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Soft Computing Approach for Optimization of FACTS Devices to Control Transmission Power Losses

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Abstract: **Losses in power transmission are significant in absence of controlling devices. Considerable power consumption occurs due to heavy load on lines and production of power does not meet the requirement. Focus on reducing power wastage, control devices are employed with reactive impedances and thyristor switches to compensate inductive, resistive and capacitive losses in transmission. FACTS devices enhance power flow transfer capability and continuous control over voltage profile with improvement in system damping to minimize losses on a parallel note. In this research heuristic approach is tested to optimize FACTS devices that would further enhance the controlling action of device. TCSC is selected as control device and Genetic Algorithm, Particle Swarm Optimization and Differential Evolution are heuristic approach that would be tested. Results and simulations validate the superiority in performance of GA with TCSC over conventional TCSC.**

Keywords: **TCSC, Power Loss, Genetic Algorithm, Heuristic Approach.**