i.e., spaceships. Three main criteria determine a flywheel's performance: rotating speed, cross-sectional shape, and material strength. The kinetic energy level that may be produced safely when linked with rotor speed is directly determined by material strength; however, the focus of this study is only on investigating how flywheel material affects the energy storage and delivery capacity per unit mass, also known as specific energy. The findings of a proposed computer-aided analysis and optimization technique demonstrate that choosing the right flywheel material could significantly impact the Specific Energy performance and lessen the operational pressures placed on the shaft and bearings at high rotational speeds because of the reduced mass. Three rim type flywheels are designed on Solidworks software and structural analysis is done on Ansys software. The first flywheel is made up of mild steel and for reducing its weight composite flywheel is also developed. Carbon fiber is used for making other two flywheel. Out of three the flywheel made-up of carbon fiber body and mild steel rim will be more efficient and lighter in weight..*

Keywords: Flywheel, Composite, Steel, Carbon fiber, Weight

DOI: 10.48175/IJARSCT-25438