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ABSTRACT



PRESENTATION



PAPER



Ivica Garašić is a head of the Welding Laboratory of the Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb (FSB) and the deputy head of the FSB's ZK Cert certification department, which is accredited and authorized by the Ministry of Spatial Planning, Construction and State Property for factory production control activities. In addition, he participates in the work of Commission II - Electric Arc Welding and Additional Materials of the at the International Institute for Welding (IIW). In a series of studies and expertise, he achieved cooperation and technology transfer with domestic and foreign companies in the field of welding and welded structures. He published about 100 scientific and professional papers. He is the deputy editor-in-chief of the 'Zavarivanje' (i.e. 'Welding') magazine, a scientific reviewer in several domestic and foreign magazines and the secretary of the Croatian Society for Welding Technology (HDTZ).

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## ANALYSIS OF THERMAL FIELD DURING TIG WELDING OF TITANIUM IN Ar-He MIXTURE SHIELDING

For welding of titanium usually TIG process is applied where argon shielding is used for protection of weld pool and tungsten electrode. However, in order to increase penetration and productivity argon-helium mixtures are available in which, depends on helium composition, better heat conductivity in area of electric arc is achieved. This also results with more intensive heating of titanium surface what possibly compromise the scale of surface oxidation and subsequent-

ly decrease exploitation properties. In this paper analysis of heat distribution during TIG bead on plate welding is given by means of IR camera. Also, numerical simulation of thermal field is performed in order to assess the applicability and reliability for detection of critical area when using argon-helium mixtures. Both approaches are analysed and appropriate conclusions are drawn based on this research.