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Recent and Ongoing Advancements in Research on Magnetic Suspension

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ABSTRACT

Magnetic suspension maintains an object (floator) in space with no visible means by magnetic force. No mechanical friction is expected in operation even without lubrication. This advantage has already given rise to a lot of industrial applications such as Maglev system, and active magnetic bearing for complete contact-free suspension of rotating object.

Researches and developments on magnetic suspension have been actively pursued for several decades and some people may consider this technology to be rather mature now. However, to fully utilize this unique technology and to increase industrial applications, technical advances are still important.

This report presents several recent innovations and advances in magnetic suspension technology. An overview of technological fundamentals is presented first, which is followed by reports on the recent and ongoing works conducted in the author's laboratory.

Keywords: Magnetic suspension, Magnetic Bearing, Mechatronics, Electromagnet, Permanent magnet