

Parameters evaluation of Unified Power Quality Conditioner

Ahmed M. A. Haidar^a; Chellali Benachaiba^b; Faisal A. F. Ibrahi^c; Kamarul Hawari^a

^aFaculty of Electrical & Electronics Engineering University Malaysia Pahang; Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia

^bBechar University, Algeria

^cTaiz University, Yemen

ABSTRACT:

The term of “Power Quality” is used to describe the electromagnetic phenomenon in variations of voltage and current in the power system. Most power quality disturbances can come from the facility itself, such as large loads turning on simultaneously, improper wiring and grounding practices, the start-up of large motors and electronic equipments that can be both a source and victim of power quality phenomena or from externally generated, for example, lightning strokes on the power lines. Currently, there are so many industries using a high technology for the manufacturing and requiring a high quality of power supply. Therefore, the paper is focusing mainly on power quality disturbance and the technique used to improve the quality of delivered power such as Unified Power Quality Conditioner (UPQC). A comprehensive analysis was performed on the parameters that affecting the performance UPQC and the MATLAB software has been used to simulate the test system. Based on the results of analysis, it can be confirmed that UPQC is an effective technique for quick improvement of power quality.

KEYWORDS:

Power Quality, UPQC, Disturbances, Series and shunt active filters

REFERENCES

1. H. Siahkali, "Power Quality Indexes for Continue and Discrete Disturbances in a Distribution Area," in Proc. 2nd IEEE Int. Conf. Power and Energy, Johor Baharu, Malaysia.2008, pp.678 – 683.
2. K. Vinod, "Power Quality Enhancement at Distribution Level Utilizing the Unified Power Quality Conditioner (Thesis or Dissertation style)," Ecole De Technologie Superieure, Universite Du Quebec, Canada, 2008.
3. J. Muñoz, J. Espinoza, I. Rubilar, L. Morán and P. Melín, "A Modular Approach for Integrating Harmonic Cancellation in a Multi-cell based UPQC," in Proc. IEEE Conf. Industrial Electronic, Orlando, FL, 2008, pp. 3178 – 3183.
4. L. Asiminoaei, F. Blaabjerg, S. Hansen and P. Thøgersen, "Adaptive Compensation of Reactive Power with Shunt Active Power Filters," IEEE Trans. Industry Application, vol. 44, No. 3, 2008, pp. 867 – 877.
5. A. Laxmi, G. Ram and K. Rao, "Role of PI and Fuzzy Controllers in Unified Power Quality Conditioner," Journal of Engineering and Applied Sciences, vol. 2, No. 2, 2007, pp. 1 – 10.

