[4] W. Xu, Z. Huang, Y. Cui, and H. Wang, "Harmonic Resonance Mode Analysis," *IEEE Trans. Power Deliv.*, vol. 20, no. 2, pp. 1182–1190, 2005.
[5] H.-C. Chin, "Optimal shunt capacitor allocation by fuzzy dynamic programming," *Electr. Power Syst. Res.*, vol. 35, no. 2, pp. 133–139, 1995.
[6] A. Ulinuha, M. A. S. Masoum, and S. M. Islam, "Optimal Scheduling of LTC and Shunt Capacitors in Large Distorted Distribution Systems using Evolutionary-Based Algorithms," *IEEE Trans. Power Deliv.*, vol. 23, no. 1, pp. 434–441, 2008.
[7] A. Ulinuha, M. A. S. Masoum, and S. Islam, "Hybrid genetic-fuzzy algorithm for volt/var/total harmonic distortion control of distribution systems with high penetration of non-linear loads," *IET Generation, Transmission & Distribution*, vol. 5, no. 4. p. 425, 2011.
[8] A. Semlyen and M. Shlash, "Principles of modular harmonic power flow methodology," *IEE Proceedings-Generation, Transm. Distrib.*, vol. 147, no. 1, pp. 1–6, 2000.
[9] G. T. Heydt, "Harmonic power flow studies, part I - Formulation and Solution," *IEEE Trans. Power Appar. Syst.*, vol. 101, no. 6, pp. 1257–1265, 1982.
[10] A. Ulinuha, M. A. S. Masoum, and S. M. Islam, "Harmonic power flow calculations for a large power system with multiple nonlinear loads using decoupled approach," in *2007 Australasian Universities Power Engineering Conference, AUPEC*, 2007.
[11] M. A. Moreno Lopez de Saa and J. Usaola Garcia, "Three-phase harmonic load flow in frequency and time domains," *IEE Proc. - Electr. Power Appl.*, vol. 150, no. 3, pp. 295–300, 2003.
[12] Y.-Y. Hong, J.-S. Lin, and C.-H. Liu, "Fuzzy harmonic power flow analyses," in *International Conference on Power System Technology, PowerCon*, 2000, vol. 1, pp. 121–125.
[13] S. M. Williams, G. T. Brownfield, and J. W. Duffus, "Harmonic propagation on an electric distribution system: field measurements compared with computer simulation," *IEEE Trans. Power Deliv.*, vol. 8, no. 2, pp. 547–552, 1993.
[14] A.Ulinuha and M. A. S. Masoum, "The Accuracy and Efficiency Issues of Decouple Approach for Harmonic Power Flow Calculation," in *Regional Postgraduate Conference on Engineering and Science (RPCES)* , 2006, vol. 1, pp. 213–218.
[15] J.-H. Teng and C.-Y. Chang, "Fast harmonic analysis method for unbalanced distribution systems," in *Power Engineering Society General Meeting, 2003, IEEE*, 2003, vol. 2, p. 1249 Vol. 2.
[16] T. S. Chung and H. C. Leung, "A genetic algorithm approach in optimal capacitor selection with harmonic distortion considerations," *Int. J. Electr. Power Energy Syst.*, vol. 21, no. 8, pp. 561–569, 1999.
[17] W. H. Kersting, "Radial distribution test feeders," *IEEE Trans. Power Syst.*, vol. 6, no. 3, pp. 975–985, 1991.

BIOGRAPHY

Agus Ulinuha is an Academic Staff at the Department of Electrical Engineering, Universitas Muhammadiyah Surakarta, Indonesia. He is currently appointed as the head of University Research Office. He received BS degree in 1994 from Universitas Diponegoro, Indonesia, MS degree in 1999 from Universitas Gadjah Mada, Indonesia, and Ph.D. degree from Curtin University of Technology, Australia in 2007. His research interest includes optimization of electrical system, power quality, and harmonics. He has successfully secured a number of research grants on power quality and optimization.

APPENDIX

TABLE A.1
HARMONIC SPECTRUMS OF NONLINEAR LOADS (FIG. 3, TABLE 2)

Order	IEEE 6-Pulse 1		ABB ACS600 6P		Rockwell 6-Pulse VFD		Toshiba PWM ASD	
	Magnitude (%)	Angle (^{0})	Magnitude (%)	Angle (^{0})	Magnitude (%)	Angle (^{0})	Magnitude (%)	Angle (^{0})
1	100	0	100	0	100	0	100	0
5	20	0	42	0	23.52	111	82.8	-135
7	14.3	0	14.3	0	6.08	109	77.5	69
11	9.1	0	7.9	0	4.57	-158	46.3	-62
13	7.7	0	3.2	0	4.2	-178	41.2	139
17	5.9	0	3.7	0	1.8	-94	14.2	9
19	5.3	0	2.3	0	1.37	-92	9.7	-155
23	4.3	0	2.3	0	0.75	-70	1.5	-158
25	4	0	1.4	0	0.56	-70	2.5	98
29	3.4	0	0	0	0.49	-20	0	0
31	3.2	0	0	0	0.54	7	0	0
35	2.8	0	0	0	0	0	0	0
37	2.7	0	0	0	0	0	0	0
41	2.4	0	0	0	0	0	0	0
43	2.3	0	0	0	0	0	0	0
47	2.1	0	0	0	0	0	0	0
49	2	0	0	0	0	0	0	0