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The criteria and methodology for evaluation of the quality of magnetic impelled arc butt welding joints in automotive industry

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Current trends in the automotive industry are forcing manufacturers of automotive components to improve the production process in terms of producing quality products at relatively low unit price. One way of achieving these assumptions is the radical change in manufacturing technology. Nowadays, manufacturers of drive shafts components noticeably follow the Magnetically Impelled Arc Butt (MIAB) welding technique, which has a number of advantages, especially important from an industrial point of view. The global automotive industry still has not solved the problem of quality assurance of MIAB welded joints, using random destructive testing of produced batch particular items. An alternative to the existing investigative methods are immersive systems of non-destructive testing based on modern ultrasound techniques. Information on engineering practice of destructive and non-destructive testing of Magnetically Impelled Arc Butt (MIAB) welded components were presented. Concept of the process was characterized and its advantages in comparison with alternative technologies were demonstrated. Status of documents, guidelines and instructions determining the correct performance of joints were described. Procedures of welds quality control were presented and were divided into two basic groups – in the process analysis and research of performed joints. Practical aspects were emphasized, taking as an application example the elements of drive transmission. Moreover, the concept of experiment set-up for utrasonic nondestructive testing and preliminary research, based on using lateral wave were presented.

Biography

Korzeniowski M is an Assistant Professor at Wroclaw University of Science and Technology. His scientific activities and research work cover the basic techniques in the field of welding, in particular welding and robotic welding, welding process automation and quality control of welded joints, non-destructive methods, mainly application of ultrasonic techniques in automotive industry.

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