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An Islanding Detection Based on Droop Characteristic for Virtual Synchronous Generator

In this project, an islanding detection and control strategy to realize the stable and autonomous operation of microgrids using the Virtual Synchronous Generator (VSG) concept under unplanned grid reconfigurations (e.g., islanding operation). Instead of a design-oriented method, this paper presents a detailed and comprehensive theoretical analysis and draws a brief conclusion, which is easy to implement and still effective under complex situations. Based on the results of mutation sequence and voltage oscillation, a rapider and more reliable islanding detection algorithm is proposed, which hardly needs parameter design. Comparing with frequency measured passive detection method, the proposed algorithm has higher detection speed and reliability. The feasibility of the proposed islanding detection and control scheme is verified by extensive simulations.

Domain: Power Systems / Microgrids
Technology: Electrical