

عنوان مقاله:

Improvement of Wind Farm Voltage by Using Shunt FACTS Devices

محل انتشار:

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خلاصه مقاله:

Environmental concerns and lack of fossil fuels are the main reasons for using renewable energies on large scale in recent decades. Especially, using of wind energy has been increasing rapidly. Nowadays, contribution of small wind power plants in electricity generation is increased. So, today, power systems are more depend on wind energy than past. On the one hand, using of wind power plants in power systems causes some problems such as: voltage stability reduction, frequency oscillations, dynamic stability reduction and so on. To tackle these problems, maintaining the voltage at the point of common coupling (VPCC) at desired level in both normal and fault condition (from grid perspective) is really important. On the other hand, FACTS technology is one of the practical solutions to deal with these kinds of problems. In this thesis, two parallel FACTS devices (SVC, STATCOM) which could absorb and generate reactive power, are used to improve the voltage stability of two considered wind farms. Moreover, to avoid mechanical damages and stress, also to obtain the maximum power from wind turbines, blade angle controllers are designed and implemented. In addition, considered wind farms, SVC and STATCOM are modeled through PSCAD/EMTDC software. Furthermore, SVC and STATCOM operations are compared to each other. Results show that, proposed parallel FACTS devices could greatly deal with wind farms issues and improve the stability of VPCC

کلمات کلیدی:

Wind Turbine, Wind Farm, FACTS, STATCOM, SVC

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