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Application of Fuzzy Logic in Voltage Regulation of Radial Feeder with Distributed Generators

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Abstract : Distributed Generation is the need of the hour. With current advancements in the DG technology, there are some major issues that need to be tackled in order to make this method of generation of energy more efficient and feasible. Among other problems, the control in voltage is the major issue that needs to be addressed. This paper focuses on control of voltage using reactive power control of DGs with the help of fuzzy logic. The membership functions have been defined accordingly and the control of the system is achieved. Finally, with the help of simulation results in Matlab, the control of voltage within the tolerance limit set (+/- 5%) is achieved. The voltage waveform graphs for the IEEE 14 bus system are obtained by using simple algorithm with MATLAB and then with fuzzy logic for 14 bus system. The goal of this project was to control the voltage within limits by controlling the reactive power of the DG using fuzzy logic.

Keywords : distributed generation, fuzzy logic, matlab, newton raphson, IEEE 14 bus, voltage regulation, radial network
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