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Static eccentricity fault modeling in permanent-magnet synchronous motors

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Abstract : In this paper, a model based on the finite element analysis has been developed for healthy and eccentric PMSM. The proposed model is analyzed by time stepping Finite element method. The electromagnetic field distribution, air-gap magnetic flux density and the leakage inductances under healthy and eccentric rotor have been calculated. Meanwhile, the MCSA of the healthy and faulty PMSM is inspected under various static eccentricity levels.

Keywords : PMSM, Finite Element Method, diagnosis, Static Eccentricity, Spectral analysis