















Fig. 10. THD for p-q method with PI and Fuzzy controllers

#### REFERENCES

- [1] H Akagi, H. Kanazawa, Y. Nabae "instantaneous reactive power compensators comprising Switching devices without energy storage components" IEEE Transactions on Industry Applications, Vol. Ia-20, No. 3, pp 625-630, 1984
- [2] L. Gyugyi, E. C. Strycula, "Active AC power filters", IEEE IAS Annual Meeting, pp. 529-535, 1996
- [3] F. Z. Peng, G. W. Ott Jr, D. J Adams, "Harmonic and reactive power compensation based on the generalized instantaneous reactive power theory for three-phase four-wire systems", IEEE Transactions on Power Electronics, Vol. 13, No. 5, pp. 1174-1181, 1998
- [4] M. I. M. Montero, E. R. Cadaval, F. B. Gonzalez, "Comparison of control strategies for shunt active power filters in three-phase fourwire systems", IEEE Transactions on Power Electronics, Vol. 22, No. 1, pp. 229-236, 2007.
- [5] M. Suresh, A. K. Panda, S. Yellasi, "Fuzzy controller based 3phase 4wire shunt active Filter for mitigation of current harmonics with combined p-q and Id-Iq control strategies", Journal of Energy and Power Engineering, Vol. 3, No. 1, pp. 43-52, 2011
- [6] H. Akagi, E. H. Watanabe, "Instantaneous power theory and applications to power conditioning", New Jersey. IEEE Press/Wiley-Inter-science ISBN: 978-0-470-10761-4, 2007
- [7] V. Soares, P. Verdelho, G. Marques, "Active power filter control circuit based on the instantaneous active and reactive current id -iq method", IEEE Power Electronics Specialists Conference, Vol. 2, pp. 1096-1101, 1997
- [8] M. Aredes, J. Hafner, K. Heumann, "Three-phase four-wire shunt active filter control strategies", IEEE Transactions on Power Electronics, Vol. 12, No. 2, pp. 311-318, 1997
- [9] P. Rodriguez, J. I. Candela, A. Luna, L. Asiminoaei, "Current harmonics cancellation in three-phase four-wire systems by using a four-branch star filtering topology", IEEE Transactions on Power Electronics, Vol. 24, No. 8, pp. 1939-1950, 2009
- [10] P. Salmeron, R. S. Herrera, "Distorted and unbalanced systems compensation within instantaneous reactive power framework", IEEE Transactions on Power Delivery, Vol. 21, No. 3, pp. 1655-1662, 2006
- [11] S. Mikkili, A. K. Panda, "Simulation and RTDS Hardware implementation of SHAF for Mitigation of Current Harmonics with p-q and Id-Iq Control strategies using PI controller", Engineering, Technology & Applied Science Research, Vol. 1, No. 3, pp. 54-62, 2011
- [12] S. K. Jain, P. Agrawal, H. O. Gupta, "Fuzzy logic controlled shunt active power filter for power quality improvement" IEEE Proceedings Electric Power Applications, Vol. 149, No. 5, pp. 317-328, 2002

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