

Investigation of Magnetic and Static Characteristics in Three-Phase Switched Reluctance Motors under Different Winding Connections

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Abstract—Due to the development in power electronics, Switched Reluctance Machines (SRMs) occupy a great interest in several industrial applications like electric vehicle thanks to their several advantages such as simple and robust construction, low cost, high reliability, and easy cooling. However, SRMs have also drawbacks such as some challenges in their control, high acoustic noise, high levels of torque ripple and vibrations. The effect of the winding connections on the static and magnetic characteristics of a 3-phase 12/8 switched reluctance machine has been studied through finite element analysis and it is investigated in this paper. Different winding connections for the three-phase SRMs is shown and compared.

Keywords—Switched reluctance motors, FEA component, Torque, Rotor poles, Losses and efficiency.