Development of Flywheel Test Equipment for Flywheel Energy Storage System with Cryo-cooled Superconducting Magnetic Bearings

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We have been developing flywheel energy storage system for railways equipped with superconducting magnetic bearings. The bearings consist of cryo-cooled superconducting coils and bulk superconductors completely inside a cryostat. A rotor is suspended and driven by electromagnetic force without mechanical contact. We have designed and prepared flywheel test equipment with the bearings. Using the equipment, we have successfully rotated the rotor without any mechanical contact and demonstrated feasibility of these superconducting magnetic bearings. In this paper, we report the levitation properties of the equipment.