

A Three Sample Based PLL-Less Hysteresis Current Control and Stability Analysis of a Single-Phase Active Distribution System

In this project, a computationally simple strategy by using three samples-based technique for a grid-connected inverter in a single-phase active distribution system is explained. The proposed control is to improve performance during varying grid conditions such as voltage sag, swell and frequency swing. A comparative analysis between the proposed controller and the conventional Second Order Generalized Integrator (SOGI) PLL based controller for dynamic grid conditions in weak grid scenario has been presented. Additionally, a frequency domain analysis via describing function method is used to model the dynamics of non-linear hysteresis current controller to analyze the closed-loop stability of the system.

Domain: Power Systems / Distribution Systems

Technology: Electrical