

PM Electrical Machines Diagnostic: Methods Selected

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Abstract : This paper presents a several diagnostic methods designed to electrical machines especially for permanent magnets (PM) machines. Those machines are commonly used in small wind and water systems and vehicles drives. Those methods are preferred by the author in periodic diagnostic of electrical machines. The special attention should be paid to diagnostic method of turn-to-turn insulation and vibrations. Both of those methods were created in Institute of Electrical Drives and Machines Komel. The vibration diagnostic method is the main thesis of author's doctoral dissertation. This is method of determination the technical condition of PM electrical machine basing on its own signals is the subject of patent application No P.405669. Specific structural properties of machines excited by permanent magnets 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 machines with permanent magnets and there was no method found to determine the technical condition of such machine basing on their own signals.

Keywords : electrical vehicle, generator, main insulation, permanent magnet, thermography, turn-to-traction drive, turn insulation, vibrations

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