

Hybrid welding of dissimilar metals

Samigullin A., Bashmakov D., Israphilov I., Turichin G.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Published under licence by IOP Publishing Ltd. The article addresses issues laser - plasma welding (LPW) dissimilar metals and the results of metallographic studies of the microstructure of welds ferrite - 40 steel and molybdenum - steel 40. Increasing potential opportunities the high-energy processing is carried out by integration the laser radiation (LR) and plasma, which allows you to create the desired spatial distribution of the energy flow for technological processes (TP) of laser-plasma heat treatment (LPT) of metals. The distribution of the thermal field is determined by the density distribution of energy flow LR and plasma exposure time, and the thermal characteristics of the treated metal. The most interesting is the treatment of details with ring flow of plasma and LR axial impact.

<http://dx.doi.org/10.1088/1742-6596/789/1/012048>

References

- [1] Pat. Russia no. 2415739 Zvezdin V.V., Israphilov I.Kh. and Veliev D.E. 2009 Method of laser welding of components made of dissimilar metals
- [2] Pat. Russia no. 59931 Israphilov I.Kh., Israphilov Z.Kh., Israphilov D.I. and Galiakbarov A.T. 2006 Plasmotron
- [3] Grigor'yants A.G., Shiganov I.N. and Misyurov A.I. 2006 Technological laser machining processes: Proc. The manual for high schools M.: Publishing House of the MSTU. Bauman ed A.G. Grigoryants 664
- [4] Zvezdin V.V., Zamorskiy V.V., Karimov V.S. and Sabirov I.S. 2004 Improving the quality of welded joints of knots and car of details in laser welding Materials III International scientific and technical conference. Part 1 (Penza,) 54-58
- [5] Zvezdin V.V., Khamadeev A.V. and Portnov S.M. 2008 Investigation of laser welding process, molybdenum and steel 45 Information and socio-economic aspects of modern technology: Online Electronic Science and Technology Journal
- [6] Israfilov I.H., Galiakbarov A.T., Bashmakov D.A., Gabdrakhmanov A.T. and Samigullin A.D. 2014 Pulse plasma surface thermostrengthening of machine parts IOP Conf. Ser.: Mater. Sci. Eng. 69 012037