DOI: https://doi.org/10.15407/techned2016.04.053

OPTIMIZATION OF REGULATORS OF FREQUENCY CONTROLLED INDUCTION ELECTRIC DRIVES UNDER THE STOCHASTIC LOADINGS

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	№ 4, 2016 (July/August)
Pages	53 – 55

Authors
Yu.V. Shurub[1], A.O. Dudnyk[2], D.S. Lavinskiy[2]
[1] – Institute of Electrodynamics National Academy of Science of Ukraine,
pr. Peremohy, 56, Kyiv-57, 03680, Ukraine,
e-mail: shurub@bigmir.net
[2] – National University of Life and Environmental Sciences of Ukraine,
Heroyiv Oborony st., 15, Kyiv, 03041, Ukraine,
e-mail: dudnikalla@mail.ua

Abstract

Optimization criteria of regulating laws for frequency controlled induction electric drives under the stochastic loads is formed. Possibility of energy efficiency increasing of electric drives due to using the statistically optimal regulators is showed. Mathematical models and transfer functions of regulating circuits of flux of induction motors in power optimization mode for vector control algorithm are proposed. They implemented by frequency converters with the properties of the current source and voltage source. Recommendations for using the optimal regulators of

induction electric drives under the stochastic loadings and frequency control depending on the spectral characteristics of the loadings are developed. References 5, figure 1.

Key words: induction electric drive, random loadings, optimal regulator.

Received: 23.02.2016
Accepted: 25.04.2016
Published: 21.06.2016

References

1. Pugachev V.S., Sinitsin I.N. Stochastic differential systems. Moskva: Nauka, 1985. 559 p. (Rus)
2. Sandler A.S., Sarbatov R.S. Automatic frequency control of induction motors. Moskva: Energiia, 1974. 328 p. (Rus)
3. Shurub Yu.V. The technique of syntesis of statistically optimal systems of induction electric drive. *Elektromekhanichni i Enerhozberihaiuchi Systemy*. 2013. No 2/2013 (22). P. 17–23. (Ukr)
4. Leonard W. Control of electric drives. Berlin, Germany: Springer-Verlag, 2001. 460 p. DOI: https://doi.org/10.1007/978-3-642-56649-3
5. Peresada S., Tonielli A. High-performance robust speed-flux tracking controller for induction motor. *International Journal of Adaptive Control and Signal Processing*. 2000. Vol. 14. P. 177–200. DOI: https://doi.org/10.1002/(SICI)1099-1115(200003/05)14:2/33.0.CO;2-2

PDF