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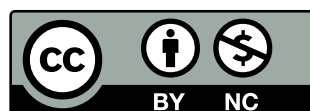
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Summaries of the articles

T. Pfeifer, J. Rykała – Braze Welding of Zinc-coated Steel Sheets Using Variable Polarity GMA Flux-cored Welding

DOI: [10.17729/ebis.2015.5/1](https://doi.org/10.17729/ebis.2015.5/1)

The article presents the course and results of research aimed to determine the effect of the type of shielding gas on the shape of brazeweld, tensile strength and structure of braze welded joints made using Variable Polarity GMA, flux-cored consumable electrode and one of 3 types of shielding gas, i.e. Ar and Ar + 1% O₂ and Ar + 18% CO₂ mixtures. The study involved macro and microscopic examinations and tensile strength tests performed on overlay brazes and braze welded joints. The study-related tests have revealed that the use of mixtures containing active gases, especially CO₂, increases the heat input of braze welding processes and provides greater wettability of sheets to be jointed. However, the use of the mixtures mentioned above also causes greater damage to sheet coatings in braze welding areas and in some cases can even lead to the partial melting of elements being joined, deteriorating the aesthetics of joints and reducing their tensile strength.

E. Turyk, W. Grobosz, T. Kuzio, S. Dudek, I.A. Riabcew – Technological Conditions of Mechanised TIG Welding using Various Systems Adjusting Current and Electrode Wire Feeding Parameters

DOI: [10.17729/ebis.2015.5/2](https://doi.org/10.17729/ebis.2015.5/2)

The study described in the article involved technological tests of mechanised TIG welding with an electrode wire fed at a possibly low angle in relation to a welding arc and based on various wire feeding control systems, e.g. enabling the adjustment of wire feeding rate pulsation

and synchronisation of wire feeding rate with current impulses. The article also presents differences in sets of technological parameters of welding performed using such control systems.

M. Łomozik – Differences in Structural Transformations of Supercooled Austenite Exemplified in Selected CCT-W Diagrams (for Welding Conditions) and CCT Diagrams for Heat Treatment Conditions

DOI: [10.17729/ebis.2015.5/3](https://doi.org/10.17729/ebis.2015.5/3)

The article presents differences in the character of thermal cycle changes in welding conditions compared with the cycle of a traditional heat treatment, discusses the essence of austenite transformations in steels in welding conditions compared with heat treatment conditions, presents test results in the form of CTT-W diagrams (i.e. for welding conditions) for X10CrMoVNb9-1 (T/P91), X10CrWMoVNb9-2 (T/P92), X12CrCoWVNb12-2-2 (VM12-SHC), 7CrMoVTiB10-10 (P24), 10CrMo9-10 and S355JR grade structural steels and compares CTT-W diagrams with CCT diagrams for typical heat treatment conditions.

T. Kik, M. Slováček, M. Vaněk – Use of Welding Process Numerical Analyses as Technical Support in Industry. Part 2: Methodology and Validation

DOI: [10.17729/ebis.2015.5/4](https://doi.org/10.17729/ebis.2015.5/4)

Numerical analyses of production processes have proved useful and capable of obtaining significant savings. However, properly conducted simulations of technological processes require not only the appropriate adjustment of parameters, boundary conditions etc., but also need detailed input data in the form of databases of material properties. The input data mentioned above are decisive for the future

conformity of results obtained in numerical simulations with results of actual welding or heat processing. This article, being the continuation of the cycle of information dedicated to numerical analyses of welding and heat treatment processes, presents possible variants of numerical analyses of these processes and exemplary stages of preparation of simulations as well as results of such simulations.

O.K. Makowieckaja - Current Situation and Developmental Trends in Production and Welding Techniques in Russia

DOI: [10.17729/ebis.2015.5/5](https://doi.org/10.17729/ebis.2015.5/5)

The article presents the primary indicators illustrating the current situation and developmental trends in the production of welding equipment and materials in Russia in 2010-2013. The study also contains the analysis of tendencies taking place on the welding technique market (import-export) in the Russian Federation.

A. Sawicki, M. Haltof - Metrological Issues in Experimental Tests of Welding Machines. Part 2: Errors and Uncertainties in Measurements of Parameters of Selected Periodic Waveforms

DOI: [10.17729/ebis.2015.5/6](https://doi.org/10.17729/ebis.2015.5/6)

The article justifies the necessity of taking into consideration measurement accuracies in experimental tests of welding machines and presents the effect of systematic errors of measurement channels on the errors related to the determination of root-mean-square current, root-mean-square voltage and average values of momentary power. The study also presents errors and uncertainties in measurements of active, passive and apparent power in supply systems of one-phase and three-phase welding machines. For the study-related purposes it was necessary to assume the symmetry of three-phase supply voltage and the linearity of elements in load branches. The article provides primary information about digital measurements of the frequency and the angle of the phase shift of periodic wavelengths indicating sources of systematic errors. The work also presents dependences enabling the experimental determination of filling factors of rectangular wavelengths of TIG welding machines as well as describes measurement errors in three cases of rectangular wave shapes. The computational determination of errors and uncertainties was exemplified using the results of tests concerned with welding source power efficiency.

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