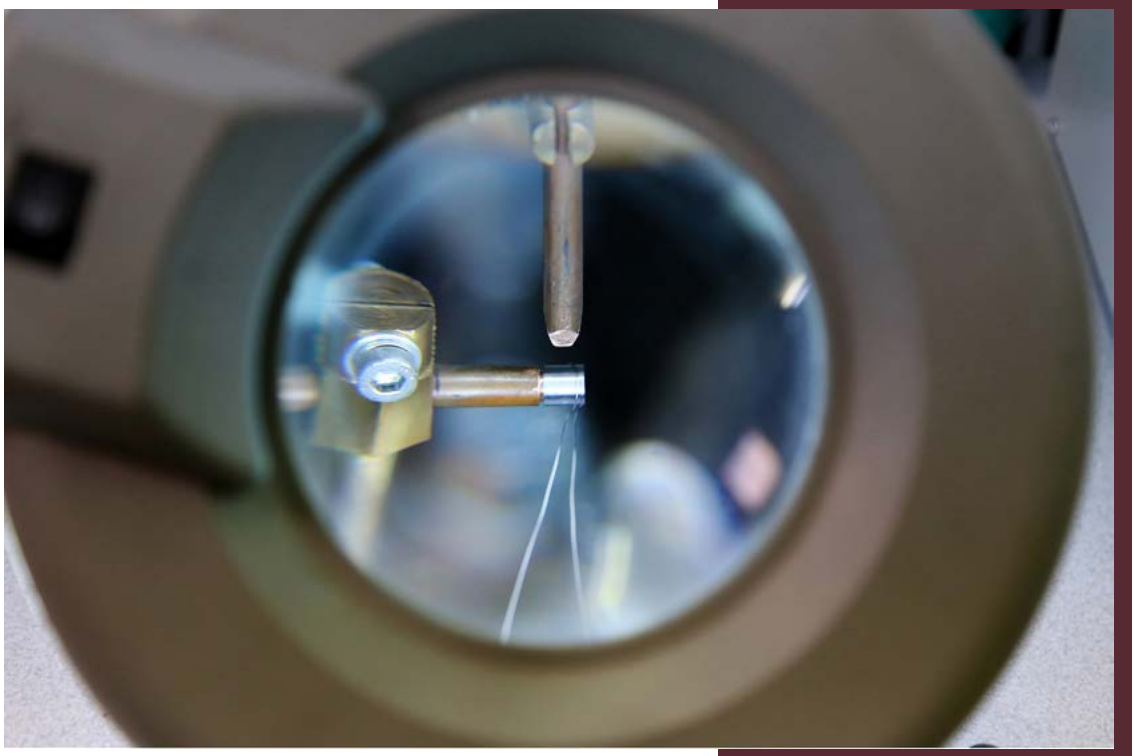
ISSN 2300-1674

BIULETYN
INSTYTUTU SPAWALNICTWA



No. 1/2016

INSTITUTE OF WELDING BULLETIN

BIULETYN

INSTYTUTU SPAWALNICTWA

No. 1 BIMONTHLY Volume 60

CONTENTS

INSTITUTE OF WELDING

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

Summaries of the articles

P. Sędek, M. Welcel, K. Kwieciński – Vibratory Stabilisation – Constant Development for Industrial Practice

DOI: *10.17729/ebis.2016.1/1*

A welding process leaves behind residual stresses in various areas of elements subjected to welding. Residual stresses affect such operational properties as dimensional accuracy and stability, brittle crack resistance, fatigue resistance, corrosion resistance etc. Vibratory stabilisation is a technological process which may lead to the obtainment of structural dimensional stability of similar efficiency as that of stress relief annealing. The attractiveness of vibratory stabilisation results from its low energy-consuming. The article presents a number of opinions concerning the efficiency of this process (including opinions of the authors, having dealt with this issue for many years). An important element of this publication is the presentation of the development of technological systems taking place at Instytut Spawalnictwa, e.g. system SW05A (currently produced and implemented in industry). The design of the above named system is based on the state-of-the-art systems of industrial electronics; dedicated software offers extensive customisation.

Z. Mirski, P. Czudak – FEM used for Strength-Related Calculations of Adhesive Joints in the Making of Rail Vehicles

DOI: *10.17729/ebis.2016.1/2*

The article presents a thick-layer flexible bonding used in railway engineering when making rail vehicles and indicates strength-related requirements for adhesive joints. The FEM was used for testing an adhesive joint between a windowpane and display-mounting brackets. Research-related tests revealed the lack of exceeding acceptable stresses and strains in a tested adhesive joint.

G. Wetzel, T. Broda, S. Keitel – Optical Measurement of Spot Resistance Welding Guns

DOI: *10.17729/ebis.2016.1/3*

Spot resistance welding processes may be troubled by deviations of electrode positions (contact fault). The article presents this issue in relation to robotic spot welding guns used in high-volume production and manual spot welding guns used in repair works. The article presents the method for optical measurements of the above named welding guns, enabling the determination of an electrode contact fault, as well as compares both types of welding guns in this respect.

M. Restecka – Robotic Implementations in Welding Engineering

DOI: *10.17729/ebis.2016.1/4*

The effect of robotisation on the competitiveness of enterprises continues to grow; therefore, manufacturers increasingly often purchase industrial robots, making the proper concept of a robotic station even more important. The article presents the present state and development trends in robotisation in Poland and overseas, indicates issues accompanying implementations of welding robots and presents possible preventive measures.

R. Kaczmarek – Adjustment of Parameters for the Ultrasonic Testing of Welded Joints According to Appropriate Standards

DOI: *10.17729/ebis.2016.1/5*

The article presents requirements of currently valid standards concerning ultrasonic tests of welded joints with reference to PN-EN ISO 17635:2010, PN-EN ISO 16810:2014, PN-EN ISO 16811:2014 and PN-EN ISO 17640:2011. The article discusses principles governing the selection

of ultrasonic probes, a manner of determining allowances for transfer losses and a manner helping adjust an appropriate test level. In addition, the article characterises techniques applied when setting a reference level as well as analyses positions of probes and a number of beam insertion angles when testing butt joints at various testing levels.

M. Haltof – Non-linear and Parametric Mathematic Models of Electric Arcs

DOI: *10.17729/ebis.2016.1/6*

The article describes factors affecting changes of physical parameters of plasma in a column and in near-electrode areas of arc in electrotechnological devices. The article also presents the effect of chemical composition and of temperature on the non-linearity of selected characteristics of plasma-creating gases. In addition, the study concerns the effect of the heterogeneity of electrode materials on the non-linearity and parametrisation of near-electrode voltage drops, taken into consideration in the approximation of static characteristics of an arc column. The article also presents selected linear and non-linear models of electric arc columns. Research-related simulation results, in the form of non-linear dynamic characteristics of electric arcs, were highly consistent with experimental data.

Biuletyn Instytutu Spawalnictwa
ISSN 2300-1674

Publisher:
Instytut Spawalnictwa (The Institute of Welding)

Editor-in-chief: ***Prof. Jan Pilarczyk***

Managing editor: *Alojzy Kajzerek*
Language editor: *R. Scott Henderson*

Address:
ul. Bł. Czesława 16-18, 44-100 Gliwice, Poland
tel: +48 32 335 82 01(02); fax: +48 32 231 46 52
biuletyn@is.gliwice.pl;
Alojzy.Kajzerek@is.gliwice.pl;
Marek.Dragan@is.gliwice.pl
http://bulletin.is.gliwice.pl/


I
S
®