Abstract

In the present day world power system deregulation is at its full stretch. In this deregulated environment there is a clear need for adequate computation of ATC which is currently being given at most importance. The insertion of FACTS devices in electrical systems seems to be a promising strategy to enhance ATC. In this paper, the viability and technical merits of boosting ATC using TCSC are analyzed. The methods used for determining ATC are linear methods, which are based on MVA loading of the system considering system thermal limit constraints, neglecting bus voltages and static collapse. Power Transfer Distribution Factors, commonly referred to as PTDFs, express the percentage of a power transfer that flows on a transmission facility. They are used to determine the maximum ATC that may be available across the system without violating line thermal limits. The effect of reactive power flows in line loading is not considered in linear ATC which is a major limitation. This paper describes a fast algorithm to incorporate this effect. In this paper the line post transfer complex flow is estimated based on exact circle equation and then ATC is evaluated using active power distribution factors. The effectiveness of the proposed method is successfully demonstrated on IEEE 30-Bus system.
References


Index Terms

Computer Science

Power Systems
Keywords
Linear ATC  ACPTDF  DCPTDF  TCSC  Reactive Power