

DOI: <https://doi.org/10.15407/techned2017.05.083>

SELECTING INDUCTION TYPE ELECTROMECHANICAL CONVERTER FOR ELECTRODYNAMIC PROCESSING OF WELDS

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Sciences of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 5, 2017 (September/October)
Pages	83 – 88

Authors

I.P. Kondratenko^{1*}, A.V. Zhyltsov^{2}, N.A. Pashchyn^{3***}, V.V. Vasyuk²**

¹ – Institute of Electrodynamics National Academy of Sciences of Ukraine,
pr. Peremohy, 56, Kyiv, 03057, Ukraine,
e-mail: dep7ied@ukr.net

² – National university of life and environmental sciences of Ukraine,
str. Heroyiv oborony, 12, Kyiv, 03041, Ukraina,
e-mail: azhilt@gmail.com

³ – Paton Welding Institute NAS of Ukraine,
str. K. Malevycha, 11, Kyiv-150, 03680, Ukraine

* ORCID ID : <http://orcid.org/0000-0003-1914-1383>

** ORCID ID : <http://orcid.org/0000-0002-1688-7879>

*** ORCID ID : <http://orcid.org/0000-0002-2201-5137>

Abstract

The features of electromechanics transformer construction of induction type are specified at

application of it in a technological complex for electrodynamic treatment of the weld-fabricated connections, that consists in the simultaneous operating on a small limit area of surface of the weld-fabricated joint by impulsive electric current and mechanical force. Magnitude of current density and force, at which transformation of mechanical descriptions environments is possible, are indicated. Interrelationships of structural parameters of electromechanics transformer with by the size of electrodynamic force and current density at the set voltage magnitude on a capacity storage and width of discharge process are defined. It is defined that the diameter of contact mark at electrodynamic treatment of the weld-fabricated joints from aluminium alloys must make 2 - 2,5 mm. References 7, figures 5.

Key words: electromechanics transformer of induction type, welding tensions, electrodynamic force, current density.

Received: 07.04.2017

Accepted: 07.06.2017

Published: 17.08.2017

References

1. Baranov Yu.V., Troytskyy O.A., Avraamov Yu.S., Shlyapyn A.D. Physical fundamentals of electropulse and electroplastic treatments and new materials. Moskva: MGIU, 2001. 844 p. (Rus)
2. Bolyukh V.F., Danko V.G. Linear electromechanical pulse action converters. Kharkiv: Natsionalnyi Tekhnichniy Universytet KhPI, 2006. 260 p. (Ukr)
3. Bolyukh V.F., Oleksenko S.V., Shchukin I.S. Comparative analysis of linear pulse electromechanical converters of electromagnetic and induction types. *Tekhnichna Elektrodynamika* . 2016. No 5. Pp. 46 – 48. (Rus)

4. Burkin S.P., Shimov G.V., Andryukova E.A. Residual stresses in metal products. Ekaterinburg: Izdatelstvo Uralskogo Universiteta, 2015. 248 p. (Rus)
5. Lobanov L.M., Kondratenko I.P., Zhyltsov A.V., Karlov A.M., Pashchin N.A., Vasyuk V.V., Yashchuk V.Y. Unsteady electrophysical processes in systems for reducing residual stress of welded joints. *Tekhnichna Elektrodynamika*. 2016. No 6. Pp. 10–19. (Ukr)
6. Lobanov L.M., Pashchin N.A., Cherkashin A.V., Mikhoduy O.L., Kondarenko I.P. Efficiency of electro-dynamic treatment of aluminum alloy Amg6 and its welded joints. *Automaticheskaiia svarka* . 2012. No 1. Pp. 3–7. (Rus)
7. Chernyshev G.N., Popov A.L., Kozintsev V.M., Ponomarev I.I. Residual stresses in deformable solids. Moskva: Nauka, 1996. 240 p. (Rus)

[PDF](#)