Abstract

This paper presents the design, and simulation of a soft switched boost converter for a switched reluctance motor with a closed loop controller. A soft switching scheme is proposed in the converter with minimum components, which reduces the switching loss and stress across the switch so that the harmonic generation is reduced in the output. The switch used in this
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Converter switched ON at zero current and switched OFF at zero voltage. Lot of researches were done on the power converter circuit of the SRM to control the speed. But in the proposed system a soft switched boost converter is designed to regulate the input voltage to SRM for any line variations and a power converter is used to control the speed of SRM. The PI controller is used as closed loop controllers, which improves the speed control of the switched reluctance motor for any load and regulate the input voltage to SRM for any line variations. The duty cycle of the switch is controlled by PI controller using PWM technique. A 500W/50KHz PWM based soft switched boost converter is designed and simulated for 6/4 pole 3 phase SRM with variable loads. The results are simulated using MATLAB SIMULINK.

Reference

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Index Terms

Computer Science  Control Systems

Key words

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Zero voltage switching
Zero current switching
Switched Reluctance Motor