Serdiuk T. Electromagnetic Compatibility and Power Quality of Traction and Non-Traction Consumers. Proceedings of the 2020 International Symposium on Electromagnetic Compatibility – EMC Europe, Rome, Italy, 23–25 September 2020. Rome, 2020.

DOI: 10.1109/EMCEUROPE48519.2020.9245735.

Electromagnetic Compatibility and Power Quality of Traction and Non-Traction Consumers

Tetiana Serdiuk

Dept. of automatic and telecommunication Dnipropetrovsk National University of Railway Transport named after Academician V. Lazaryan, Dnipro, Ukraine; ORCID 0000-0002-2609-4071

Abstract:

The energy efficiency of power traction system and the power quality of the electric grid are estimated. The electromagnetic compatibility (EMC) traction and non-traction consumers are investigated. The propagation of traction current is studied as well as the third harmonic. The coefficient of harmonics is accorded the standards on the 110 kV buses.

Keywords: power quality parameters, energy efficiency, electromagnetic compatibility (EMC), traction current, harmonics

References:

1. Ministry of Infrastructure of Ukraine. Electronic resource, [online] Available: https://mtu.gov.ua/en/news/29858.html.

Show Context Google Scholar

2."Security Energy Efficiency Competitiveness", *Approved by the Decree of the Cabinet of Ministers of Ukraine*, pp. 73, August 18 2017, [online] Available: https://zakon.rada.gov.ua/laws/show/605-2017-%D1%80.

Show Context Google Scholar

3.Standards for the quality of electric energy in power supply systems of general purpose: GOST 13109-97. [Introduction 01.01.2000], Kyiv:Publishing house of standards, pp. 31, 1998.

Show Context Google Scholar

4. The Methodology for measuring the power quality in general-purpose power supply systems: SOU-N EE40.1-37471933-55:2011 [Valid from 31.10.2011], Kyiv (Ukraine): Minenergovugillya, pp. 98, 2012.

Show Context Google Scholar

5. Characteristics of the electric power distribution in electrical measures of the secondary purpose: State standard DSTU EN 50160: 2014 (EN 50160: 2010 IDT). [Valid from 10.10.2014], Kyiv (Ukraine), pp. 27, 2014.

Show Context Google Scholar

6."Electromagnetic compatibility (EMC). Part 4-30" in Testing and measurement methods. Methods of measuring the quality of electrical energy (IEC 61000-430:2015 IDT), Moscow (Russia):Standartinform, pp. 61, 2018.

Show Context Google Scholar

7. Electromagnetic compatibility (EMC) Part 4 Section 30: Power quality measurement methods.

Show Context Google Scholar

8."Railway applications - Compatibility between rolling stock and train detection systems - Part 2: Compatibility with track circuits. CENELEC prEN 50238-2 (draft Pr. 15360). (2009)", *Railway applications - Compatibility between rolling stock and train detection systems -Part 2: Compatibility with track circuits*, 2010.

Show Context Google Scholar

9. Railway applications - Supply voltages of traction systems, 2004.

Show Context Google Scholar

10. Railway applications - Power supply and rolling stock - Technical criteria for the coordination between power supply (substation) and rolling stock to achieve interoperability, 2005.

Show Context Google Scholar

11.KG. Markwardt, "Directory of the power supply of railways" in , Moscow:Transport, vol. 1, pp. 256, 1980.

Show Context Google Scholar

12.T. Serdiuk, V. Havryliuk, M. Feliziani and K Serdiuk, "Propagation of Harmonics of Return Traction Current in Rail lines", *Proc. of the 2019 International Symposium on Electromagnetic Compatibility - EMC EUROPE 2019*, pp. 550-555, September 2-6,2019.

Show Context View Article Full Text: PDF (262KB) Google Scholar

13.T. M. Serdiuk, "Modeling of influence of traction power supply system on railway automatics devices", *Proc. of the 2017 International Symposium on Electromagnetic Compatibility - EMC EUROPE 2017*, pp. 6, September 4-8,2017.

Show Context Google Scholar

14.T. Serdiuk, M. Feliziani and K. Serdiuk, "About electromagnetic compatibility of track circuits with the traction supply system of railway", *Proc. of the 2018 International Symposium on Electromagnetic Compatibility (EMC Europe 2018)*, pp. 242-247, August 27-30,2018.

Show Context View Article Full Text: PDF (1401KB) Google Scholar

15.T. N. Serdyuk, "Measurement of electromagnetic interference in the station rail circuits", *Proc. of the 10th Int. Symposium on Electromagnetic Compatibility (EMC Europe 2011)*, pp. 214-217, September 26-30, 2011.

Show Context Google Scholar