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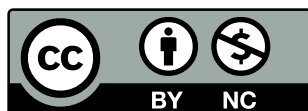
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INSTITUTE OF WELDING

The International Institute of Welding
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Summaries of the articles

P. Sędek – Welding in Vibration Conditions – Critical Approach

DOI: [10.17729/ebis.2017.3/1](https://doi.org/10.17729/ebis.2017.3/1)

Vibratory stabilisation has been used in production practice for a relatively long time now. The use of vibratory stabilisation provides technical and economic advantages where high dimensional stability of welded structures is required. For many years, research magazines have been reporting of attempted welding in vibration conditions. The article provides the overview of reference publications concerned with this issue as well as presents related tests performed by the author. The publications cited in the article inform about the effect of vibration on the distribution of welding stresses, strength-related properties and on the manner of weld formation. However, varying views presented in the above-named publications do not unequivocally confirm the efficiency of welding on vibration conditions. The foregoing inspired the author to carry out research including welding tests involving ferritic steel S355 and performed in various conditions of vibration having specified frequency. The tests involved the determination of the distribution of welding stresses as well as included metallographic examinations, toughness tests and hardness measurements. The research revealed the lack of the effect of vibration on the distribution of welding stresses, hardness and toughness of welds. No changes in the microstructure of welds were observed either. The conclusions formulated on the basis of the research did not recommend, generally, the welding of ferritic steels in vibration conditions.

I. A. Riabcew, R. Rosert, I. K. Senczenkow, E. Turyk – Welding Imperfections in Surfaced Layers

DOI: [10.17729/ebis.2017.3/2](https://doi.org/10.17729/ebis.2017.3/2)

The article presents the overview of various welding imperfections based on the classification

of PN-EN ISO 6520-1:2009 and formed during surfacing. The article discusses specific surfacing-related imperfections and unclassified in the above-named standard as well as imperfections related to special requirements concerning surfaced layers.

J. Czuchryj, S. Sikora – Visual Tests of Welded Joints Made of Thermoplastics

DOI: [10.17729/ebis.2017.3/3](https://doi.org/10.17729/ebis.2017.3/3)

The article describes visual tests of joints having varied thicknesses, made of thermoplastics and welded using a manual extruder. The research-related tests were performed following the principles specified in PN-EN 13100-1. Welding imperfections detected during the tests and the regulations of the PN-EN 16296 standard were used to identify the quality levels of the test joints.

P. Irek, K. Kaczmarek, Ł. Rawicki, L. Grolik – Dye Penetrant Tests of Welded Joints Made in Structural Steel

DOI: [10.17729/ebis.2017.3/4](https://doi.org/10.17729/ebis.2017.3/4)

The article presents imperfections tested using penetrant methods. The research described in the article was concerned with imperfections regarded as the most hazardous, i.e. cracks. The tests involved the formation of natural cracks in structural steel S355J2C+N. The cracks were measured in terms of their width and the roughness profile of their surface. The research involved a number of penetrant tests aimed to determine how a given factor (crack width or crack surface roughness) affected the time of development in penetrant tests of joints made in structural steel.

L. Szubert, P. Skoczewski, M. Welcel – Measurement system for monitoring HLAW welding parameters

DOI: [10.17729/ebis.2017.3/5](https://doi.org/10.17729/ebis.2017.3/5)

This paper presents the design, technical possibilities and the intended use of a multi-station

measurement system for HLAW process monitoring. The system used at the production site allows the monitoring and recording of HLAW welding parameters in relation to various constructions and products. The use of an industrial fieldbus interface allows full integration with automation devices and systems found on typical production stations/sites.

**K. Kaczmarek, R. Kaczmarek -
Quality assessment of welded joints
using TOFD technique in terms of
requirements of current standards**

DOI: [10.17729/ebis.2017.3/6](https://doi.org/10.17729/ebis.2017.3/6)

The article describes the classification and evaluation of TOFD indications according to PN-EN ISO 10863 and PN-EN ISO 15626 as well as identifies, discusses and illustrates numerous examples of typical problems connected with the evaluation of indications. Special attention is paid to spatial resolution and dead zones as well as their consequences affecting the subsequent evaluation of indications occurring at different depths. In addition, the article describes potential methods enabling the verification of unclassified indications requiring additional (supplementary) tests.

**L. Grolik – Changes in the
Geometrical Shape of a Liquid Metal
Pool in Relation to a Heat Input
During a Welding Process**

DOI: [10.17729/ebis.2017.3/7](https://doi.org/10.17729/ebis.2017.3/7)

The article aims to present a number of factors affecting the geometrical shape of a liquid metal pool when making welded joints, i.e. factors increasing or decreasing a heat input including the density and efficiency of heat sources, stirring efficiency, tungsten electrode tip point, heat flow in a material being welded, cooling rate and linear energy supplied to a joint.

**C. Darrow – Fundamentals of
Gouging with Plasma**

DOI: [10.17729/ebis.2017.3/8](https://doi.org/10.17729/ebis.2017.3/8)

The purpose of this document is to present the fundamental mechanics of gouging with plasma. While plasma gouging is not a new concept, little has been presented on subjects such as nomenclature, how the gouge is actually produced, and the relationships between process parameters. This paper seeks to present this information to help aid in gouging process design.

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