Diagnosis Of Static, Dynamic, And Mixed Eccentricity In Line Start Permanent Magnet Synchronous Motor By Using FEM

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Abstract : In line start permanent magnet synchronous motor, eccentricity is a common fault that can make it necessary to remove the motor from the production line. However, because the motor may be inaccessible, diagnosing the fault is not easy. This paper presents an FEM that identifies different models, static eccentricity, dynamic eccentricity, and mixed eccentricity, at no load and full load. The method overcomes the difficulty of applying FEMs to transient behavior. It simulates motor speed, torque and flux density distribution along the air gap for SE, DE, and ME. This paper represents the various effects of different eccentricities types on the transient performance.