

This paper presents a novel switched reluctance motor incorporating a new design methodology. The proposed structure is designed using distinct concepts including design considerations of salient poles and the motor energy conversion capacity. First, multiple techniques to increase the motor torque using these concepts are discussed. Then, the new design is introduced. Based on the concepts of maximum energy conversion and also providing a topology change process, a novel stator-segmented structure is proposed. The three-phase form of the proposed motor has six segments in the stator with four poles and a solid rotor with 22 poles. The novel motor's characteristics are initially obtained using finite-element analysis and shown to exhibit higher torque density when compared to the conventional structure. Finally, the performance of the new design and analysis methods described in the paper are verified by experimental results obtained by a built prototype.