Design and Implementation of a Damping Controller in Microgrids

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Abstract:
The power generation and distribution sectors observe high-level penetration of Renewable Energy Sources (RESs) and Distributed Generators (DGs) due to several factors such as perpetual energy demand, nature of sources and load. Nevertheless, more specifically, the direct current (DC) micro grid is getting more attention over the conventional alternating current (AC) Micro rid for several benefits; for example, higher efficiency and reliability. This research work focus on three aspects the first one to design phase shift full bridge DC-DC converter with and discuss with various optimization techniques for implementing the Micro Grid. The second aspects to validate to implemented the Enthalpy Sigmoid Neuro-Fuzzy crowbar control using DFIG for power oscillation damping. The third aspects to analysis and implementation of a damping controller with renewable energy sources. The advantages and disadvantages of different protection and planning approaches are explained in detail. The effectiveness for the proposed strategy is proved.

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Contents

The world's consistently expanding energy interest, the electrical business is unavoidably faced with the advancement of significant expense power plants, transmission and circulation organizations, just as ecological difficulties, and environmental change. Renewable energy resources (RESs) and distributed generation (DG) are two innovative and effective solutions to this issue. These new resources have the potential to improve the dependability of power delivery to customers while also lowering transmission and sub-transmission line congestion and power loss. The advantages of renewable energy sources have prompted power grid planners to include them into their designs and to broadly deploy Micro-Grids (MGs) [1].