



International online conference

Digitalization of industrial thermal processes and units



14:20

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Section 1: Computer simulation

Ceramics in metals joining and new perspectives of streamlining the welding processes

The work presents the raw materials used in the production of refractory ceramics for welding technology as well as influence of the phase composition on slag properties and welding technique. The phase composition of different welding consumables (electrodes and flux-cored wires) was determined by the X-Ray Diffraction Technique. The analysis of slag chemical composition was conducted by X-Ray Fluorescence¹.

The second part of the work presents the new perspectives of remote welding with a surgical robot equipped with a digital camera used to observe the welding zone, in particular the difficulty in detecting the boundaries of the weld pool². The idea can be supported by new methods of computer image filtration using the augmented-reality welding mask³.

¹ Jastrzębska I., Szczerba J., Stoch P., Prorok R., Śniezek E. (2015): Effect of electrode coating type on the physico-chemical properties of slag and welding technique, Institute of Welding Bulletin, vol. 59, No. 1, p. 46–52.

² Prusak Z., Tadeusiewicz R., Jastrzębski R., Jastrzębska J., The advances and perspectives in using medical informatics for steering surgical robots in welding and training of welders applying long-distance communication links, Welding Technology Review, vol. 92, No. 5, p. 37–49, 2020.

³ Tadeusiewicz R., Jastrzębska I., Jastrzębski R. (2016): The possibility of creating a welding mask with computer processing of spatial image instead of welding filters (in Polish), Welding Technology Review, vol. 88, No. 1, s. 17–22.

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