

Anti-Islanding Protection using AFD for Renewable energy systems

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Abstract

The advancement in new technology like fuel cells, wind turbines, and photovoltaic cells and new innovations in power electronics to satisfy customer demands for better power quality and reliability are forcing the power industry to shift to distributed generations (DGs). Hence DG has recently gained a lot of popularity in the power industry due to market deregulations and environmental concerns. Islanding take place when a portion of the distribution system becomes electrically isolated from the rest of the power system yet continues to be energized by DGs. The main problem of interconnecting a DG to power distribution system is islanding. Failure to trip islanded generators can lead to a number of problems to these generators and the connected loads. All DGs must be disconnected immediately after the occurrence of islanding. Typically, this disconnection should be occurred within 100 to 300 ms after the loss of the main supply. To achieve such a goal, each DG must be equipped with any islanding detection method. In this paper, active methods have been introduced to overcome this problem especially the method of Active Frequency Drift (AFD) as it can detect islanding easily and has a small Non-Detection Zone, but unfortunately it degrades the power quality of the system. MATLAB/SIMULINK is used to simulate the output response of AFD method.

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