

Permanent Magnet Machine Can Be a Vibration Sensor for Itself

Authors : M. Barański

Abstract : The article presents a new vibration diagnostic method designed to (PM) machines with permanent magnets. Those devices are commonly used in small wind and water systems or vehicles drives. The author's method is very innovative and unique. Specific structural properties of PM machines are used in this method - electromotive force (EMF) generated due to vibrations. There was analysed number of publications which describe vibration diagnostic methods and tests of electrical PM machines and there was no method found to determine the technical condition of such machine basing on their own signals. In this article, the method genesis, the similarity of machines with permanent magnet to vibration sensor and simulation and laboratory tests results will be discussed. The method of determination the technical condition of electrical machine with permanent magnets basing on its own signals is the subject of patent application No P.405669, and it is the main thesis of author's doctoral dissertation.

Keywords : vibrations, generator, permanent magnet, traction drive, electrical vehicle

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