

Reduced Vibration in a Levitating Motor

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Abstract : We investigate the fitness of a male and female permanent magnetic levitation support for use as an axle on a rotor for a levitating motor. The support enables passive thrust and axial support for the axle as a result of the unique arrangement of permanent magnets. As the axial and thrust bearing aspects are derived from magnetic repulsion, it is not immediately clear that the repulsion is stiff enough to enable even low power motors. This paper describes the design and performance of two low power motors based on the magnetic levitation support. We find that our low power motors, with rotational speeds of 618 and 833 rpms, exhibit performance free from excess vibrations that might hinder performance. This means that the actuation of the motors is adequately stabilized by the axle and results in motors capable of being utilized despite the levitation support.

Keywords : levitating motor, magnetic levitation support, fitness, axle

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