

## Design and Performance Evaluation of Synchronous Reluctance Machine (SynRM)

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**Abstract :** Torque ripple, maximum torque and high efficiency are important issues in synchronous reluctance machine (SynRM). This paper presents a view on design of a high efficiency, low torque ripple and high torque density SynRM. To achieve this goal SynRM parameters is calculated (such as insulation ratios in the d-and q-axes and the rotor slot pitch), while the torque ripple can be minimized by determining the best rotor slot pitch in the d-axis. The presented analytical-finite element method (FEM) approach gives the optimum distribution of air gap and iron portion for the maximizing torque density with minimum torque ripple.

**Keywords :** torque ripple, efficiency, insulation ratio, FEM, synchronous reluctance machine (SynRM), induction motor (IM)

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