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ELECTROMAGNETIC FIELD OF THE INDUCTOR FOR LOCAL ELECTRIC PULSE EFFECTS ON METAL PRODUCTS

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Abstract

The mathematical model has been developed to determine of the induced pulsed density current in the conductive sheet and the current parameters of the inductor contour for non-contact electric pulse processing of materials. Based on the calculated data, the prospects of using inductors in the form of current contours for influencing the weld due to the "electroplasticity" effect in the local area are shown. References 7, figures 5.

Key words: three-dimensional electromagnetic field, pulsed electric current, strong skin effect, weld.

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References

1. Stepanov G.V., Babutskiy A.I. Effect of high-density pulsed electric current on strength of metallic materials and stress-strain state of structural components. Kyiv: Naukova dumka, 2010. 276 p. (Rus)
2. Lobanov L.M., Paschin N.A., Loginov V.P., Poklyatskiy A.T. Impact of electric pulse processing on the residual formation of a thin-sheet welding structure. *Avtomaticheskaya svarka*. 2010. No 3. Pp. 13-17. (Rus)
3. Polivanov K.M. Theoretical bases of electrical engineers. Moskva: Energiya, 1969. 352 p. (Rus)
4. Mikhaylov V.M. Pulsed electromagnetic fields. Kharkov: Vischa shkola, 1979. 139 p. (Rus)
5. Rashchepkin A.P., Kondratenko I.P., Karlov O.M., Kryshchuk R.S. Electromagnetic field of w-shaped inductor for magnetic-pulse processing of materials. *Tekhnichna Elektrodynamika*. 2019. No 6. Pp. 5-12. (Ukr) DOI: <https://doi.org/10.15407/techned2019.06.005>
6. Vasetsky Yu.M, Dziuba K.K. Three-Dimensional Quasi-Stationary Electromagnetic Field Generated by Arbitrary Current Contour Near Conducting Body. *Tekhnichna Elektrodynamika*. 2018. No 1. Pp. 3-12. DOI: <https://doi.org/10.15407/techned2018.01.003>
7. Knopfel G. Pulsed High Magnetic Fields. Moskva: Mir, 1972. 392 p. (Rus)

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