Voltage Control of Two Quadrant Chopper", Trends in Electrical Engineering (STM Journals), Vol. 4, Issue 3, pp. 26-34, 2014.

**Abstract:**

The DC motors are most suitable for wide range speed control and hence it is used in many adjustable speed drives. The DC motors are generally fed by chopper circuit for improved performance. In order to get smooth and precise control over the speed of DC motor, many different types of controllers have already been introduced. In this paper, two discrete-time multi-input and multi-output optimal controllers, one for control of speed of DC motor and another for control of DC voltage of chopper, are designed. The state space models of DC motor and chopper circuit are developed to design the proposed controllers. Based on the developed state space model the proposed controllers are designed. The performances of controllers are verified using the MATLAB/SIMULINK contrivance. The simulation results show that, the proposed controller gives admirable control over the speed and the dc voltage respectively. Again the overall design exhibits ease, less complexity and robustness than any other conventional controllers.

**Keywords**: Separately Excited DC Motor, Two Quadrant Chopper, Speed Control, Optimal Regulator