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MEASUREMENT OF NONSINUSOIDAL FACTOR FOR SINGLE-PHASE VOLTAGE USING OF SYMMETRIC COMPONENTS FILTERS

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Abstract

The method for measurement of nonsinusoidal factor of phase and line voltages using the converter of single-phase voltage in three-phase symmetric system of is developed. Such system of voltages is connected on an input of symmetric components filters (SCF) connected in cascade of negative and positive phase-sequence voltages and matching networks of type US1-3. Simulation and study of dynamic properties of the devices that implement the proposed method, showed that at fast connection of positive phase-sequence voltages the transient decays for a time less than one and a half period of voltage of a fundamental frequency. References 11, figures 2, table 1.

Key words: single-phase voltage, nonsinusoidality, quality of the electric power, symmetric components filter.

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References

1. Bamdas A.M., Kulinich V.A., Shapiro S.V. Static electromagnetic converters of frequency and numbers of phases. Moskva-Leningrad: GEI, 1961. 208 p. (Rus)
2. State Standard 13109-97. Norms of quality of electric energy in systems of an electrical supply of general purpose. 35 p. (Rus)
3. Makov D.K. The electric power quality indicators' measurement device. Patent of USSR № 970273. (Rus)
4. Suprunovska N.I., Shcherba A.A. Processes of energy redistribution between parallel connected capacitors. *Tekhnichna Elektrodynamika*. 2015. No 4. P. 3–11. (Rus)
5. Shcherba A.A., Makov D.K., Polishchuk O.V. Determination of sine wave distortion factor using symmetric components filters. *Systemy obrobky informatsi*
i. 2015. Issue 6 (131). P. 150–152. (Ukr)
6. Shcherba A.A., Suprunovska N.I. Increasing regularities of rate of current rise in the load at limiting its maximal values. *Tekhnichna Elektrodynamika*. 2012. No 5. P. 3–9. (Rus)
7. Shcherba A.A., Suprunovskaya N.I. Synthesis of electrical circuits with capacitive energy storages in semiconductor formers of power discharge pulses. *Tekhnichna Elektrodynamika*. 2014. No 1. P. 3–11. (Rus)
8. Ivanova O.M., Danylenko M.I., Monastyrsky G.E., Kolomytsev V.I., Koval Y.M., Shcherba

A.A., Zaharchenko S.M., Portier R. Investigation of the formation mechanisms for Ti-Ni-Zr-Cu nanopowders fabricated by electrospark Erosion method in cryogenic liquids. *Metallofizika i Noveishie Tekhnologii*
. 2009. Vol. 31. No 5. P. 603–614.
9. Rezinkina, M., Bydianskaya, E., Shcherba, A. Alteration of brain electrical activity by electromagnetic field. *Environmentalist*. 2007. Vol. 27. No 4. P. 417–422.
10. Shcherba A.A., Makov D.K. A method of determination of fundamental frequency's symmetric sequences and higher harmonics of three-phase voltage systems. Proc. of the IEEE International Conference on *Intelligent Energy and Power Systems* (IEPS), 2014, Kyiv, Ukraine. P. 74–76.
11. *Shcherba A.A., Suprunovska N.I.* Study features of transients in the circuits of semiconductor discharge pulses generators with nonlinear electro-Spark load. Proc. of the IEEE International Conference on *Intelligent Energy and Power Systems* (IEPS), 2014, Kyiv, Ukraine. P. 50–54.

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