

Enhanced Power Quality Micro-grid Controller with Hybrid Renewable Energy System for Uninterrupted Power Supply between Islanded and Grid Connected Operations

Abstract

The paper presents the enhanced power quality micro-grid controller with Hybrid Renewable Energy System (HRES) for uninterrupted power supply between islanded and grid connected operations. HRES consist of solar Photo Voltaic (PV) and wind mill with Battery Storage System (BSS). This BSS assure the continuous power supply throughout the time of Islanded Mode. To get maximal power from solar PV, Fuzzy Logic Control (FLC) based Maximum Power Point Tracker (MPPT) is used. An improved power control method is developed to compensate the active and reactive power demand, load unbalance and current harmonics. This control technique control the Distributed Generation (DG) to get smooth transformation between grid connected mode and islanded mode.

Keywords: - Hybrid Renewable Energy System, Distributed Generation, Micro-grid, Power Quality, Islanded Mode, Grid connected mode, resynchronization.