

Technology ability of laser bonding of compacted graphite iron

Zvezdin V., Klochkova K., Rakhimov R., Saubanov R., Pesoshin V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Published under licence by IOP Publishing Ltd. Laser welding features of compacted graphite iron are described in this paper. An approach that allows to reduce residual stresses and the probability of occurrence of "hot" cracks in the weld seam as well as to increase the absorption coefficient of laser radiation due to the use of metal powder Ni-Cr-B-Si-Fe, BoroTec-Eutalloy® 10009-chromium-nickel alloy are proposed. Recommendations are given when conducting a welding with compacted graphite iron.

<http://dx.doi.org/10.1088/1757-899X/412/1/012084>

References

- [1] Grigoryants A G, Shiganov I N and Misyurov A I 2006 Technological processes of laser processing (Moscow: MSTU publishing house of N.E. Bauman) 664
- [2] Zvezdin V V, Hamadeev A V, Zagirov R G and Shangaraev I R 2008 Positioning of laser radiation towards weld seam as an index of the quality of technological process Bulletin KSTU N.A. Tupolev 17-21
- [3] Khisamutdinov R M, Zvezdin V V, Saubanov Ruz R and Klochkova K V 2016 Laser technology control of tool hardening and deposition welding Journal of Advanced Research in Technical Science 89-95
- [4] Zvezdin V V, Israfilov D I, Portnov S M, Saubanov R R, Rakhimov R R and Zvezdina N M 2015 Automatic control system of high-precision welding of preparations by the laser radiation at influence of the plasma torch Proceedings of the higher educational institutions (Physics) 58 51-54
- [5] Grigoryants A G, Perestoronin A V, Portnov S M, Zvezdin V V and Israfilov I H 2015 A system for automatic control of precision laser welding in engineering Welding International 29 801-04
- [6] Vagapov I K, Ganiyev M M and Shinkarev A S 2005 A research of influence of ultrasonic shock processing on value and distribution of residual tension in welded preparation News of higher education institutions. Aircraft equipmen 56-59
- [7] Zvezdin V V, Rakhimov R R, Saubanov R R, Israfilov I H and Akhtiamov R F 2017 Management of laser welding based on analysis informative signals IOP Conference Series: Materials Science and Engineering 240 012073
- [8] Rakhimov R R, Saubanov R R and Israfilov I H 2017 Analysis of the impact of informative heat treatment parameters on the properties of hardening of the surface layers Journal of Physics: Conference Series 789 012040
- [9] Zvezdin V V, Hisamutdinov R M, Rakhimov R R, Israfilov I H and Akhtiamov R F 2017 Method of control position of laser focus during surfacing teeth of cutters IOP Conference Series: Materials Science and Engineering 240 012072