عنوان مقاله:

A Hybrid Fuzzy/LQR Based Oscillation Damping Controller using 3-level STATCOM

محل انتشار:

همایش ملی کاربرد سیستم های هوشمند (محاسبات نرم) در علوم و صنایع (سال: 1392)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Ramazan ebrahimi

Naser taheri

خلاصه مقاله:

Analysis and damping of torsional oscillations in series compensated transmission system is presented in this paper. Series compensation of transmission lines connected to turbo generators can result in Sub Synchronous Resonance (SSR) leading to adverse torsional oscillations.The use of Flexible AC Transmission System (FACTS) controllers such as Static Synchronous Compensator (STATCOM) are increasing in the network for enhancing power transfer capability, dynamic voltage support and also damping of power oscillations. In this paper, a hybrid Fuzzy/LQR (Linear Quadratic Regulator) control method for 3-level STATCOM control is introduced and applied for damping oscillations caused by SSR. Linear quadratic regulator (LQR) is an optimal control method that minimizes the cost function in order to achieve the optimal tradeoff between the use of control effort, the magnitude and the speed of response. Also it guarantees a stable control system. The Fuzzy logic is used to design of control system in outer loops of controller and designed supplementary controller for damping oscillation in STATCOM. The simulation results demonstrate the effectiveness of the proposed hybrid controller and its robustness performance. The operating range of the proposed control scheme was demonstrated as better that of the conventional controller.

کلمات کلیدی:

STATCOM, Oscillation Damping, Fuzzy Cntroller,LQR Controller, Sub Synchronous Resonance