DOI: https://doi.org/10.15407/techned2019.03.067

IDENTIFICATION OF THREE-PHASE LINEAR LOAD PARAMETERS FOR COMPENSATION OF REACTIVE POWER BY SEARCHING OPTIMIZATION

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 3, 2019 (May/June)
Pages	67 – 73

Authors
V.G. Yagup*, K.V. Yagup**
Kharkiv National University of Municipal Economy,
str. Marshala Bazhenova, 12, Kharkiv, 61002, Ukraine,
e-mail: yagup.walery@gmail.com
* ORCID ID : http://orcid.org/0000-0002-7019-3499
** ORCID ID : http://orcid.org/0000-0002-9305-8169

Abstract

The identification of a three-phase load in a three-wire electrical system is considered, provided that the consumed currents are stored as equivalent of load. It is shown that the system of equations for determining the parameters of the identified load is underdeveloped, which does not ensure the uniqueness of the solution. Various ways of defining this system and obtaining a solution using search optimization using the system of computer mathematics MathCAD are proposed. The calculated versions of the found load equivalents and the values of uncompensated reactive power are analyzed. Since the uncompensated powers are relatively small, it seems possible to use any of the variants of the identified load for the practical calculation of the symmetry-compensating device. References 3, figures 4, tables 6.

Key words: three-wire electrical system, load equivalent, search optimization, symmetrical-compensating device.

Received: 14.08.2018
Accepted: 18.12.2018
Published: 05.03.2019

References

1. Pan A., Zhou J. Power quality analysis and harmonic tracing in the city. Proc. *23rd International Conference on Electricity Distribution*. Lyon, France. 15-18 June 2015. Pp. 1-4.
2. Saenko Yu.L., Kalyuzhny D.N., Svergunenko S.V. Identification of the linear generalized load in the distribution problem actual contributions in the distortion of stresses in three-phase four-current networks. *Tekhnichna Elektrodynamika*. 2018. No 2. Pp. 67-74. (Rus) DOI: https://doi.org/techned2018.02.067
3. Yagup V.G., Yagup E.V. Determination of the reactive power compensation mode in a four-wire three-phase power supply system by means of search optimization. *Tekhnichna Elektrodynamika*. 2016. No 1. Pp. 60-66. (Rus) DOI: https://doi.org/techned2016.01.060

PDF