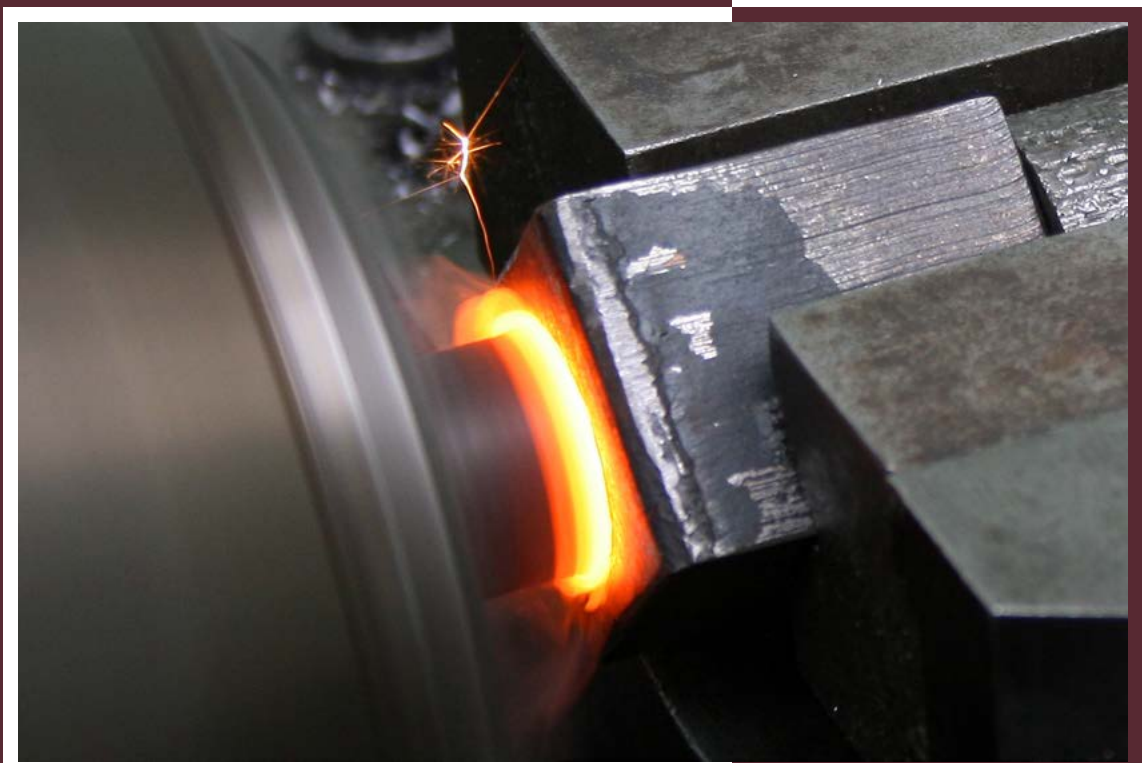


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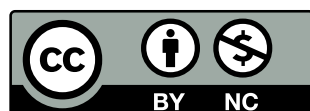
BIMONTHLY

Volume 60

CONTENTS

- T. PFEIFER, J. NIAGAJ – Requirements of Quality Assurance Systems concerning the Fabrication of Equipment for Nuclear Facilities 6
- M. RÓŻAŃSKI, M. TOPOLSKI – Plasma Welding of Steel CPW 800..... 21
- R. KACZMAREK, K. KACZMAREK – Interpretation of Types of Discontinuities in the Ultrasonic Testing of Forgings Using Double Transducer Probes of Various Parameters..... 28
- K. PROKOP, G. ROGALSKI – Cold Cracking Susceptibility of Joints made of Ferritic-Austenitic Duplex Steel 2205 during Underwater Welding..... 35
- S. PAWLAK – Methodology of Non-Destructive Testing of Selected Adhesively Bonded Metal Sheets Using Active Thermography..... 43
- A. SAWICKI, M. HALTOF – Representation of the Effect of Plasma Column Disturbances on the Static and Dynamic Characteristics of Arcs Described by the Pentegov Model. Part 1. Modelling the Effect of One-Parameter Disturbances on Electric Arc Characteristics..... 51

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Summaries of the articles

T. Pfeifer, J. Niagaj – Requirements of Quality Assurance Systems concerning the Fabrication of Equipment for Nuclear Facilities

DOI: [10.17729/ebis.2016.2/1](https://doi.org/10.17729/ebis.2016.2/1)

The article discusses requirements formulated in document GS-R-3 issued by the International Atomic Energy Agency and requirements specified in the NSQ-00 (NQA) and NQA-1 (ASME) standards concerning quality assurance related to deliveries of components and services for nuclear power plants.

M. Rózański, M. Topolski – Plasma Welding of Steel CPW 800

DOI: [10.17729/ebis.2016.2/2](https://doi.org/10.17729/ebis.2016.2/2)

The article is concerned with issues related to the plasma welding of steel CPW 800 using titanium and niobium microagents. Plasma welding tests involving sheets subjected to TMCP were performed with various linear energy values. Welded joints were subjected to macro and microscopic metallographic tests, hardness measurements (involving the base material, HAZ and weld) as well as tensile and bend tests. The strength of the welded joints obtained in the tests was greater than that of the base material; a slight increase in the hardness of joint area ensured its relatively high plasticity.

R. Kaczmarek, K. Kaczmarek – Interpretation of Types of Discontinuities in the Ultrasonic Testing of Forgings Using Double Transducer Probes of Various Parameters

DOI: [10.17729/ebis.2016.2/3](https://doi.org/10.17729/ebis.2016.2/3)

The paper presents results of studies demonstrating a significant impact of double transducer probe characteristics on the interpretation of

discontinuity types in the ultrasonic quality control of forgings. Double transducer probes are characterised by significant differences in the width of an ultrasonic beam in two mutually perpendicular directions, i.e. perpendicular and parallel to the plane of the separation of probes. These circumstances may lead to the misinterpretation of discontinuities types (point-like/extensive) and thus, to the adoption of inappropriate criteria for the evaluation of indications and, eventually, to the determination of improper sizes of discontinuities mistakenly interpreted as extensive. This article is addressed to NDT personnel performing ultrasonic tests using double transducer probes as well as to those participating in courses preparing for examination according to ISO 9712 in the product sector of forgings.

K. Prokop, G. Rogalski – Cold Cracking Susceptibility of Joints made of Ferritic-Austenitic Duplex Steel 2205 during Underwater Welding

DOI: [10.17729/ebis.2016.2/4](https://doi.org/10.17729/ebis.2016.2/4)

The underwater welding of ferritic-austenitic duplex steels is arousing growing interest inspired by the urgent need for developing welding technologies used for repairing underwater pipelines transporting oil. The tests involved underwater welding using covered electrodes (process 111). The research also involved Tekken technological tests performed under water at a depth of 0.5 m and in air as well as macro and microscopic metallographic tests, ferrite content measurements and hardness measurements of joints. The test results obtained revealed that the underwater welding of duplex steels could lead to cold crack formation. In the case considered above, cold crack susceptibility was attributed to arc burning instability.

S. Pawlak – Methodology of Non-Destructive Testing of Selected Adhesively Bonded Metal Sheets Using Active Thermography

DOI: [10.17729/ebis.2016.2/5](https://doi.org/10.17729/ebis.2016.2/5)

The article presents the methodology of non-destructive tests of adhesively bonded metal sheets using active thermography, illustrated with an example of selected imperfections related to the application of adhesive. The experimentation involved the design and the making of specimens reflecting actual car body joints with simulated imperfections such as the complete lack of or the insufficient amount of adhesive between two sheets. The research also involved the selection of a measurement technique, the development of a testing procedure and the manner of interpreting thermographic test results in the form of recorded sequences of images. The thermographic tests were performed in a two-sided arrangement, where a specimen was situated between a heat source and a thermographic camera. Such an arrangement enabled the uniform heating of the specimen surface and, as a result, the obtainment of legible images used for determining the maximum temperature contrast. The test results made it possible to assess the size and approximate shape of the layer of adhesive between two sheets of analysed lap joints. This article constitutes the continuation of previously initiated

works dedicated to the development of active thermography related to non-destructive tests of permanent joints.

A. Sawicki, M. Haltof – Representation of the Effect of Plasma Column Disturbances on the Static and Dynamic Characteristics of Arcs Described by the Pentegov Model. Part 1. Modelling the Effect of One-Parameter Disturbances on Electric Arc Characteristics

DOI: [10.17729/ebis.2016.2/6](https://doi.org/10.17729/ebis.2016.2/6)

The article discusses various types of disturbances affecting an arc column such as changes in length, changes in the intensity of convective heat dissipation using a stream of gas washing around a column, changes in gas atmosphere pressure, and changes in the intensity of laser radiation penetrating the arc. The above named disturbances were included in expressions approximating static current-voltage arc characteristics. The characteristics mentioned above were used to create a number of macromodels based on the Pentegov model of disturbed arcs. The results of processes simulated in an electric circuit were used to demonstrate the usefulness of the models developed and the considerable comfort of such an approach when testing systems with electric arcs.

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