

عنوان مقاله:

Optimal Transmission Congestion Management by Means of Substation Reconfiguration

محل انتشار:

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خلاصه مقاله:

In power systems, congestion management is one of the important tasks of system operators. To eliminate or reduce congestion, several actions can be taken by system operator ranging from generation rescheduling to load shedding if required. It is known that transmission switching can be used for system configuration, and consequently, change power flows through the lines as a means of relieving congestion. In this paper, in order to mitigate network congestion, substation busbar reconfiguration as a powerful tool is employed to change network topology, consequently, leading to lower energy prices and better competition in the market. The presented method is capable in processing complex substation configurations. The proposed approach and formulation applies Benders decomposition to separate DC optimal power flow (DCOPF) problem with binary variables from the network AC security check and thus increasing convergence and robustness of the solution. Test results for the IEEE 14-bus system illustrate the accuracy and performance of the reconfiguration model for removing congestion.

کلمات کلیدی:

congestion; substation reconfiguration; master problem; AC constraints check subproblem

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