

## References

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# East European Welding Research News

By Rudolph O. Seitz

## EAST GERMANY

ZIS Mitteilungen 11, No. 11 (Nov. 1969).

- Hirschfeld, G.: Study of the relation between welding and weld parameters in semiautomatic CO<sub>2</sub>-shielded welding (1869-80).—An attempt has been made to find some simple relationships between the welding parameters and corresponding weld parameters for the purpose of obtaining basic information for the evaluation of experimental data by means of a computer.
- Schellhase, M.: Arc welding stability examined on the basis of a parameter diagram (1881-89).—All the conceivable parameters which affect the static and dynamic stability of the welding arc are arranged and related to each other in the form of block diagrams to show the ramifications of their effect on the arc.
- Heinig, W. and Nitzsche, R.: Theoretical studies toward improving the control action of resistance spotwelding machines (1890-1900).—The growing trend toward automation in spotwelding requires a thorough study of the factors affecting spotweld quality. It is desirable to find a single factor which reflects the process of forming a spotweld with sufficient accuracy so that it can be used to obtain welds of consistent quality. One of these factors examined by the author is the temperature variation at and in the welding spot.
- Schulze, W.: Problems in the magnetoinductive measuring of the weld gap (1902-07).—After describing the principle of an automatic guiding system for welding heads based on magnetic induction the author discusses various types of plate edges which have an adverse effect on the guiding accuracy.
- Einicke, H.: Arc welding power

sources (1908-25).—A review is given of the classification, characteristics and performance data of the major power supplies produced in the German Democratic Republic.

- Dennin, G.: Strength of fillet welds produced with the CO<sub>2</sub>-shielded welding process (1926-30).—Data obtained by analyzing the penetration and strength values of test welds were used to establish approximation formulas which make it possible to determine the increase in penetration in CO<sub>2</sub> welding as a function of the throat thickness of the fillet welds.
- Tassewa, S. and Höhn, W.: Welding of steels alloyed with nitrogen (1932-46).—The weldability of a number of austenitic Cr-Ni steels with high nitrogen contents was investigated and the mechanical and corrosion properties of the welds obtained with different filler metals were examined. The results are reported in tabular form.
- Hesse, G. and Ruckert, D.: Transistorized welding voltage regulator (1949-54).—In response to the demands for means to maintain constant welding parameters which are essential in automatic welding a transistorized voltage regulator ZIS 613 has been developed for the universal welding rectifier KG 400 VC/ZIS 465.
- Jaeger, F. et al.: High-frequency welding of synthetic fabrics in the garment industry (1955-62).—A general review of the current state of development and of the problems involved in the high-frequency welding of synthetic fabrics is given. Joining of thermoplastic fabrics by ultrasonic welding and other methods is predicted.
- Kudryavtsev, J. V. and Naumchenkov, N. E.: Fatigue strength of welded components for overhead cranes (1965-75).—The results of recent Russian studies of the effects of type of joint, welding process and post-weld treatment on the fatigue strength of several important crane

components are reported.

- Naumann, E.: Possibilities of optimizing the layout of weld fabrication shops (1967-85).—The author describes an example where computer methods involving iteration and simulation have been used to solve the problem of optimum plant layout as applied to weld fabrication shops.
- Klasterka, F.: Four-station contour welding setup (1986-89).—The successful development of an automatic welding setup for the fabrication of the rear spring suspension of a passenger car (Model 353) is described.
- Kraus, W.: Brazing and soldering equipment-patent review (1990-96).—Patents, patent applications and design patents published in West and East Germany in 1968/69 are reviewed.

## U.S.S.R.

*Avtomaticheskaya Svarka* 22, No. 1 (Jan. 1970).

- Seleznev, A. G. et al.: Study of the structure of the transition layer in friction welding with the aid of radioactive isotopes (21-24).—The results of a study of the structure of the contact layer in the friction welding of dissimilar metals, using tagged atoms, are reported. In the friction welding of St 30 and PI8 steels and also of St 30 and Armco iron no substantial migration of carbon atoms was observed. It is shown that there is no diffusion of carbon atoms at a depth beyond 5-10 microns.
- Krutikhovskii, V. G. and Tregubov, G. G.: Dimensions of the weld deposit as a function of the welding variables in submerged arc overlay welding with strip electrodes (25-27).—An empirical relationship was established between the width of the weld deposit and the welding parameters

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Clad Steel Plate." Welding Research Council Bull. Ser. No. 61. (June 1960).

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and compared with the theoretical relationship.

- Ilyushenko, V. M. et al.: Antifriction properties and wear resistance of leaded tin bronze overlays (28-31).—The wear resistance and the coefficient of friction of leaded tin bronze overlays were determined. An anti-friction alloy with optimum composition was selected for the fabrication of bimetallic heavy duty bearings.

- Volchenko, V. N.: The classification of welding processes (32-38).—Welding is defined as an irreversible thermodynamic process associated with local changes in the state of matter and of energy. The author bases his classification of the welding processes in the fundamental concept of energy.

- Kakhovskii, N. I. et al.: Welding

of Cr-Ni-Mo single-phase austenitic steels (39-43).—The effect of manganese and nitrogen on the cracking resistance of fully austenitic welds has been studied. The nitrogen-containing Cr-Ni-Mn-Mo wire EP 690 and the ANV-17 electrodes were developed for welding the Okh 17 N 16 M 3 T, 00 kh 17 N 16 M 3 B and 000 kh 16 N 15 M 3 steels. They give welded joints of uniform strength, uniform corrosion resistance and sufficiently high ductility and toughness of the weld metal.

- Nikhinson, Yu. I et al.: Welding of the T-16M automotive chassis frame (44-46).—The results of developing a procedure for welding high carbon 45L steel are reported. It is recommended to complete the weld in two passes without preheating.

- Zhukov, V. V.: Welding gold to Kovar with the laser beam (47-48).—It is shown that gold contacts and current-carrying elements made of Kovar can be successfully joined by welding with the laser beam and that the resulting joints are of high quality.

- Rudzit, R. B. and Kaleis, M. A. Effect of the dynamics of the compression mechanism on the heat concentration in the percussion welding of T-joints (49-52).—The percussion welding of T-joints between bars and plates by the use of a compression mechanism with different dynamic properties was investigated. It is shown that the heat concentration at the point of contact can be controlled by varying the free acceleration of the electrode.

- Cherednichok, V. T. et al.: Special features of rod-to-plate joints produced by flash welding (53-56).—The interdependence of the parameters which are characteristic of the upsetting process in making T-joints and the properties of the resulting welds were studied.