

{tag}

{/tag}

IJCA Proceedings on International Conference
on Innovations In Intelligent Instrumentation, Optimization and Electrical Sciences

© 2013 by IJCA Journal

ICIIOES - Number 10

Year of Publication: 2013

Authors:

R. Christy Goldlin

R. Anand

{bibtex}iciioes1677.bib{/bibtex}

Abstract

This paper presents about a fuzzy logic controller for three phase distributed generation system. An integrator to be implemented in a stationary reference frame called as the Reduced Order Generalized Integrator. The proposed ROGI based Fuzzy Controller is compared with the traditional ROGI based PI Controller. The currents injected to the grid are properly synchronized with the grid voltage. The proposed Controller minimizes the overshoot and under shoot response than the PI Controller. It ensures the stable output. The Controller has three injection strategies such as the balanced current injection, constant instantaneous active power injection and Maximum Instantaneous active power injection. This controller can perform

successfully even during faulty grid conditions

Refer

ences

- M. Cacciato, A. Consoli, R. Attanasio, and F. Gennaro, "Soft-switching converter with HF transformer for grid-connected photovoltaic systems," IEEE Trans. Ind. Electron. , vol. 57, no. 5, pp. 1678–1686, May 2010.
- J. Carrasco, L. Franquelo, J. Bialasiewicz, E. Galvan, R. Guisado, M. Prats, J. Leon, and N. Moreno-Alfonso, "Power-electronic systems for the grid integration of renewable energy sources: A survey," IEEE Trans. Ind. Electron. , vol. 53, no. 4, pp. 1002–1016, Jun. 2006.
- T. Zhou and B. Francois, "Energy management and power control of a hybrid active wind generator for distributed power generation and grid integration," IEEE Trans. Ind. Electron. , vol. 58, no. 1, pp. 95–104, Jan. 2011.
- H. Zhang and L. Tolbert, "Efficiency impact of silicon carbide power electronics for modern wind turbine full scale frequency converter," IEEE Trans. Ind. Electron. , vol. 58, no. 1, pp. 21–28, Jan. 2011.
- Q. Zeng and L. Chang, "An advanced SVPWM-based predictive current controller for three-phase inverters in distributed generation systems," IEEE Trans. Ind. Electron. , vol. 55, no. 3, pp. 1235–1246, Mar. 2008.
- A. Timbus, M. Liserre, R. Teodorescu, P. Rodriguez, and F. Blaabjerg, "Evaluation of current controllers for distributed power generation systems," IEEE Trans. Power Electron. , vol. 24, no. 3,
- Y. Sato, T. Ishizuka, K. Nezu, and T. Kataoka, "A new control strategy for voltage-type PWM rectifiers to realize zero steady-state control error in input current," IEEE Trans. Ind. Appl. , vol. 34, no. 3, pp. 480–486, May/Jun. 1998.
- D. Zmood, D. Holmes, and G. Bode, "Frequency domain analysis of three phase linear current regulators," in 34th Conf. Rec. IEEE IAS Annu. Meeting, 1999, pp. 818–825.
- D. Zmood and D. Holmes, "Stationary frame current regulation of PWM inverters with zero steady-state error," IEEE Trans. Power Electron. , vol. 18, no. 3, pp. 814–822, May 2003. pp. 654–664, Mar. 2009
- P. Rodriguez, A. Luna, I. Candela, R. Mual, R. Teodorescu, and F. Blaabjerg, "Multiresonant frequency-locked loop for grid synchronization of power converters under distorted grid conditions," IEEE Trans. Ind. Electron. , vol. 58, no. 1, pp. 127–138, Jan. 2011
- P. Rodriguez, A. Timbus, R. Teodorescu, M. Liserre, and F. Blaabjerg, "Flexible active power control of distributed power generation systems during grid faults," IEEE Trans. Ind. Electron. , vol. 54, no. 5, pp. 2583– 2592, Oct. 2007.
- A. Yazdani and R. Iravani, "A unified dynamic model and control for the voltage-sourced converter under unbalanced grid conditions," in Proc. IEEE Power Eng. Soc. Gen. Meeting, 2006, pp. 1–6.
- H.-S. Song and K. Nam, "Dual current control scheme for PWM converter under unbalanced input voltage conditions," IEEE Trans. Ind. Electron. , vol. 46, no. 5, pp.

953–959, Oct. 1999.

- M. Nasir uddin, "An adaptive filter based torque ripple minimization of a fuzzy logic Controller for speed control of IPM Motor Drives," IEEE Trans. Ind Electron, Vol. 47, no. 1, Feb 2011.
- Rentao Zhao, Zhenguo Chang, Peie Yuan, Liyong Yang, Zhengxi, "A Novel Fuzzy Logic and Anti-windup PI Controller for Three-phase Grid Connected Inverter," IEEE Trans International Conference on Power Electronics and Intelligent Transportation System.
- Chao Ma, Dagui Huang, "Comparative Study of PI Controller and Fuzzy Logic Controller for three-phase grid-connected Inverter," IEEE Trans International Conference on Mechatronics and Automation.

Computer Science

Index Terms

Applied Sciences

Keywords

Reduced Order Generalized Integrator (rogi) Distributed Phase Generation System
(dpgs) Current Controller Fuzzy Logic
Controller (flc).