عنوان مقاله:

VSC-HVDC Controller Design to Alleviate Low Frequency Oscillations (LFOs) Applying Vector Evaluated Improved Honey Bee Mating Optimization Approach

محل انتشار:

ششمین کنفرانس ملی محاسبات توزیعی و پردازش داده های بزرگ (سال: 1399)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

This paper focuses on examining a linear structure of parallel AC/DC power system installed with HVDC. The voltage source converters are the main composition of HVDC systems (VSC-HVDC). As a result, four controllable variables exist to check the power system features. Regarding these variables, one of them is utilized as an additional controller input to alleviate Low Frequency Oscillations (LFOs) effectively. In order to assess the most efficient input of VSC-HVDC the Singular Value Decomposition (SVD) approach is applied to achieve the aim of mitigating these oscillations. Furthermore, the Vector Evaluated Improved Honey Bee Mating Optimization (VEIHBMO) technique is employed to find the optimal values of the controller parameters. The robustness of the proposed controller design is indicated through various operating points and compared with conventional techniques. The considerably enhancing the dynamic stability of the power system can be accounted as the major benefits of the proposed scheme. Moreover, applying the proposed procedure leads to remarkably decreasing in the value of the overshoots, undershoots and the settling times. The proper performance of the proposed approach is demonstrated by means of simulation results to .mitigate LFOs

کلمات کلیدی:

Power System Stability, VSC-HVDC, Vector Evaluated Improved Honey Bee Mating Optimization (VEIHBMO), Low Frequency Oscillations (LFOs), Singular Value Decomposition (SVD), Fuzzy logic