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INSTITUTE OF WELDING

The International Institute of Welding and The European Federation for Welding, Joining and Cutting member

M. St. Węglowski, C. Hamilton -Investigation into friction stir processing of surface layers

It has been presented the results of investigations into friction stir processing carried out on the AlSi9Mg aluminium casting alloy. The investigations referred to the determination of the influence of process conditions on the moment of force affecting the tool and on the temperature in the stirring zone. The results of the investigations have shown that the increase in the rotational speed of the tool causes the decrease in the moment affecting it and the increase in the temperature in the tool area. It has been shown also that the increase in the rate of the tool travel brings about the increase in the moment of force and small changes in the temperature. The experimental measurement results have been compared to numerical calculation ones.

S. Stano, M. Banasik, M. Urbańczyk - Impact of the position of a laser beam – wire system in relation to a material being welded and of the filler metal feeding rate on the stability of laser welding with a filler metal

It has been presented fragmentary results of the investigations into the laser welding process with addition of filler metal in the form of wire, concerning the welding process stability depending on selected geometrical parameters of the set: wire tip-laser beam-material subjected to welding. It has been found that the welding process runs steadily when the laser beam impacts directly on the tip of the wire fed to the welding area and the wire tip is positioned directly on the surface of the material being welded. It has been determined the manner of liquid metal transfer from the wire tip to the liquid metal pool forming around the capillary.

P. Gotkowski, R. Jachym, H. Fryc, D. Fryc - Testing of resistance spot welding procedures for fabrication of railway car subassemblies

It has been discussed one of the manners of the manufacture of wagon body subassemblies. The results of testing of resistance spot welded joints in X2CrNi12 steel have been presented. The joints were made for different thickness combinations which occurred in the wagon body structure. The test results show that the joints made in this way meet the requirements of PN-EN 15085 series.

A. Lisiecki, D. Janicki, A. Grabowski, K. Gołombek - Properties of Ti/TiN composite layers produced by ”in situ” method with the use of high power diode laser

It has been described the results of testing of the structure and properties of surface Ti/TiN composite layers produced „in situ” in consequence of remelting of the surface layer of the Ti6Al4V titanium alloy plate by means of high power diode laser under pure nitrogen (laser gas nitriding). The influence of the parameters of the laser gas nitriding process on the microstructure of surface layers, microhardness, abrasive wear resistance of the metal-metal type and erosive wear resistance at different glancing angles of the erodent has been analyzed.

A. Kiszka, T. Pfeifer - Technological investigation into variable polarity GMA welding of HCT 600X ZF 100 RBO high strength steel

It has been presented the results of the technological investigation into the innovative GMA welding method with the use of varia-

ble polarity AC during welding of HCT 600X ZF 100 RBO high strength steel. The results of mechanical testing and metallographic examination of welded joints have been given. The influence of electrode negative (EN ratio) on the quality of welded joints and particularly on the fusion depth and HAZ width has been analyzed. The prospective fields of commercial application of innovative welding techniques have been discussed.

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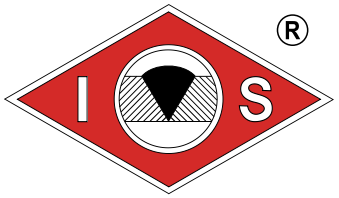
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