Reel # 70

BRODSKIY, A. Ya.

to

BRODSKIY, A. YA.

BRODSKIY, A. YA.

Reglamentatsiia pravki svarnykh trubchatykh konstruktsii. (Avtogennoe delo, 1946, no. 7, p. 21-23, illus., diagrs., bibliography)

Title tr.: Regulation of straightening of welded tubular structures.

TS227.A166 1946

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

BRODSKIY, A. YA.

"Investigation of Straightening the Aircraft Welded Constructions." Sub 14 Apr 47, Moscow Order of the Labor Red Banner Higher Technical School imeni N. E. Bauman

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

PA 19T17

BRODSKIY, A. Ya.

USSR/Airframes
Aircraft - Construction

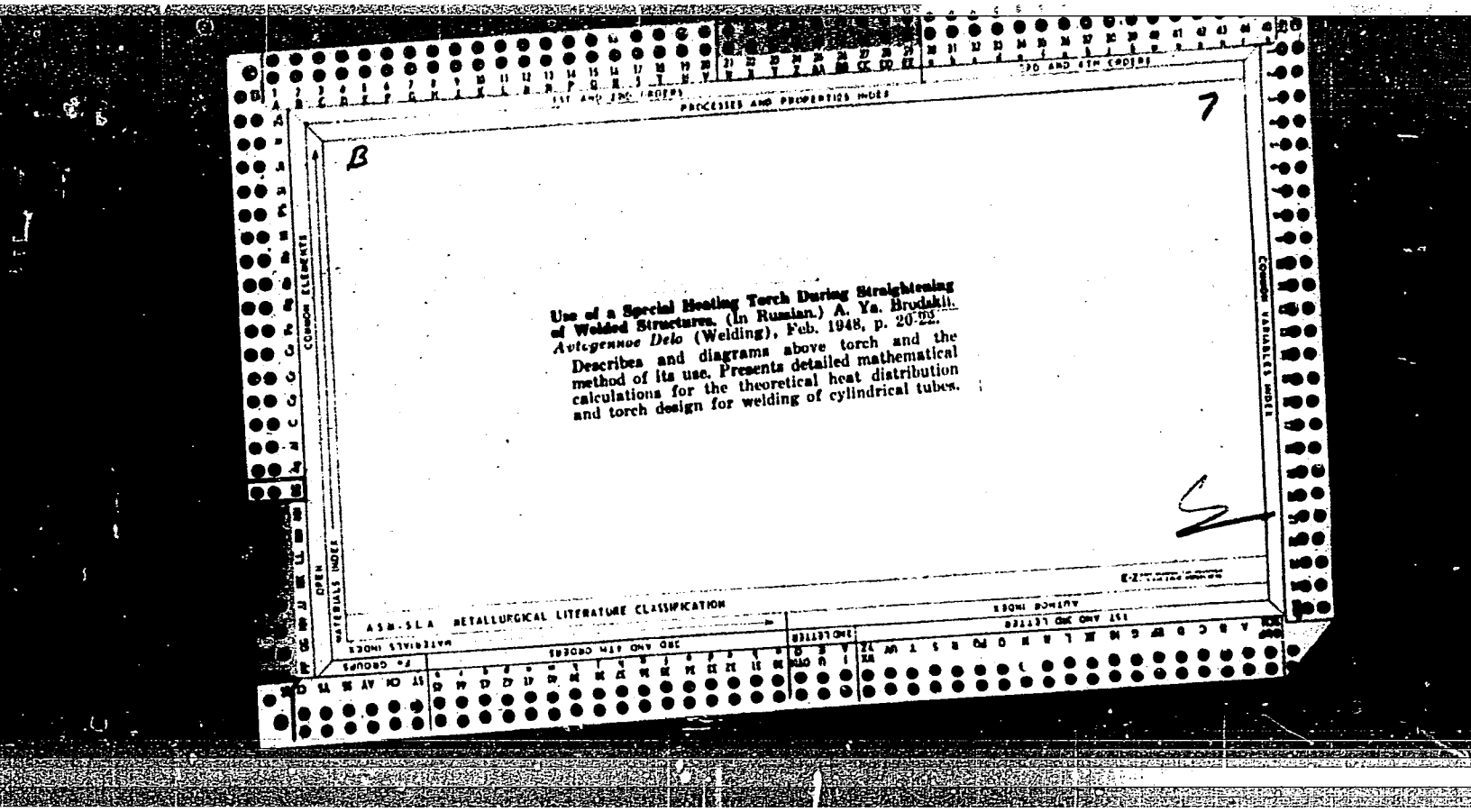
Aug 1947

"New Data on the Straightening of Welded Airplane Frames," A. Ya. Brodskiy, 6 pp

"Avtogennoye Delo" No 8

Graphs, diagrams and formulae as results of experiments. Optimum temperature is 800 to 850° C. Repeated heating of one spot is inefficient. Rate of cooling must be minimum. It is not efficient to maintain high temperatures for a long period of time in parts to be straightened.

18T17



Use of a Special Heating Torch During Straightening of Welded Structures. (In Russian.) A. Ya. Brudakii. *Avtogennoe Delo* (Welding), Feb. 1948, p. 20-23.

Describes and diagrams above torch and the method of its use. Presents detailed mathematical calculations for the theoretical heat distribution and torch design for welding of cylindrical tubes.

BRODSKII, A. Ya.

Y

Argon-Arc Welding of Thin Stainless Steels. A. Ya. Brodskii. (Avtogennoe Delo, 1948, No. 6, pp. 6-8). [In Russian]. After a brief account of the advantages of argon-arc welding and the theory of the process, the torches, transformers and electrodes used are considered. Tests showed that tungsten electrodes were better than carbon for welding stainless steels, the permitted diameter of electrode for steel 0·8–1·5 mm. thick being 2–2·5 mm., and that dried argon (13–14% nitrogen) could be used satisfactorily. S. K.

BRODSKIY, A. YA.

PA 19/49T40

USSR/Engineering — Oct 48
Welding, Arc
Welding, Autogenous

"Automatic Argon Arc Welding of Thin-Gauge Metals," A. Ya. Brodskiy, Cand Tech Sci, NIAT, 5½ pp

"Avtogennoye Delo" No 10

Argon arc welding of thin, stainless-steel sheets by hand is being successfully introduced in many plants. Discusses: (1) automatization of argon arc welding, (2) appliances for automatic argon arc welding, (3) choice of current

[redacted] 19/49T40

USSR/Engineering (Contd) — Oct 48

and equipment, and (4) some technical data. Includes 12 sketches and two tables.

[redacted] 19/49T40

ANGIN, A. S.; BRODSKIY, A. Ya. and SHVINSKOV, N. I.

BRODSKIY A. YA.

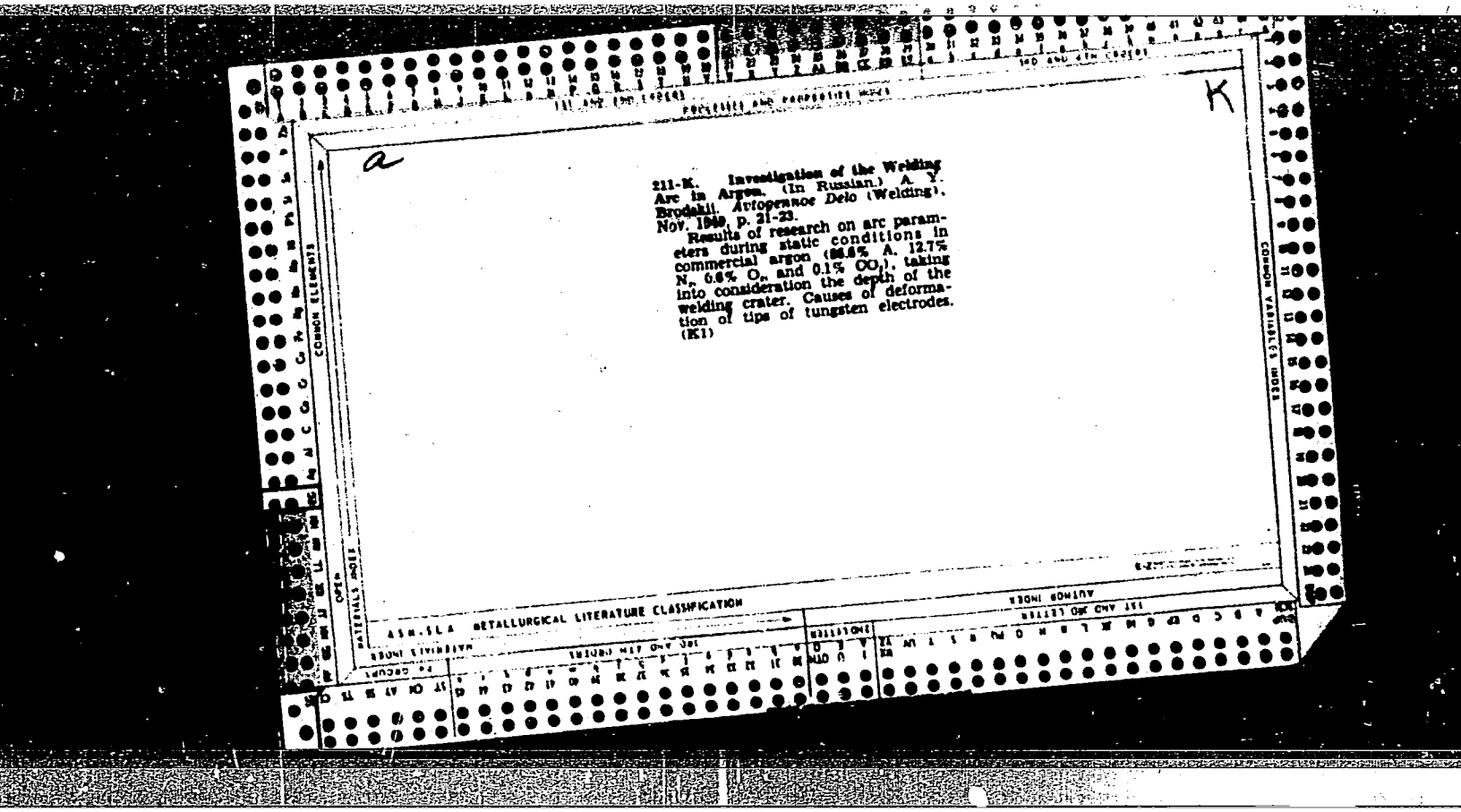
"Metalwork and Welding Contrivances used in Aircraft Construction," National Publishing House of the Defense Industry, Moscow, 1949.

Investigation of the Electrical Characteristics of the Welding Arc in Argon. A. Ya. Brodsky and G. M. Tikhodeev (Avtog. Delo, 1949, (3), 1-3).--(In Russian). As a result of investigation carried out with the tungsten/chromium-nickel arc in an atmosphere of argon, the following functions were deduced: V = f(I), when l is constant and V = f(l) when I is constant (V = voltage, I = current, l = length of the arc.) The relationship V = f(l) can be taken as linear for practical purposes without serious error. The potential gradient is about 9-10 V./cm. The effect of impurities in the argon on the voltages of the arc was also studied: with the tungsten arc, other things being equal, the voltage would be 1-2 V. higher using commercial argon (86.6%) as compared with purified argon (97%). By taking advantage of this, it appears possible to regulate the heat intensity of the welding arc by varying the quantity of impurities in the argon.--W.J.K.

20

M

MANUAL ARGON-ARC WELDING OF THE MAGNESIUM ALLOY MA-1. A. Ya. Brodsky and O. V. Moshkova (Avtog. Delo, 1949, (7), 10-12).---(In Russian). Argon-arc welding is the rational method of joining magnesium alloy without flux. Before welding it is necessary to clean the surface of the magnesium alloys; for this purpose chemical cleaning in a solution of chromic acid is recommended. It is possible to apply this type of welding to butt, lap, and angle joints, etc. As filler, only wire made from alloy MA-1 should be used. In the transition zone of the welded joint of MA-1, grain growth is observed, characteristic of the welded joints of binary alloys.---W.J.K.



BRODSKIY, A. YA.

Argonodugovaia svarka v proizvodstve kompensatorov. (Vestn. Mash., 1950 no. 2, p. 37-40)

Argon arc welding in the production of compensators.
DLC: TN4. V4

SO: Manufacturing and mechanical engineering in the Soviet Union, Library of Congress, 1953.

BRODSKIY, A. Ya.

PA 167T75

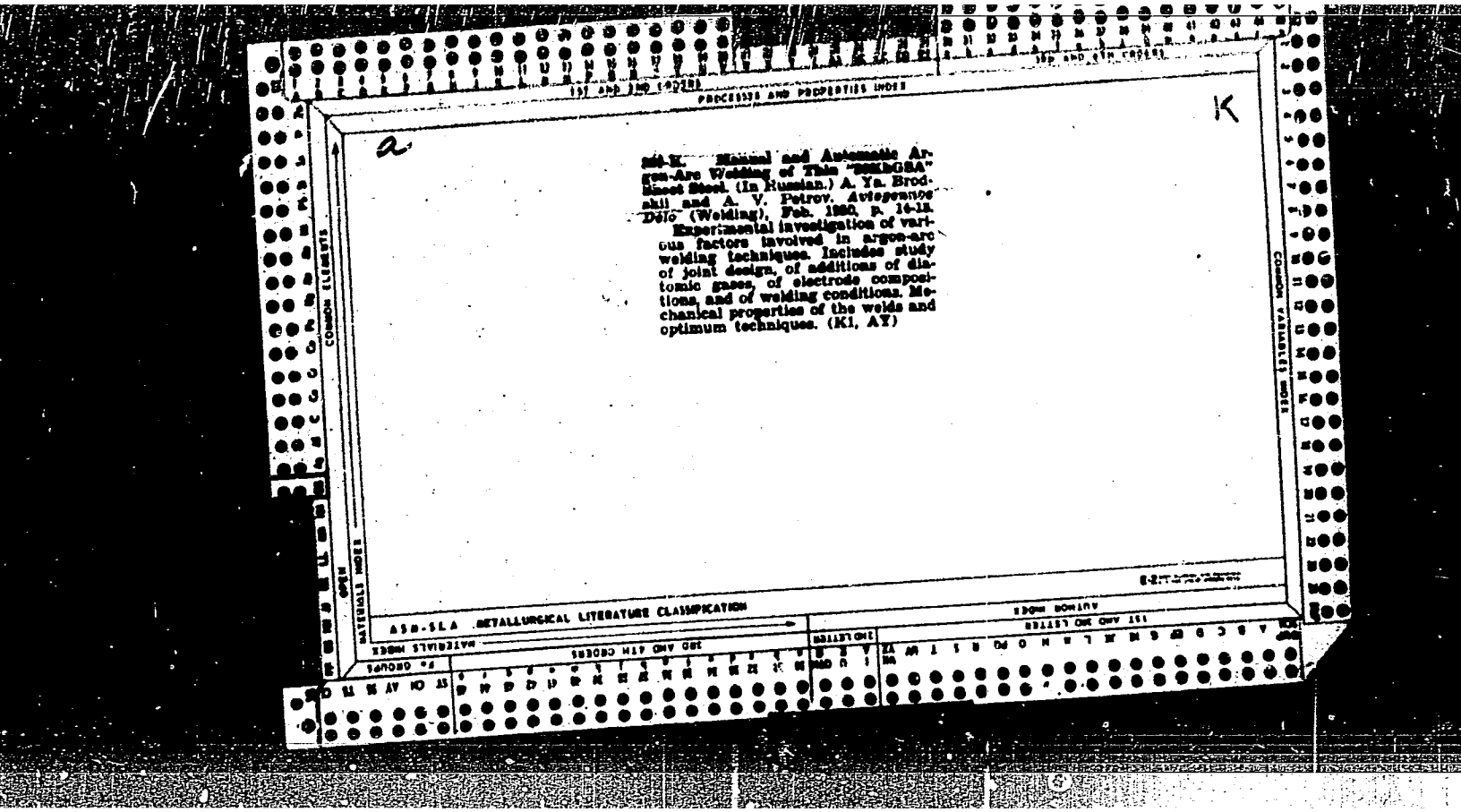
USSR/Metals - Welding Sep 50

"Deformation of Wolfram Electrodes in Argon-Shielded Arc Welding," A. Ya. Brodskiy, Cand Tech Sci, A. V. Petrov, Engr, Stalin Prize Laureates

"Avtogen Delo" No 9, pp 11-15

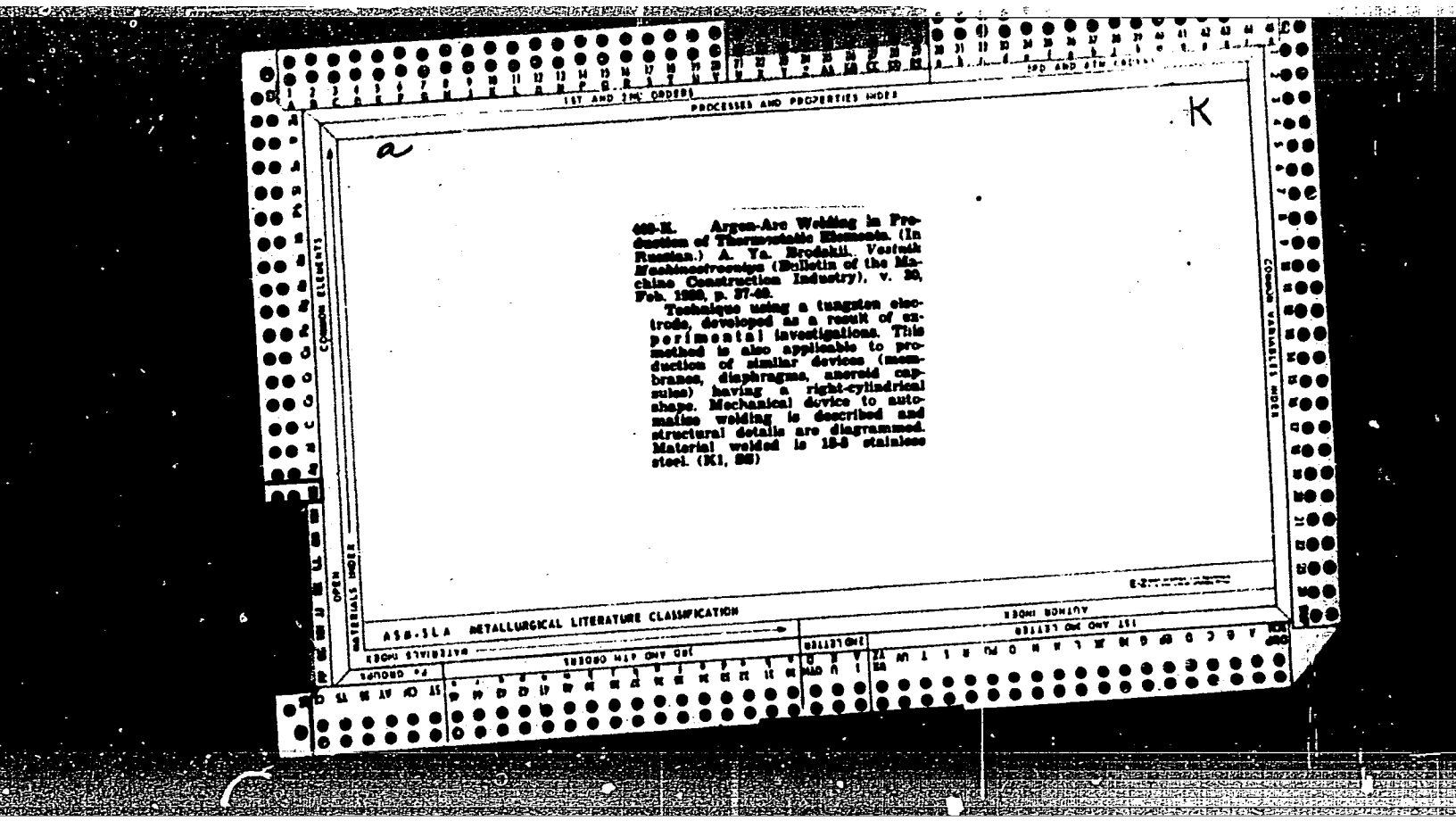
Investigates deformation of wolfram electrodes in argon medium. Reversible deformation, caused by thermal expansion of wolfram, is unavoidable. Irreversible deformation, caused by processes of oxidation and sublimation of wolfram oxides, may be considerably decreased by eliminating turbulent currents in shielding flow of argon.

167T75



Mid-K. Manual and Automatic Argon-Arc Welding of Thin "08KhGSA" Sheet Steel. (In Russian.) A. Ya. Brodskii and A. V. Petrov. *Avtogennoe Delo* (Welding), Feb. 1960, p. 14-18.

Experimental investigation of various factors involved in argon-arc welding techniques. Includes study of joint design, of additions of diatomic gases, of electrode compositions, and of welding conditions. Mechanical properties of the welds and optimum techniques. (K1, AY)



BRODSKIY, A. Ya.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 581 - I

BOOK Call No.: AF501939

Author: BORDSKIY, A. YA.
Full Title: TECHNIQUES IN INERT-GAS-SHIELDED ELECTRIC-ARC WELDING
Transliterated Title: Tekhnologiya dugovoy elektrosvarki v inertnoy srede

PUBLISHING DATA
Originating Agency: None
Publishing House: State Scientific and Technical Publishing House of Machine-Building Literature (Mashgiz)
Date: 1951 No. pp.: 166 No. of copies: 6,000
Editorial Staff
Editor: Glizmanenko, D. L., Kand. of Tech. Sci.
Appraisers: Staff of the Chair "Welding Production", Moscow Higher Technical School im. Bauman

PURPOSE: A manual for technologists and designers specializing in the manufacture and design of welded joints.

TEXT DATA
Coverage: This book is the continuation of the author's earlier Dugovaya elektrosvarka v inertnoy srede (Inert-Gas-Shielded Electric-Arc Welding), Mashgiz, 1950. This book describes the electric-arc welding of magnesium, aluminum and copper alloys, silver, thin-sheet 30 KhGSA steel,

low-carbon steel and cast iron, as well as the joint welding of different alloys using helium and argon gas as a protective atmosphere. Nitrogen-arc welding is also examined. The book contains data on the mechanical properties, microstructure and corrosion resistance of the resulting weld alloys and welding joints. According to the author, the possibility and expedience of using argon and nitrogen mixtures and nitrogen as a shielding atmosphere for welding stainless heat-resisting alloys and copper were demonstrated for the first time in the Soviet Union. The book is provided with illustrations, tables and diagrams.

No. of References: Total 44, Russian 28 (1913-1951)
Facilities: Benardos, N. N., Boytsov, V. V., Nikolayev, G. A., Prof., Dr. of Tech. Sci.

BRODSKIY, A.YA.

USSR/Engineering - Welding, Processes — Jul 51

"Certain Characteristics of Heat Sources in Welding Thin Steel Plates," A. Ya. Brodskiy, Cand Tech Sci, Laureate of Stalin Prize

"Avtogen Delo" No 7, pp 16-18

Describes expts to det thermal characteristics of argon shielded arc and comparing them with characteristics of heat sources in oxyacetylene and atomic hydrogen welding

200T42

USSR/Engineering - Welding, Processes (Contd) — Jul 51

processes. Max heat flow was observed in argon-arc welding, min flow in oxyacetylene process.

200T42

BRODSKIY, A. YA.

USSR/Metals - Steel, Welding, Properties — Oct 51

"Properties of 18-8 Steel Joints Welded by Argon-Shielded Arc Method and Other Fusion Welding Processes," A. Ya. Brodskiy, Cand Tech Sci, Laureate Stalin Prize

"Avtogen Delo" No 10, pp 6-10

Presents and interprets results of comparative investigations of welds made by argon-shielded arc, oxyacetylene and atomic hydrogen arc processes. Best results in respect to mech properties and corrosion resistance obtained by

202T81

USSR/Metals - Steel, Welding, Properties (Contd) — Oct 51

argon arc welding. Lowest properties shown by joints welded by oxyacetylene method.

202T81

BRODSKIY, A. YA.

USSR/Engineering - Welding, Processes Jan 52

"Current Rectification During Argon-Arc Welding," A. Ya. Brodskiy, Cand Tech Sci, Laureate of Stalin Prize

"Avtogen Delo" No 1, pp 10-14

Outlines causes for current rectification and its effect on technological efficiency of arc and on mech properties of welded joints. Discusses extent of rectification depending on arc length, purity of argon, no-load voltage, effective resistance in welding circut, and suggests measures against this

212T13

phenomenon: elimination by including capacity reactance and decreasing of rectification extent by including ohmic resistance in welding circuit in addn to inductive reactance. All relations are represented graphically.

212T13

BRODSKIY, A. YA.

USSR/Engineering - Welding, Methods Apr 52

"Automatic Argon Arc Welding With Mechanized Feed of Filler Wire," A. Ya. Brodskiy, Cand Tech Sci, Laureate of Stalin Prize

"Avtogen Delo" No 4, pp 8-11

Describes procedure and equipment for automatic welding of articles made of thin stainless steel. Method permits welding of joints with irregular curvilinear shape. Arc length is maintained const with the aid of mech and elec devices. Performance of elec devices is based on relationship between length and voltage of arc.

212T32

BRODSKIY, A. YA.

Dec 52

USSR/Metallurgy - Welding, Processes

"Distortion of Thin Sheets in Argon Arc Welding and in Certain Other Methods of Welding by Fusion," A. Ya. Brodskiy, Cand Tech Sci, Stalin Prize Laureate

Avtogen Delo, No 12, pp 6-10

Gives results of expts for comparing extent of distortion of 1.0-2.5 mm sheets, free during welding by oxyacetylene, atomic hydrogen, and argon arc methods. Discusses effect of geometrical factors, time of holding sheets in fixed state and heat conductivity, presenting results in graphical form.

266T39

HRODSKIY, A.Ya.

Flux welding of reinforcement joints with coated electrodes. Avtom. svar. 6 no.6:65-70 N-D '53. (MLRA 8:4)

1. TsNIIPS.
(Electric welding)

BRODSKIY, A.Ya., kandidat tekhnicheskikh nauk, laureat Stalinskoy premii.

Welding joints of reinforcement bars having diameters of 25-40 mm. Biul.stroi. tekh. 10 no.15:16-17 O '53. (MLRA 6:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut promyshlennykh sooruzheniy. (Reinforced concrete construction) (Electric welding)

1. BALDIN, V.A.; BRODSKIY, A.Ya.

2. USSR (600)

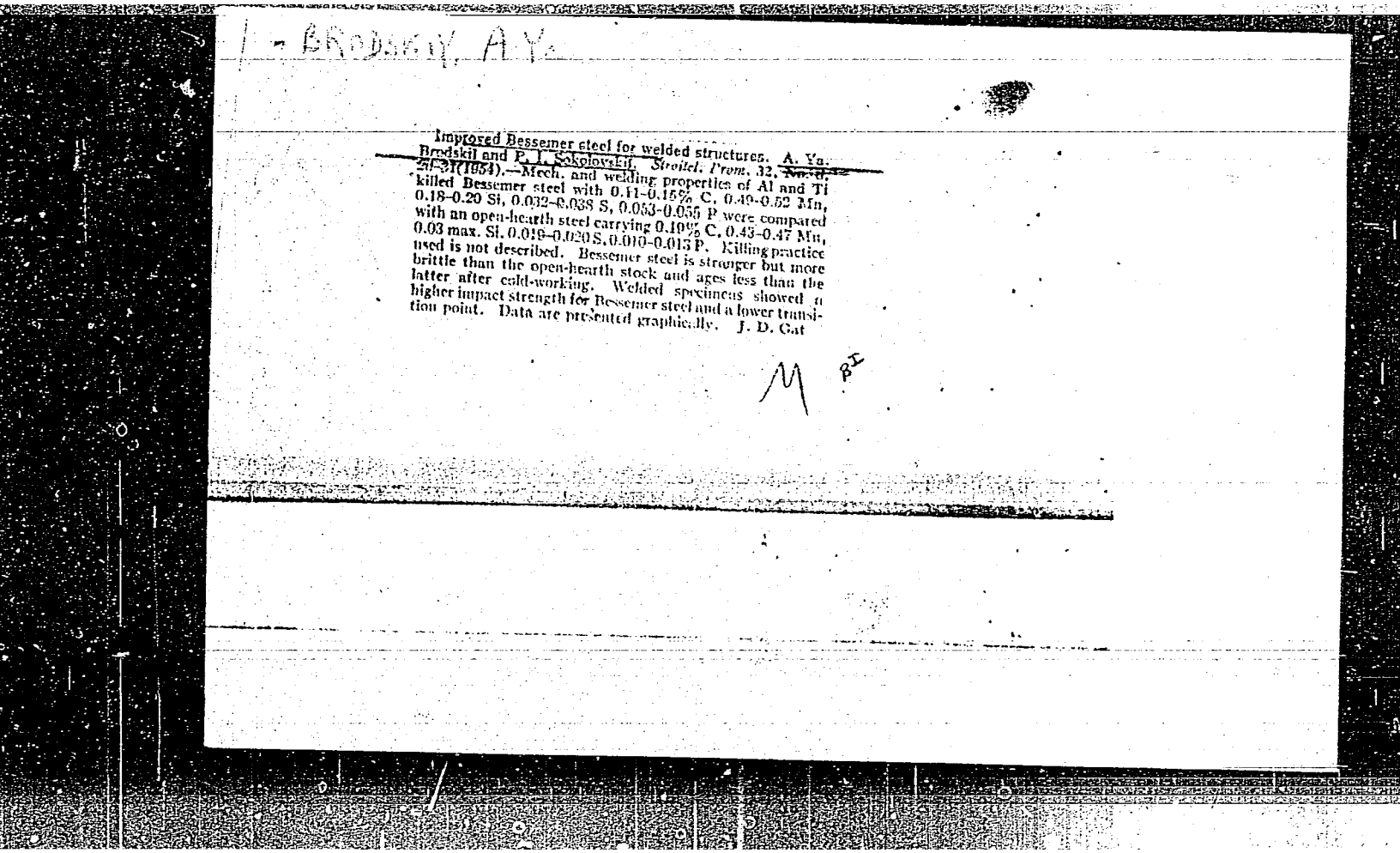
4. Electric Welding

7. Manual arc welding of the joints of concrete reinforcements with electrode sets, V.A. Baldin, A.Ya. Brodskiy, Avtog.delo 24 no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

BRODSKIY, A. Ya.

The contact electrowelding of the intersecting rods of the grid for a reinforced concrete construction. A. Ya. Brod. — Data are presented on the results of an expt. designed to study the effect of welding variables on the properties of welds. Rods used in the expt. were made from low-C [illegible] steel of the following compn.: C 0.10, Mn [illegible] Si 0.03, S 0.028, P 0.024%. Mech. [illegible] elongation 32.0%, reduction of area [illegible] variables studied can be rated in the following order [illegible] fect upon the strength of the weld: (1) the time under current has the greatest effect; (2) electrode pressure; (3) welding current; (4) increasing the diam. of the [illegible] surface of the electrode over 15 mm. [illegible] strength of the weld.



1 - BRODSKIY, A. Ya.

Improved Bessemer steel for welded structures. A. Ya. Brodskii and P. I. Sokolovskii. *Stroitel. Prom.*, 32, No. 2, 31–3 (1954).—Mech. and welding properties of Al and Ti killed Bessemer steel with 0.11–0.15% C, 0.49–0.52 Mn, 0.18–0.20 Si, 0.032–0.038 S, 0.053–0.056 P were compared with an open-hearth steel carrying 0.10% C, 0.43–0.47 Mn, 0.03 max. Si, 0.019–0.020 S, 0.010–0.013 P. Killing practice used is not described. Bessemer steel is stronger but more brittle than the open-hearth stock and ages less than the latter after cold-working. Welded specimens showed a higher impact strength for Bessemer steel and a lower transition point. Data are presented graphically. J. D. Gat

M BI

BRODSKIY, A. Ya.

USSR/Engineering—Argon-arc welding

Card 1/1 : Pub. 128—23/33

Authors : Brodskiy, A. Ya., Cand. Tech. Sci.; and Polyakov, K. M., Engineer

Title : Comparison between the argon-arc and oxygen-acetylene methods of welding tubes of aluminum-magnesium alloys

Periodical : Vest. mash. 34/8, 78-80, Aug 1954

Abstract : An account is given of experiments conducted to determine whether argon-arc welding or oxygen-acetylene welding is the more economical when applied to work on tubes of aluminum-magnesium alloy. The former was found to be more productive and to produce better work but to be more expensive. Illustration; tables; graph.

Institution : .....

Submitted : .....

BRODSKY, A.YA.

"Argon-arc Welding by Tungsten Electrodes." (Argono-Dugovaya svarka vol'. framovym elektrodom.) Mashgiz.1955.

BRODSKIY, A.Ya.; POLYAKOV, K.M.

Effect of argon arc welding fusion defects on the strength of aluminum-magnesium alloy butt seam welds. Avtom.svar. 8 no.4: 73-83 Jl-Ag'55. (MLRA 8:11)
(Aluminum-magnesium alloys--Welding)(Electric welding)

BRODSKIY, A.Ya., laureat Stalinskoy premii, kandidat tekhnicheskikh nauk.

Spot welding of rolled section iron reinforcement bars. Sbor.mat.o nov.tekh. v strei. 17 no.9:26-30 '55. (MLRA9:1)
(Reinforced concrete) (Electric welding)

BRODSKIY, A.Ya., laureat Stalinskoy premii, kandidat tekhnicheskikh nauk.

Joints with circular cover plates for heavy-duty reinforcements. Stroi.prom. 33 no.1:31-35 Ja'55. (MLRA 8:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut promyshlennykh sooruzheniy.
(Reinforced concrete construction)

BRODSKIY, A.Ya.; KOSYREV, V.P.; SOKOLOVSKIY, P.I.

Corrugated concrete reinforcements made of low allow 25GS steel.
Strei. prom. 33 no.9:36-38 S '55. (MLRA 9:1)
(Reinforced concrete)

BRODSKIY,A.Ya.; ZVEGINTSEVA,K.V., inzhener, redaktor; GRUSHEVSKAYA,G.M., redaktor; POPOVA,S.M., tekhnicheskiy redaktor

[Argon-arc welding using tungsten electrodes] Argono-dugovaia svarka vol'framovym elektrodom. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 395 p. (MIRA 9:3)
(Electric welding)

BRODSKIY A. Ya.

AID P - 4833

Subject : USSR/Engineering

Card 1/1 Pub. 11 - 6/13

Author : Brodskiy, A. Ya.

Title : Determination of the method to be applied in resistance spot welding of intersecting reinforcement rods.

Periodical : Avtom. svar., 3, 52-57, Mr 1956

Abstract : The author presents results of calorimetric research, and proposes formulae for practical use in spot resistance welding of intersecting reinforcement rods used in concrete constructions. Three formulae, 8 graphs. 8 Russian references (1953-55).

Institution : Central Scientific Research Institute of Industrial Construction (TsNIIPS).

Submitted : 30 My 1955

BRODSKIY, A.Ya., kandidat tekhnicheskikh nauk; FRIDMAN, A.M., inzhener.

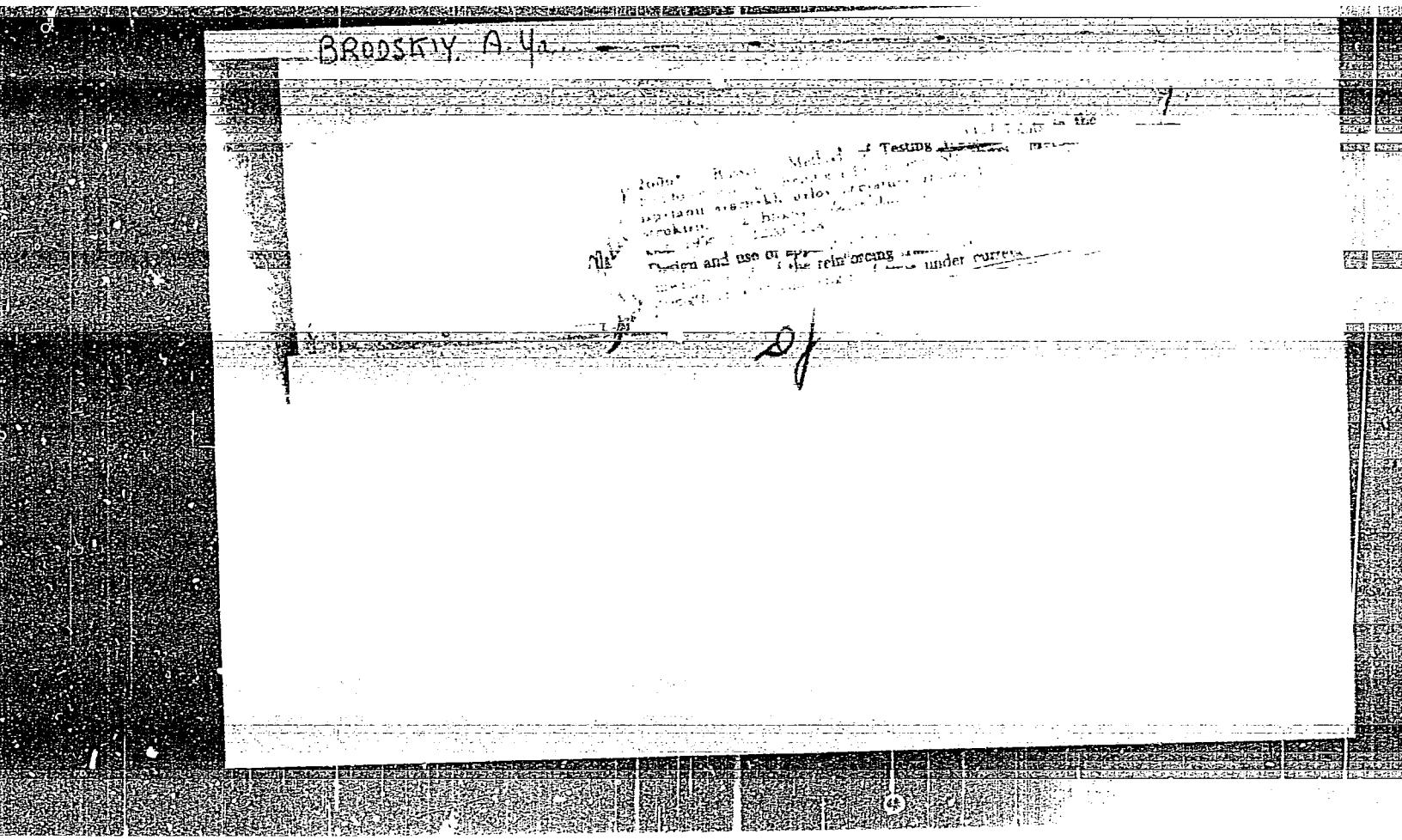
Equipment for assembling and spot welding of reinforced frame elements with multiple bar joints. Biul. stroi.tekh. 13 no.12: 10-12 D '56. (MLRA 10:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut promyshlennykh sooruzheniy.
(Electric welding) (Reinforced concrete)

BRODSKIY, A.Ya., kandidat tekhnicheskikh nauk.

Welding with flux of T-connections of inserted parts in precast reinforced concrete elements. Nov. tekh. i pered. op. v stroi. 18 no.9:14-16 S '56. (MLRA 9:10)

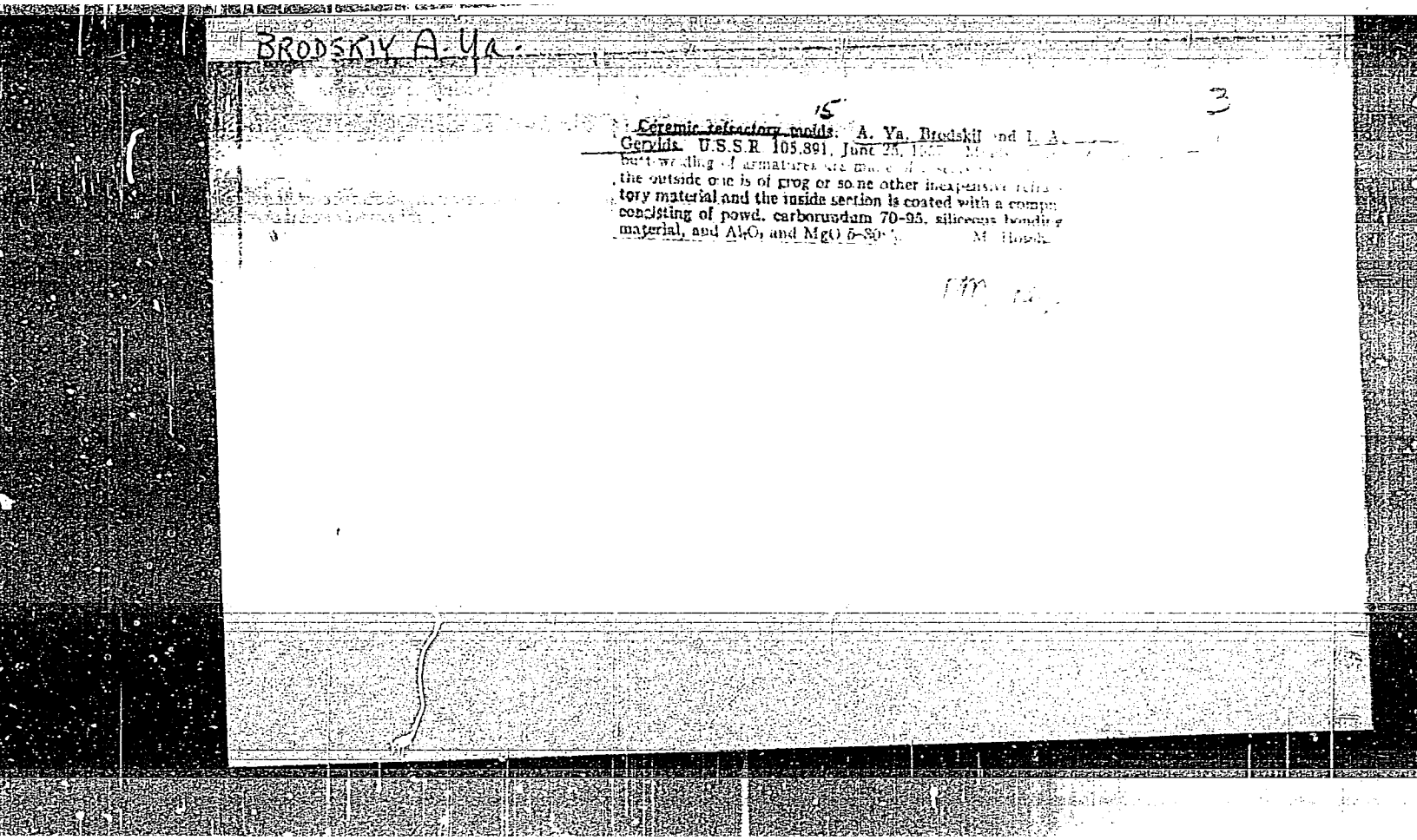
(Electric welding) (Precast concrete)



BRODSKIY, A.Ya.

Submerged-melt welding of the concrete reinforcing steel joints with a continuous slag formation. Stroi.prom. 34 no.11:15-18 N '56. (MLRA 9:12)

1. TSentral'nyy nauchno-issledovatel'skiy institut promyshlennykh sooruzheniy.
(Slag) (Welding)



BRODSKIY A.Ya.

15

3

Ceremic refractory molds. A. Ya. Brodskii and I. A. Gervids. U.S.S.R. 105,891, June 25, 1[illegible]. M[illegible]. [illegible] the outside one is of grog or some other inexpensive refractory material and the inside section is coated with a composition consisting of powd. carborundum 70–95, siliceous bonding material, and Al_2O_3 and MgO 5–30[illegible]. M. Hosch.

BRODSKIY, A.YA.

135-7-9/16

SUBJECT: USSR/Welding

AUTHOR: Brodskiy, A.Ya., Candidate of Technical Sciences.

TITLE: The Mechanism of "Slagging" in Tank-Welding. (O mekhanizme "zashlakovki" pri vannoy svarke).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, # 7, pp 22-24 (USSR)

ABSTRACT: The article deals with the "tank-welding" method which had been suggested long ago by N.G. Slavyanov and has been used in the USSR for 3-4 years in butt-welding of large-diameter reinforcement bars for reinforced concrete constructions.

Welding by this method on single phase current and with one electrode with a steel cramp serving as mold, is now practiced at the experimental welding plant of the "ЦНИИ МЧМ". This method was also used for reinforcement welding at the Kuybyshev Hydroelectric Plant (Kuybyshevgidrostroy). The Technical Conditions "ТУ 19-51" of the Ministry of Power Plants require a strength limit not below 42 kg/mm^2 for butt joints of profile bars of steel "Ст.5" (conditional stresses are meant, determined by dividing the breaking stress by the cross section area of the whole basic bar). According to Welding Construction Trust # 65

Card 1/4

135-7-9/16

TITLE: The Mechanism of "Slagging" in Tank-Welding. (O mekhanizme "zashlakovki" pri vannoy svarke).

(svarochno-montazhnyy trest # 65) of Glavstal'konstruktsiya- where 50 bars welded at the Kuybyshevgidrostroy have been tested - only 20 of the 50 tested butt joints disrupted under load corresponding to stresses of 42-43 kg/mm^2, 10 joints broke at 38-41 kg/mm^2, and 20 joints - at 25-37 kg/mm^2. 90 % of the joints which failed to pass the test contained defects in the form of non-fusion over 30 to 60 % of the cross-section area, caused by "slagging" of the bar butts, i.e. solidifying of slag on the butts during the initial stage of tank-welding.

At Stalingradgidrostroy, 21 % of 503 welded reinforcement bars made of steel "CT.5" with a diameter of 22-80 mm, did not pass the test, mainly due to non-fusion and "slagging" (mostly in the bottom portion of the joint). According to data from the Kakhovskaya Hydroelectric Plant, non-fusion and slag inclusions were also the most frequent defects of butt joints. Electrode combs which were used for the purpose of increasing productivity of work, led to even more "slagging" when welding was performed on the aforementioned steel cramps.

Card 2/4 By experimenting with graphite bars and copper cramps, with

TITLE: The Mechanism of "Slagging" in Tank- Welding. (O mekhanizme "Zashlakovki" pri vannoy svarke).

cooled copper bars in combination wit a copper cramp, and with steel bars assembled on a steel brace with copper tubes for water cooling brazed to it on the outer side, - the mechanism of "slagging" was understood and the following conclusions were made:
1) The "slagging" occurs when the bar butts conduct heat more intensively than the mold walls.
2) The intensity of "slagging" grows with the intensity of heat losses of the bar butts, i.e. with the growing bar diameter, or with growing heat-conductivity factor of bar material.
3) The degree of "slagging" on the bar butts can be controlled, for example by applying heat to the bar butts, or intensive cooling of molds, or using molds of materials which are more heat-conductive than the bar material (for instance copper).
The article contains 4 photographs, 1 series of sketches, and 2 bibliographic references (both Russian).

Card 3/4

135-7-9/16

PROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000307010001-9

TITLE: The Mechanism of "Slagging" in Tank- Welding. (O mekhanizme "Zashlakovki" pri vannoy svarke).

ASSOCIATION: Central Research Institute for Constructions of the Building and Architecture Academy. (Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsii Akademii stroitel'stva i arkhitektury).

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 4/4

Brodskiy, A Ya

BRODSKIY, A.Ya.

Reply to engineer L.V. Glebov. Avtom.svar. 10 no.6:83-86 N-D '57. (MIRA 11:1)

1.TSentral'nyy nauchno-issledovatel'skiy institut stroitel'noy konstruktsii Akademiy stroitel'stva i arkhitektury SSSR.
(Steel, Structural—Welding)
(Electric welding)

PHASE I BOOK EXPLOITATION 1019

Brodskiy, A.Ya., Candidate of Technical Sciences

Elektrodugovaya i elektroshlakovaya svarka stykov armatury zhelezobetona (Electric Arc and Electroslag Butt Welding of Concrete Reinforcements) Moscow, Gosstroyizdat, 1958. 140 p. 8,000 copies printed.

Scientific Ed.: Zvegintseva, K.V., Engineer; Ed. of Publishing House: Skvortsova, I.P.; Tech. Ed.: Toker, A.M.

PURPOSE: This book is intended for engineering and technical personnel employed by design bureaus and construction organizations. It may also be used as a textbook for students attending construction and technical vuzes.

COVERAGE: The author discusses the electric arc and electroslag butt welding of rods and bars used in reinforced concrete structures. Basic information on reinforcement steel, strength requirements for welded joints, and a detailed description of various methods of welding and their classification are presented. Detailed information on engineering and strength properties of various welding

Card 1/4

methods are given as well as an evaluation of these methods. Generalized data on the selection of a suitable welding method for given conditions are also presented. Although the basic principle of electric arc puddle welding dates back to the last century, great progress in this method of welding has been made in the last 4 or 5 years, according to the author. Experimental work in this field was and is being conducted by the Moskovskoye vyssheye tekhnicheskoye uchilishche imeni N.Ye. Baumana (Moscow Higher Technical School imeni N.Ye.Bauman), the TsNIISK of the Akademiya stroitel'stva i arkhitektury SSSR (USSR Academy of Construction and Architecture), the Opytnyy svarochnyy zavod (Experimental Welding Plant) of the Mosgorsovnarkhoz, the Leningradskiy institutut inzhenerov vodnogo transporta (Leningrad Institute of Water Transportation Engineers), the electric arc welding section of the USSR Academy of Sciences, the Ural'skiy politekhnicheskiy institut imeni Kirova (Ural Polytechnic Institute imeni Kirov) and other organizations. These processes have been and are being applied in the construction of the Kuybyshev, Kakhovka and Stalingrad hydroelectric plants. No personalities are mentioned. There are 70 references, of which 67 are Soviet and 3 German.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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1-6-59

Card 4/4

SOV 125-58-3-7/15

AUTHORS: Brodskiy, A.Ya., Sokolovskiy, P.I. and Fridman, A.M.

TITLE: Spot Welding of a Reinforcement Framework with Heat Treatment of Cluster Joints Between the Electrodes of the Machine (Tochechnaya svarka armaturnykh karkasov s termicheskoy obrabotkoy uzlov mezhdu elektrodami mashiny)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 3, pp 50-56 (USSR)

ABSTRACT: Thus far, reinforcement frames for concrete structures were are-welded. Experience has shown that contact spot welding is cheaper and more efficient in the production of reinforcement frames without diagonal links. However, joining three or five periodical-profile "St 5"-steel bars into cluster joints by contact spot welding entails metal hardening at the joint, caused by fast heating and subsequent fast cooling. The article gives a detailed description of experiments carried out for the purpose of eliminating this hardening. Engineer V. Yakovleva took part in the experiments. The developed technology consists in subsequent heating of the joints to a definite temperature between the electrodes of the welding machine and in slow cooling. Details of technology are given in table 3. Chemical composition of the

Spot Welding of a Reinforcement Framework with Heat Treatment of Cluster Joints Between the Electrodes of the Machine

periodic-profile steel used for the experiments is also given. The described method has been put to practical use in the reinforcement workshop of a Chelyabinsk construction project. Automatic heat treatment between machine electrodes requires modernization of the standard welding machines and welding transformers.
There are 3 tables, 1 photo, 2 figures, 5 graphs, 2 sets of microphotos and 5 Soviet references.

ASSOCIATION: TsNIISK

SUBMITTED: September 25, 1956

1. Reinforcing steel--Spot welding 2. Spot welds--Effectiveness
3. Welded joints--Heat treatment

BRODSKIY A.YA

AUTHOR: Brodskiy, A.Ya. 125-58-5-6/13

TITLE: On Methods of Evaluating the Resistance of Weld Metal to the Formation of Hot Cracks in Arc Welding (O metodike otsenki stoykosti metalla shva protiv obrazovaniya goryachikh treshchin pri dugovoy svarke)

PERIODICAL: Avtomaticheskaya Svarka, 1958, Nr 5, pp 41-44 (USSR)

ABSTRACT: The MVTU method of N.N. Prokhorov and S.A. Kurkin (with Kurkin's specimen as is shown in figure 1) and the VNII Mintransmash method of L.A. Fridlyand and K.I. Timofeyev (with the use of special test machine) were tested on steel "14G2" and "14KhGS" (GOST 5058-57-standard) and on killed steel "MSt.3". The test results differed. The author points out the faults of the Kurkin specimen, which does not reproduce the actual conditions of the deformation of metal in the process of welding. It is concluded that the VNII Mintransmash method clearly reveals the changes in the strength of metal welded to different steels, with the "UP2/45" and "OMM-5" electrodes. It is suitable for revealing the technological strength of intercrystalline layers, conditioned by their chemical composition. The essence of the method is in the

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On Methods of Evaluating the Resistance of Weld Metal to the Formation of Hot Cracks in Arc Welding

measurements of the special machine, which permits control of the rate of deformation of the specimen, by bending it in the welding process. The method is schematically illustrated (Fig. 2,3). There are 5 figures and 4 Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel' nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Research Institute of Construction Designs of the USSR Academy of Construction and Architecture)

SUBMITTED: June 26, 1957

AVAILABLE: Library of Congress

SOV-135-58-10-6/19

AUTHOR: Brodskiy, A.Ya., Candidate of Technical Sciences

TITLE: New Welding Method by Electric Rivet Fusing (Novyy sposob svarki elektrozaklepkami proplavleniyem)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 10, pp 18-21 (USSR)

ABSTRACT: A new welding method is described, developed at TsNIISK by O.V. Kuznechikov, graduate of the MVTU, and consisting of the fusing of rivets through 3 or more parts (Fig. 8). The fundamental parameters of the new welding technology with a.c. arc feed are: type and diameter of electrode, secondary short-circuit current, electrode deposition, axial load on the electrode and dimensions of a copper ring serving to form the electric rivet head. Tests proved that the strength of weld joints increased with larger electrode diameters and increased number of welded spots. Further investigations of the new method are being performed and equipment designed for practical application is being developed.

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There are: 1 diagram, 1 circuit diagram, 4 sets of photos, 4 graphs and 3 Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury (Central Scientific Research Institute of Construction Design Attached to the Academy of Construction and Architecture)

1. Arc welding--Applications 2. Welded joints--Test results

AUTHOR: Brodskiy, A.Ya. SOV-125-58-10-5/12

TITLE: The Weld-Ability of Low-Alloy Manganese "14G2" Grade Steel (Svarivayemost' nizkolegirovannoy margantsovistoy stali 14G2)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 10, pp 44 - 54 (USSR)

ABSTRACT: Information is presented on investigations to determine the weldability of "14G2" grade manganese steel in the manual arc welding process. Roller tests were performed on slabs from two castings (chemical composition given in table 1) which were selected by Candidate of Technical Sciences P.I. Sokolovskiy for the purpose of determining changes of steel properties with different welding parameters, the sensitivity of steel to stress concentrators in welding and to choose the proper electrodes. It was concluded that "14G2" steel has satisfactory properties. Best results were obtained in welding with "E42A" and "E50A" electrodes. As unsatisfactory deoxidation reduces the quality of "14G2" steel, proper attention should be paid to the technology of deoxidizing commercial casts

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The Weld-Ability of Low-Alloy Manganese "14G2" Grade Steel

of this steel. There are 7 graphs, 5 tables, 1 diagram and 5 Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Scientific Research Institute of Building Structures of the USSR Academy of Building and Architecture)

SUBMITTED: August 24, 1958

1. Manganese steel--Welding 2. Arc welding--Electrodes 3. Arc welding--Metallurgical effects

BRODSKIY, A.Ya., kand. tekhn. nauk.

Methods for testing welded joints of high-strength steel reinforcements in concrete elements. Biul. stroi. tekh. 15 no.1:16-19 Ja '58. (MIRA 11:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR.
(Reinforced concrete--Testing)

BRODSKIY, A.Ya., kand. tekhn. nauk; YEVGEN'YEV, I.Ye., kand. tekhn. nauk; FRIDMAN, A.M., inzh.; TSAPLIN, V.P., inzh.

Device for controlling strength of joints in welded reinforcements. Nov. tekh. i pered. op. v stroi. 20 no.4:11-12 Ap '58. (MIRA 11:3)
(Reinforced concrete)

BRODSKIY, A.Ya., kand.tekhn.nauk

Weldability of low-alloy chromemanganese silicon steels used for steel structures. Nov.tekh.mont. i spets.rab. v stroi. 20 no.12:18-21 D '58. (MIRA 12:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR.
(Steel alloys—Welding)

BRODSKIY, A.Ya., kand. tekhn. nauk (Moskva).

Calculating processes of spot contact welding of concrete reinforcements. Prom. stroi. 36 no.11:39-40 N '58.
(MIRA 12:1)

(Electric welding) (Reinforced concrete)

BRODSKIY, A.Ya., kand.tekhn.nauk; PODLYASHUK, A.B., inzh., red.

[Welding joints of reinforcements of reinforced concrete construction elements] Svarka stykov armatury zhelezobetonnykh konstruktsii. Moskva, 1959. 27 p. (MIRA 13:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. Byuro tekhnicheskoy informatsii. 2. Rukovoditel' svarochnogo kabineta laboratorii metallicheskikh konstruktsii TSentral'nogo nauchno-issledovatel'skogo instituta stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (for Brodskiy).
(Reinforced concrete) (Steel--Welding)

PHASE I BOOK EXPLOITATION SOV/5232

Brodskiy, A.Ya., ed.

Payka nerzhaveyushchikh staley i zharoprochnykh splavov (Brazing of Stainless Steels and Heat-Resistant Alloys) Moscow, 1959. 51 p. 5,000 copies printed. (Series: Moskovskiy Dom nauchno-tekhnicheskoy propagandy. Peredovoy opyt proizvodstva. Seriya: Progressivnaya tekhnologiya mashinostroyeniya, vyp. 18)

Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Resp. Reviewer for This Publication: L. M. Garmash; Tech. Ed.: R.A. Sukhareva.

PURPOSE: This collection of articles is intended for brazers.

COVERAGE: The collection contains three articles discussing general problems encountered in brazing. The joining of thin-walled pipes and the importance of flame brazing are given special attention. No personalities are mentioned. There are no references.

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Brazing of Stainless Steels (Cont.) SOV/5232

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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SOV/97-59-3-13/15

AUTHORS: Brodskiy, A. Ya., and Trofimov, V. I., Candidates of Technical Sciences

TITLE: Welding of Reinforcement Joints During Assembly of the Skeleton of a Multi-Story Industrial Building

PERIODICAL: Beton i zhelezobeton, 1959, Nr 3, pp 138-139 (USSR)

ABSTRACT: Giprostroymaterial Institute devised a joint between column and beam using a "bath" weld in the place of ordinary hand electric arc welding. This new joint was tried out on the frame of Karacharovo timber mill (designed by A. P. Vlasov, Architect, and V. I. Trofimov, Candidate of Technical Sciences) and proved to be much simpler than other methods of jointing (see Fig 2). A detailed description of the construction of this mill is given (see Fig 1). Fig 2 shows laying of floor slabs and their tying-in with the beam. The strength of joint between the floor slabs and beams is of the same order as the joint investigated in TsNIPS (see S.M. Krylov: "Problems of Contemporary Reinforced Concrete Constructions", Gosstroyizdat 1952). The method of "bath"

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Welding of Reinforcement Joints During Assembly of the Skeleton of a Multi-Story Industrial Building

welding joints of reinforcement in a copper form using comb electrodes was worked out between 1952 and 1953 in TsNIPS by V. A. Baldin and A. Ya. Brodskiy and described in "Welding of steel reinforcement of reinforced concrete by means of comb electrodes" (Avtogennoye delo, Nr 4, 1953). Fig 3 shows welding together of six bars in one operation by means of a detachable copper clip. Fig 4 shows joint ready for welding. The comb electrode used for welding is of mark UOII-13/45 of 5 mm diameter, consisting of five units. The finished weld is illustrated in Fig 5. The arcs are fed by alternating current STE-32, STE-34 or STN-500 of 500 amps. Welding of a packet of three 36 mm diameter rods lasts 8 minutes. The strength of multi-layer reinforcement welds made under laboratory conditions was tested in the Laboratory for Metal Constructions of the Institute of Building Constructions ASiA USSR (Laboratoriya metallicheskikh konstruktsiy Instituta stroitel'nykh Konstruktsiy ASiA SSSR) and the values obtained are tabulated on p 138. The tests complied with norms TU.73-56 and proved that bath

Welding of Reinforcement Joints During Assembly of the Skeleton of a Multi-Story Industrial Building

welding of joints using copper clips and comb electrodes is very effective. Scientific worker A. M. Fridman and welder A. F. Yevsyukov of the Institute of Building Constructions ASiA USSR took part in these investigations. There are 5 figures and 1 table

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18(5), 25(1,5) SOV/135-59-7-7/15

AUTHOR: Brodskiy, A. Ya., Candidate of Technical Sciences

TITLE: Resistance Welding in the Manufacture of Steel Reinforcements for Steel-Reinforced Concrete Structures (Kontaktnaya svarka v proizvodstve armatury zhelezobetonnykh konstruktsiy)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 7, pp 23-26(USSR)

ABSTRACT: The author reviews the application of resistance welding in manufacturing reinforcements for steel-reinforced concrete structures. He compares Soviet welding machines used for this purpose with similar foreign models. Mentioning a large number of Soviet welding machines, the author points to certain deficiencies. He states that the existing Soviet models must be improved and that the scientific research organizations must develop new and more perfect models. There are 3 photographs, 1 set of graphs and 15 references, 11 of which are Soviet, 2 German, 1 French

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Resistance Welding in the Manufacture of Steel Reinforcements for Steel-Reinforced Concrete Structures (Kontaktnaya svarka v proizvodstve armatury zhelezobetonnykh konstruktsiy)

and 1 Swiss.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy akademii stroitel'stva i arkhitektury (Central Scientific Research Institute of Structural Designs of the Academy of Construction and Architecture)

18(5,7) SOV/125-59-5-5/16

AUTHOR: Brodskiy, A.Ya., Candidate of Technical Sciences

TITLE: On Using Low Alloyed Silicon-Manganese Steel for Welded Building Constructions

PERIODICIL: Avtomaticheskaya svarka 1959, Vol 12, Nr 5, (74) pp 45-54 (USSR)

ABSTRACT: The article presents the results of tests for weldability, made with steel type 15GS. For the investigation three samples of steel 15GS were taken, which were produced by the factory "Krasnyy Oktyabr'" (Red October). The contents of carbon in one sample were on the lower limit of the GOST-5058-57-Standard and in another sample nearer the higher limit. The silicon concentration of both samples was lower than that demanded by the standard. The third sample had a medium carbon concentration, while the silicon content was on the lower limit. The fluidity limit of the steel with the lowest carbon concentration was at a thickness of 20 mm, 0.4 - 3.6 kg/mm^2, less than demanded. The impact

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On Using Low Alloyed Silicon-Manganese Steel for Welded Building Constructions

strength of the samples with low and medium carbon concentration was at a temperature of - 40° 3 Kgm/cm^2 lower than demanded by the standard. The results of the tests were compared with the data of a parallel test, made with steel NL2, where also three samples were used. Here the carbon concentration was nearer the higher limit. Schedule 1 shows the exact chemical composition of both types and their mechanical qualities, given by Candidate of Technical Sciences P.I. Sokolovskiy. For the welding electrodes type UP-2/55. SM-11 and UP-2/45 were used. For the test of sensibility against "tension concentrator" the tests made by Kintzel' with 30 mm thick samples with sharp incisions (r=0.1 mm) were used. The results showed, that the samples with high and medium carbon concentration had a higher sensibility within the zone of thermic influence than steel type NL-2. The sample with low carbon concentration and low silicon concentration was equal to the corresponding

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On Using Low Alloyed Silicon-Manganese Steel for Welded Building Constructions

sample of steel NL2. In other tests it could be seen, that steel 15GS with 0.12% C and 0.55% Si does not have a higher reaction to the natural tension concentrator than steel NL2. Steel with medium carbon concentration and a low silicon concentration cannot be welded satisfactorily, but this steel can be welded well with a minimum carbon and silicon concentration. It could be seen in the tests, that steel type 15GS in a composition corresponding to standard GOST-5058-57 is not to be used for welded building constructions. Steels with changed chemical compositions shall be tested the same way later on. There are 6 graphs, 4 diagrams and 3Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Scientific Investigation Institute of Building Constructions of the Academy of Buil-

SOV/125-59-5-5/16

On Using Low Alloyed Silicon-Manganese Steel for Welded Building Constructions

ding and Architecture USSR).

SUBMITTED: November 3, 1958

Card 4/4

GUSAROV, N.N., inzh. Prinimali uchastiye: ANDREYEV, V.V., inzh.; RABOTNOV, B.A., inzh.; FEDOTOV, L.Ye., inzh., nauchnyy red. BALDIN, V.A., retsenzent; BRODSKIY, A.Ye., kand.tekhn.nauk, retsenzent; SAVALOV, I.G., kand.tekhn.nauk, retsenzent; LEVI, S.S., kand.tekhn.nauk, retsenzent; SOKOLOV, V.S., kand.tekhn. nauk, retsenzent; LEBEDEV, Yu.I., retsenzent; RAZUMOVA, E.D., inzh., retsenzent; DOLGIKH, V.G., inzh., retsenzent; MAKSIMOV, K.G., red.izd-va; PUL'KINA, Ye.A., tekhn.red.

[Provisional instructions on using gamma rays in controlling welded joints of reinforcements in reinforced-concrete construction elements] Vremennaia instruktsiia po kontroliu svarnykh soedinenii armatury zhelezobetonnykh konstruktsii prosvechivaniem gamma-luchami. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 46 p.
(MIRA 14:2)

1. Russia (1923- U.S.S.R.) Ministerstvo stroitel'stva elektrostantsiy. Tekhnicheskoye upravleniye. 2. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy (for Baldin, Brodskiy). 3. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Baldin). 4. VNIIOMS (for Savalov, Levi). 5. TSentral'naya nauchno-issledovatel'skaya laboratoriya Gosgortekhnadzora (for Sokolov). 6. Zamestitel' glavnogo sanitarnogo inspektora, Sanitarnaya inspektsiya SSSR (for Lebedev). 7. TsNIP Ministerstva stroitel'stva elektrostantsiy (for Razumova). 8. Trest Sevzapenergomontazh (for Dolgikh).
(Gamma rays--Industrial applications) (Reinforcing bars--Welding)

S/125/60/000/012/004/014
A161/A030

AUTHORS: Brodskiy, A.Ya; Fridman, A.M; Yermanok, Ye.Z; Frolov, S.A.

TITLE: Resistance Welding of 30KhG2S Reinforcement Steel for Pre-Stressed Reinforced Concrete Structures

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 12, pp. 28 - 36

TEXT: The weldability of 30ХГ2С (30KhG2S) reinforcement steel in resistance welding machines has been investigated and practical recommendations are given. The standard composition of this steel (GOST 5058-57) is: 0.26 - 0.35% C; 0.6 - - 0.9% Si; 1.2 - 1.6% Mn; 0.6 - 0.9% Cr; not above 0.3% Ni and Cu (each); the mechanical properties: conditional yield limit $\sigma_{0.2} \geq 60$ kg/mm^2; ultimate strength $\sigma_в > 90$ kg/cm^2; elongation $\delta_5 > 6\%$; bending angle 45° in cold state around a mandrel with diameter equal to 5 diameters of the tested rod. Rods used for experiments were periodical, with 14 - 28 mm diameter, produced by the Stalino and Magnitogorsk metallurgical works. Round test specimens with sharp notch in different heat affected zones, so-called ЦНИПС(TsNIPS specimens) were used with success first of all with other reinforcement steel, but had to be replaced with Menazhe (Russian transliteration) notch specimens for 30KhG2S because of its very high notch sensitivity. It proved also very sensitive to inaccuracy of connection

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Resistance Welding of 30KhG2S Reinforcement Steel for Pre-Stressed Reinforced Concrete Structures

angle in cross connections as well as to burns in machine grips during resistance welding. It is recommended to prevent burns by using electrodes with a wide contact surface, to raise the gripping effort, to carefully clean the surface of electrodes and rods, and to reduce the current density in these spots, which is possible by not only conducting current to the bottom electrodes but also to the upper hold-downs made from copper alloy. In view of the high sensitivity to heating time with butt welding, preheating should be carried out, (not too drastically) - e.g. continuous fusing is not premissible - for chilling in the heat-affected zone reduces strength through the formation of martensite spots (Fig. 3) which affects deformability and thus causes cracks. The formation of martensite can be prevented by heat treatment between the electrodes of resistance welding machines fitted with special automatic devices. [Abstracter's note: No details of such devices are mentioned]. The optimum welding process conditions were found in experiments in an АСИф-75 (ASIF-75) welder with a recorder which enabled the duration and temperature of preheating, the magnitude of upsetting, the number of preheating cycles, and the total welding time to be determined. The optimum values of the following major parameters were determined: setting length $l_{уст}$,

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Resistance Welding of 30KhG2S Reinforcement Steel for Pre-Stressed Reinforced Concrete Structures

fusion length $l_{опл}$, and upsetting length $l_{ос}$, as well as the transformer stage. The optimum process was determined by the shape of the curves of breaking load, bending angle and impact strength in butt joints. For medium-diameter reinforcement rods the $\frac{l_{усл}}{d}$, $\frac{l_{опл}}{d}$ and $\frac{l_{ос}}{d}$ values must be 2.8; 0.7 and 0.35 respectively. Butt joints in 20 and 28 mm diameter rods were so welded in ASIF-75 and MCP-100 (MSR-100) welders. In spot welding of cross joints the weldability of 30KhG2S steel was much lower than of Ст.5 (St.5), and the highest possible mechanical strength was obtained with about 2 sec. holding (St.5 requires three times as much holding). With St.5 rods, spot welded connections can be obtained with mechanical strength not below the strength of the base metal, regardless of the transformer stage, but in 30KhG2S spot welds the strength can drop drastically and be very uneven. The cause is the presence of martensite and heterogeneous structure. The properties of cross joints can appearantly be improved by heat treatment in the welding machine (between electrodes) (Ref. 3) (A. Ya. Brodskiy, P.I. Sokolovskiy. A.M. Fridman, "Avtomaticheskaya svarka", No. 3, 1958). Conclusions: 1) Resistance welding with 30KhG2S reinforcement steel is more difficult than with other Soviet reinforcement steel grades, but butt joints

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A161/A030

Resistance Welding of 30KhG2S Reinforcement Steel for Pre-Stressed Reinfor ed Concrete Structures

are possible with ultimate strength not below the standard minimum for this steel. 2) Smooth Cr.3 (St.3) steel rods can be joined with 30KhG2S rods by spot welding into cross joints without weakening the rods. Cross joints of 30KhG2S with 30KhG2S have not more than 86% of initial metal strength before welding. 3) Brittleness is the drawback of all joints in 30KhG2S steel rods made by resistance welding, but it may be eliminated by heat treatment between electrodes. There are 6 figures and 3 Soviet references.

ASSOCIATIONS: TsNII stroitel'nykh konstruktsiy ASiA SSSR (TsNII of Construction Frameworks AS and A USSR). A.Ya. Brodskiy and A.M. Fridman; NII zhelezobeton pri Mosgorispolkome (Scientific Research Institute for Reinforced Concrete at Moscow City Executive Committee), Ye.Z. Yemanok; MVTU imeni Baumana (MVTU imeni Bauman), S.A. Frolov

SUBMITTED: March 3, 1960

Card4/4

18.1210
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80266
S/125/60/000/04/007/018
D003/D006

AUTHOR: Brodskiy, A.Ya. and Chzhan Syu-Chzhi

TITLE: On the Weldability of Certain Structural Aluminum Alloys

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 4, pp 36-46 (USSR)

ABSTRACT: Experiments were carried out with aluminum alloys improvable by heat treatment, with the use of argon arc process and 5-10 mm thickness of the joined elements. The purpose was to check the weldability of the alloys in such thickness, since they proved not weldable in 1-3 mm thickness, i.e. the strength of welds was too low and they developed cracks. The investigated alloys were "AMg6", "M40", "V95" and "V92". Argon from Balashikhinskiy kislorodnyy zavod (Balashikha Oxygen Plant) was used in the experiments. Details of experimental techniques are

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On the Weldability of Certain Structural Aluminum Alloys

given. The following conclusions were made- 1) The "AMgA-M" and "AMg6" can be recommended for use in welded structures but the "AMg6" developed pores in elements over 5 mm in thickness, and means must still be found to do away with porosity. The welds of "AMgA-M" had the same mechanical strength as the base metal. In 10 mm thickness, welds of the "AMg6" had the strength of about 70% of the base metal and welds of the "AMg6" and 5 mm thickness was between 80 and 95%. 2) Welds in alloys improvable by heat treatment made by electrodes of the "AMg6" and "AV-K" alloy developed no cracks although the welded specimens were fixed. When an infusible electrode was used without filler metal cracks formed in molten metal and spread

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On the Weldability of Certain Structural Aluminum Alloys

into the parent metal. 3) The strength of butt joints in elements 10 mm thick welded with the "AMg6" wire was about 60% of the base metal strength. In elements of the "V95A-T" 10 mm thick welded by the "AMg6" wire, strength was only 50% of the base metal. 4) Heat-affected zone (determined by distribution of hardness) spreads differently in different types and grades of alloys. In the "AMg6" it did not depend on the arc power in the range of 6000-13,000 kalories per centimeter weld length but at more intense arc heat the zone of lowered hardness spread further, and the hardness in metal dropped. In heat-susceptible "D16A-T" and "V95A-T" the zone of heat effect and lowered hardness was considerably greater and depended directly on the arc power. The low-hardness portion in these al-

On the Weldability of Certain Structural Aluminum Alloys

loys was within a certain distance of the fusion zone, and spreading of the fusion zone also depended on the arc power. Engineer A.S. Rakhmanov took part in the experiments. There are 5 graphs, 1 diagram, 2 sets of photographs, 2 tables, and 3 Soviet references.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Scientific Research Institute of Constructional Structures of the Academy of Construction and Architecture of the USSR)

SUBMITTED: September 14, 1959

82289

S/135/60/000/007/006/014
A006/A002

18.7200

AUTHOR: Brodskiy, A. Ya., Candidate of Technical Sciences

TITLE: Deep-Fusion Arc Spot Welding

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 7, pp. 18-21

TEXT: In Reference 1, the author investigated a new arc spot welding method which differs from conventional processes insofar as the weld joints are produced without piercing the upper element being welded, at a thickness of 10 mm and more. Further experiments to develop this method were carried out by laboratory assistant V.A. Sinyakovskiy under the supervision of the author. Information is presented on the results obtained. The experimental investigation was carried out with 6; 8; 10 and 20 mm thick "МСТ.3" (MST.3) strip steel and "БСТ.5" (BST.5) steel, and "УОНИ-13/55А" (UONI-13/55A) (d = 4) and "УОНИ-13/55" (UONI-13/55) or "УП 22" (UP22) (d=5 and 6 mm) electrodes. A laboratory welding device shown in Figure 1 was used. The arc was fed from a "ТСД-1000" (TSD-1000) transformer. The arc was excited during the initial welding stage by a "ОСПЗ-1" (OSPZ-1) oscillator. The deep-fusion welding process is divided into 5 stages: 1) ignition of the arc; 2) beginning of the metal fusion and formation of a closed cavity; 3) fusion of

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Deep-Fusion Arc Spot Welding

the metal to the required depth; 4) filling of the fused cavity; 5) formation of a reinforced head. Changes in the current and voltage depend on the conditions of the electrode tip and of the coating lip formed on the electrode tip during the first arc spot welding. An oscillogram is given representing the current and voltage during the initial fusion period for three cases: 1) the contact between the electrode and the surface being welded is a spot; 2) the height of the lip is 2-3 mm; 3) the contact surface between the electrode tip and the metal is large. Characteristics of each stage are given. It is shown that the use of a "ПС-500" (PS-500) arc feed generator is unfit for deep fusion welding on d-c. By investigating the correlation between the axial load on the electrode and fusion characteristics, the author establishes that the axial load exerts a pronounced effect on the fusion depth. If the loads are below the limit value, increased axial load causes a greater fusion depth. A load approaching the limit value reduces the depth of fusion. Under the effect of excess load the electrode is bent to an angle whose increased inclination reduces the strength of the coating. The presence of a gap between the elements being welded reduces the strength of the weld joints. The assembly of the elements must therefore be made very carefully. Their maximum thickness, which is 25 and 30 mm, was determined by tests with 20; 25 and 30 mm thick upper and 6 mm thick bottom plates made of "14Г" (14G) sheet steel. The joints were free of defects, such as hot cracks,

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due to the positive effect of a high manganese content in the steel. The loss of electrode material was determined by chemical analysis. The micro-gas analysis of the arc atmosphere was made by D.S. Kostyukova of NII betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (Scientific Research Institute of Concrete and Reinforced Concrete at the Academy of Construction and Architecture of the USSR). The strength of weld joints performed by the new method was tested on specimens with a different number and arrangement of the rivet welds. It shows that highest and most durable strength was produced by two-electrode arc spot welds with displaced axes. There are 7 figures, 4 tables and 1 Soviet reference.

ASSOCIATION: TSNII stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Scientific Research Institute of Building Structures of the USSR Academy of Construction and Architecture)

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BRODSKIY, A.Ya., kand.tekhn.nauk; FRIDMAN, A.M., inzh.

Arc welding of 30KhG2S reinforcing steel for prestressed reinforced concrete construction elements. Bet.i zhel.-bet. no.6:261-266 Je '60. (MIRA 13:7)
(Steel, Structural--Welding)
(Reinforced concrete)

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S/135/60/000/010/007/015
A006/A001

1.2300 only 2208, also 2408

AUTHORS: Brodskiy, A. Ya., Candidate of Technical Sciences, Rakhmanov, A. S., Engineer

TITLE: Two-Electrode Semi-Automatic Argon-Arc Welding of Aluminum Alloys

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 10, pp. 22-24

TEXT: A method of two-electrode semi-automatic argon arc welding of aluminum alloys from one feed source was developed with the participation of L. S. Livshits, Candidate of Technical Sciences, from VNIIST. It was intended to attain thereby an increase in the crystallization time of the seam metal and a higher welding efficiency. For this purpose the ПШП-9 (PShP-9) semi-automatic machine for one-phase two-electrode welding was redesigned at the welding laboratory of the department of metal structures at TsNIISK. The electric circuit of the machine remained the same, bu the electrode feed was modified as follows: the wires are fed through a flexible hose from two containers to the pistol. From the hose thy are supplied to a pulling device consisting of a roll with two semi-circular grooves and a pinion gear. Through a hollow pipe the wires enter a copper current-conducting tip with two eccentric apertures and are

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Two-Electrode Semi-Automatic Argon-Arc Welding of Aluminum Alloys

then supplied through the tip to the welding area. The gap between the electrode wires and their arrangement in respect to the symmetrical axis of the pistol may be varied by turning the tip. The optimum gap between the wires was found to be 2 mm. It was established by further experiments that the possibility of regulation was of great importance in developing the welding technology, since it affected the crystallization time of the welding pool, the width of the seam and the penetration depth. Tests performed with AMg alloy pipes of 377 mm external diameter proved the good quality of one-pass two-electrode argon-arc welding under the following conditions: V-shaped unblunted chamfer of the pipe edges with angles of taper of 30 - 50°; assembly of the pipes without a gap on a backing ring with a shaping groove; welding with 380 - 400 amps current; 12 - 13 m/hour speed; 12 - 15 l/min argon consumption; 300 m/hr electrode feed and 1.5 mm AMg wire diameter. The wire is degreased and undergoes a special etching treatment prior to welding. The ultimate strength of welds produced by the described method is 19 - 22 kg/mm^2. The developed technology provides for an extended welding current limit and increased coefficient of build-up, raising the efficiency of the process. Investigations showed that mechanical

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oscillations (about 100 osc/min) of the wires were probably due to the interaction of the electric fields originated around the electrodes. Porosity is sharply reduced. The strength of welds produced by the two-electrode welding process is not below that of joints made with one electrode. There are 5 figures, 2 tables and 1 Soviet reference.

ASSOCIATION: TsNIISK Akademii stroitel'stva i arkhitektury (TsNIISK of the Academy of Construction and Architecture) Brodskiy; VNIIST (Rakhmanov).

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BRODSKIY, A.Ya.; FRIDMAN, A.M.; YERMANOK, Ye.Z.; FROLOV, S.A.

Resistance welding of 30KhG2S steel for prestressed reinforced concrete construction. Avtom. svar. 13 no.12:28-36 D '60.
(MIRA 13:11)

1. TSentral'nyy naucho-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (for Brodskiy, Fridman). 2. Nauchno-issledovatel'skiy institut zhelezobetona pri Mosgorispolkome (for Yermanok). 3. Moskovskoye vysshaye tekhnicheskoye uchilishche im.Baumana (for Frolov).
(Reinforcing bars—Welding)
(Prestressed concrete)

BRODSKIY, A.Ya.

Preventing cracks in craters of welded 14G2 steel joints. Prom.stroi. 38 no.6:59-60 '60. (MIRA 13:7)

1. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'noy konstruktsii Akademii stroitel'stva i arkhitektury SSSR.
(Steel, Structural)

PHASE I BOOK EXPLOITATION SOV/5587

Brodskiy, Arkadiy Yakovlevich, Candidate of Technical Sciences

Svarka armatury zhelezobetonnykh konstruktsiy (Welding of Concrete Reinforcements) Moscow, Gosstroyizdat, 1961. 378 p. Errata slip inserted. 8,000 copies printed.

Sponsoring Agency: Akademiya stroitel'stva i arkhitektury SSSR. Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy.

Reviewer: G. A. Nikolayev, Honored Scientist and Technologist, Corresponding Member. Academy of Construction and Architecture USSR, Professor; Scientific Ed.: D. L. Glizmanenko, Candidate of Technical Sciences; Ed. of Publishing House: M. N. Kuznetsova; Tech. Ed.: Ye. L. Temkina.

PURPOSE: This book is intended for engineers and technicians engaged in the design and production of welded concrete reinforcements and for foremen in plants manufacturing prefabricated

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ferroconcrete products. It may also be useful to students specializing in construction and welding.

COVERAGE: Basic problems involved in welding concrete reinforcements are reviewed. The following are discussed: the weldability of steel by various welding methods; designs of welded reinforcements and joints; specifications for strength of welded joints; processes of the resistance butt and spot welding of reinforcements; elements of thermal calculations; methods for scheduling the spot-welding regimes for reinforcements; the physical metallurgy of welding; the heat treatment of welded joints; and results of investigations on the behavior of welded joints in ferroconcrete. Attention is also given to a description of modern equipment for the resistance welding of concrete reinforcements and to a consideration of the organization of labor in production and the engineering-economic efficiency of various welding methods. The author thanks G. A. Nikolayev, Honored Scientist and Technologist of the RSFSR, Corresponding Member of ASiA SSSR (Academy of Construction and

Architecture USSR); M. S. Borishanskiy and S. A. Dmitriyev, Senior Staff Members of the NIIbetona i zhelezobetona ASiA SSSR (Scientific Research Institute of Concrete and Ferroconcrete of the Academy of Construction and Architecture USSR); and A. M. Fridman, Junior Staff Member. There are 200 references, mostly Soviet.

TABLE OF CONTENTS:

S/097/61/000/001/004/004
A053/A029

AUTHORS: Brodskiy, A.Ya., Candidate of Technical Sciences, Senior Scientific Coworker, Fridman, A.M., Junior Scientific Coworker

TITLE: Reply to an Article by A.A. Ulesov and V.Ya. Dul'kin on the Misrepresentation of Electric Arc Bath Welding

PERIODICAL: Beton i zhelezobeton, 1961, No. 1, pp. 28-30

TEXT: A.A. Ulesov and V.Ya. Dul'kin have raised two questions in their article - one concerning the effectiveness of bath welding in general with regard to butt joints of reinforcement rods - and the other on butt welding of reinforcement joints in reference to steel of 30ХГ2С(30KhG2S) grade. Ulesov and Dul'kin try to solve the question rationally by applying the characteristics of bath welding of brand Ст.3 (St.3) and Ст.5 (St.5) steel to 30KhG2S steel which is a mistake. The experience of Ulesov and Dul'kin are based on the production of monolithic reinforced (but not prestressed) concrete constructions, dealing with field welding of 80-90 mm rods made from

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Reply to an Article by A.A. Ulesov and V.Ya. Dul'kin on the Misrepresentation of Electric Arc Bath Welding

Cm.4 (St.4) and Cm .5 (St.5) carbon steel, which belong to the easily weldable grades. On the other hand there exist steel grades, as shown in the table issued by Mashgiz in 1951, which are only weldable if thermically treated before or after the welding process. Such are the steels of 30ХГС (30KhGS) and 35ХГС (35KhGS) grade. Since thermic treatment is not applicable on the site, the utilization of such high-grade low-alloy steel for welding purposes in concrete reinforcement is prohibitive. In commenting on the statements and proposals of Ulesov and Dul'kin the authors of this article explain the reasons, why bath welding of the butt joints of reinforcement rods is not to be recommended in reinforced concrete structures and arrive at the following conclusions: 1) Steel of 30 KhG2S grade from which high-grade rods for prestressed reinforced concrete structural elements are made, having a diameter of 10-32 mm belong according to ГОСТ 5058-57 (GOST 5058-57) to the number of difficult weldable steels. 2) The butt welding of the joints of such rods can only be executed in plants, while resistance butt welding appears to be the most progressive method of welding. 3) In the ab-

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Reply to an Article by A.A. Ulesov and V.Ya. Dul'kin on the Misrepresentation of Electric Arc Bath Welding

sence of resistance butt welding machines, reliable butt joints of rods from 30KhG2S steel can be obtained from arc welding by the application of round bars, in accordance with the technology contained in the "Directives", 4) Bath welding of butt joints of rods from 30KhG2S steel does not ensure sufficient strength and should therefore not be applied. 5) The utilization of covers in butt welding of joints of rods from 30 KhG2S steel is permissible only if there are no other more progressive methods of welding available. In this connection TsNIISK has developed and introduced a certain number of methods of mechanized welding of rods made from steel of St.3, St.5, 25ГС (25G2S), 35ГС (35GS), 18Г2С (18G2S) grades etc (electroslag hand welding and multi-electrode bath welding methods), TsNIISK is constantly engaged in investigating and developing more progressive and more perfect means (semi-automatic and automatic electroslag welding) for the general welding method, as worked out by the Institut elektrosvarki im.Patona (Electrowelding Institute im.Paton). There is 1 table and 1 Soviet reference.

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ULESOV, A.A., elektrosvarshchik, dvazhdy Geroy Sotsialisticheskogo Truda; DUL'KIN, V.Y.; BRODSKIY, A.Ya., kand.tekhn.nauk, starshiy nauchnyy sotrudnik; FRIDMAN, A.I., mladshiy nauchnyy sotrudnik; MASHOV, V.V.; KARTASHOV, K.P.

Welding the 30KhG2S reinforcing steel. Bet. i zhel.-bet. no.1:25-31 Ja '61. (MIRA 14:2)

1.Kuybyshevgidrostroy (Ulesov). 2. Starshiy inzh.otdela issledovaniya i kontrolya Kuybyshevgidrostroya (for Dul'kin). 3. Direktor TSentral'nogo nauchno-issledovatel'skogo instituta stroitel'nykh konstruktsiy (for Nasonov). 4. Direktor Nauchno-issledovatel'skogo instituta betona i zhelezobetona (for Kartashov).
(Reinforcing bars—Welding)

1.2390

27380
S/125/61/000/003/004/016
A161/A133

AUTHORS: Brodskiy, A.Ya.; Chang Hsiu-chih

TITLE: Effect of the argon-arc welding conditions on the surface of welds in the welding of aluminum alloys with consumable electrode

PERIODICAL: Avtomaticheskaya svarka, no. 3, 1961, 27 - 31

TEXT: The causes of wrinkled weld surfaces in welding aluminum alloy parts in other than aircraft structures, i.e., elements of 5 - 10 mm and higher thickness, were investigated in experiments. Welding was effected with an automatic welder on AMr6 (AMg6) alloy with wire of the same alloy. Data of other investigations are mentioned in which it was found that, if the welding current is raised above a certain limit, it spoils the welds and makes the surface uneven, porous and dirty. The "wrinkle" formation is explained by the pressure of the arc on the liquid pool and insufficient argon shielding, the formation of a thick oxide film, and shifting of the film together with liquid metal into wrinkles. The phenomenon has to be studied, for welding of thick parts in structures requires a strong current. The effect was determined by the welding speed, arc voltage angle of incline of the welding nozzle, argon consumption, distance between the

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nozzle end and weld metal surface, internal diameter of nozzle, neck of electrode wire, and diameter of electrode wire. The discussion of every parameter effect is illustrated with a graph. It is stressed that the optimum argon consumption is found for only one nozzle design, and should be corrected for various nozzles, but the linear dependence stated between the optimum argon consumption and the inner nozzle diameter will provide an aid for the selection of welding process data. The conclusion is drawn that the maximum permissible welding current is possible at the lowest practically possible welding speed, arc voltage and space between the nozzle end and weld surface, and at an optimum consumption (12 - 25 l/min with an inner nozzle diameter of 16 mm, or 22 - 46 l/min with 30 mm, and nozzle incline angle of 80°; an inner nozzle diameter in the range 16 - 40 mm and the wire neck have slight and about equal effect. There are 7 figures and 4 Soviet-bloc references.

ASSOCIATION: TsNII stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR (Central Scientific Research Institute of Structural Parts Academy of Construction and Architecture of the USSR)

SUBMITTED: April 4, 1960

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