

Evaluation of Distributed Generator Impacts on Distribution System with Optimal-Performance Index

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The increasing penetration rate of Distributed Generators (DG) on power distribution system makes it more complex and more stressed. Injected power from DG affects the power flow, nodal voltage, real and reactive power loss, harmonic contents. The impact factors due to fault current and fault voltage will also affect the protection measurements taken in the distribution system while the DG is integrated with existing power system. The above-said factors when combined increase the complexity of optimal placement of DGs. Optimal location of DG is very critical in order to obtain the maximum benefits to the system. This paper proposes Optimal Performance Index (OPI) which evaluates the technical issues related to Distributed Generators (DG). The DGs with different sizes are placed in IEEE 13-feeder system and the OPI is calculated for each configuration. The tool used for the simulation is MATLAB/SIMULINK.