TJPRC: International Journal of Power Systems & Microelectronics (TJPRC: IJPSM)
Vol. 2, Issue 2, Dec 2016, 21-32

TRANS STELLAR
•Journal Publications •Research Consultancy

SPEED CONTROL OF 8/6 SWITCHED RELUCTANCE MOTOR USING FPGA

GUTTA HARISH KUMAR & ASHOK S

Department of Electrical Engineering National Institute of Technology Calicut Kerala, India

ABSTRACT

Switched Reluctance Motors (SRM) are gaining much attention now-a-days. The usage of switched reluctance motor is increasing especially due to the development in the power semiconductor devices and digital electronics permitting the somewhat more complex control algorithms required for the control of the SRM. This paper proposes a FPGA based digital controller designed for the speed control of 8/6 SRM drive under varying load conditions. Massive parallel processing is the major advantage of FPGA to provide solution for demanding applications. The model is developed in the Matlab/Simulink using Xilinx reference block set and the developed model is converted in to the VHDL code using Xilinx ISE and Altium software and then implemented in Xilinx Spartan-3AN XC3s14an FPGA Nano board. PI controller is implemented in FPGA for controlling the speed of the SRM under varying load conditions. Hardware implementation of the proposed method is done and the results show that the speed control is achieved under wide operating ranges.

KEYWORDS: Switched Reluctance Motor(SRM), Field Programmable Gate Array(FPGA), PI Controller, System Generator

Received: Apr 26, 2016; **Accepted:** Jun 18, 2016; **Published:** Jun 27, 2016; **Paper Id.:** TJPRC:IJPSMDEC20163

Original Article