PV-Based Dynamic Voltage Restorer for Power Quality Enhancement in Distribution Systems

Naser Mohammed Bayoumy AbdelRahim ,Z. Elkady, A. Mansour, M. Elhagry, and F. Bendary

Abstract

PV-based dynamic voltage restorer (DVR) is considered one of the most effective solutions for enhancing the functionality of the PV grid system by adding ancillary functions to the grid side inverter. DVR protects against voltage sag and swell based on pulse width-modulated (PWM) voltage source inverters. This paper investigates the performance and analysis of three phase DVR based on synchronous reference frame (SRF) theory. The control algorithm has been developed for the generation of compensating reference voltage vector to inject or absorb active and reactive power in series between the point of common coupling and critical load. The results presented in the paper show that the proposed control algorithm has excellent performance in both steady-state and dynamic phases.

25th International Conference and Exhibition on Electricity Distribution (CIRED 2019) 2019, June

Future University In Egypt (http://www.fue.edu.eg)

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