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Available Transmission Transfer Efficiency (ATTE) as an Index Measurement for Power Transmission Grid Performance

Authors : Ahmad Abubakar Sadiq, Nwohu Ndubuka Mark, Jacob Tsado, Ahmad Adam Asharaf, Agbachi E. Okenna, Enesi E. Yahaya, Ambafi James Garba

Abstract : Transmission system performance analysis is vital to proper planning and operations of power systems in the presence of deregulation. Key performance indicators (KPIs) are often used as measure of degree of performance. This paper gives a novel method to determine the transmission efficiency by evaluating the ratio of real power losses incurred from a specified transfer direction. Available Transmission Transfer Efficiency (ATTE) expresses the percentage of real power received resulting from inter-area available power transfer. The Tie line (Rated system path) performance is seen to differ from system wide (Network response) performance and ATTE values obtained are transfer direction specific. The required sending end quantities with specified receiving end ATC and the receiving end power circle diagram are obtained for the tie line analysis. The amount of real power loss load relative to the available transfer capability gives a measure of the transmission grid efficiency.

Keywords : performance, transmission system, real power efficiency, available transfer capability