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Sensitivity Analysis for 14 Bus Systems in a Distribution Network with Distributed Generators

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Abstract : There has been a formidable interest in the area of Distributed Generation in recent times. A wide number of loads are addressed by Distributed Generators and have better efficiency too. The major disadvantage in Distributed Generation is voltage control- is highlighted in this paper. The paper addresses voltage control at buses in IEEE 14 Bus system by regulating reactive power. An analysis is carried out by selecting the most optimum location in placing the Distributed Generators through load flow analysis and seeing where the voltage profile rises. MATLAB programming is used for simulation of voltage profile in the respective buses after introduction of DG's. A tolerance limit of +/-5% of the base value has to be maintained. To maintain the tolerance limit, 3 methods are used. Sensitivity analysis of 3 methods for voltage control is carried out to determine the priority among the methods.

Keywords : distributed generators, distributed system, reactive power, voltage control, sensitivity analysis
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