125-58-7-8/1

AUTHOR: Paton, B.Ye., and Lavrdskiy, V.A.

TITLE: A New Ignition Circuit of Ignitrons in Contact Welding Machines (Novaya skhema zazhiganiya ignitronov v mashinakh dlya kontaktnoy svarki)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 7, pp 48-51 (USSR)

ABSTRACT: A new circuit of independent ignitron ignition is suggested which does not require the use of lead resistances. The square shape of the voltage curve of the current feeding the ignitron igniter circuit is obtained by the use of a ferro-resonance circuit. This ensures a continuous magnitude and shape of the current pulse in the ignition circuit. The described method was tested with good results in butt flash welding. It is suggested that this circuit be used in other contact welding machines equipped with ignitron interrupters.
There are 2 circuit diagrams, 1 oscillogram, and 1 Soviet reference

ASSOCIATION: Institut elektrosvarki imeni Ye.O.Patona AN USSR (Institute of Electric Welding imeni Ye.O. Paton, AS Ukr.SSR)

Card 1/2

SOV/125-58-11-2/16

AUTHORS: Paton, B.Ye., Medovar, B.I. and Latash, Yu.V.

TITLE: The Electric Slag Remelting of Steels and Alloys in a Copper Water-Cooled Crystallizer (Elektroshlakovyy pereplav staley i splavov v mednom vodookhlazhdayemom kristallizatore)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 11, pp 5-15 (USSR)

ABSTRACT: Information is given on a new method to improve the properties of various steel grades and alloys with the use of electric slag melting of electrodes in a water-cooled copper crystallizer. Rods can be obtained which are heavy and large in diameter. The most important advantage of the new method is the possibility to use alternating current. It was first introduced in May 1958 at the "Dneprospetsstal'" plant on a special electric slag remelting device designed by the Institute of Electric Welding imeni Ye.O. Paton. The authors thank Senior Laboratory Worker L.I. Belyatsev and other workers from the Yuzhno-trubnyy zavod (Southern Pipe Plant), the Novo-Kramatorskiy mashinostroitel'nyy zavod (Novo-Kramatorsk Machinebuilding Plant) and "Elektrostal'" plant for their cooperation in developing the new method.

Card 3/3

Prob Electro Welding in Ye. O. Paton 45 Ukr SSR

AUTHORS: Paton, B.Ye. and Zavadskiy, V.A. SOV/125-58-12-1/13

TITLE: A Measuring Device for Circuits With an Ignitron Breaker (Izmeritel'nyy organ skhem s ignitronnym preryvatelem)

PERIODICAL: Avtomaticheskaya svarka. 1958, Nr 12, pp 3-11 (USSR)

ABSTRACT: Various systems for measuring effective current values and voltages are analyzed. A circuit of a measuring device is suggested consisting of a non-linear active resistance in the form of an electronic tube and capacitance. The input voltage feeds the anode circuit of the tube, and the resistance switched in the tube grid is a variable parameter. The use of one, two or four triodes increases the admissible changes of voltage from 50 to 200 v. The advantage of the system is the possiblity of changing the characteristics with the use of grid resistance. The measuring device can measure effective values of the input voltage with changes of the ignitron ignition angles from 30 to 150°. The device can be recommended for automatic control of circuits and for measuring the effective value of welding currents in contact machines.
There are 8 sets of circuit diagrams and 5 graphs.

~~Card 1/2~~

Inst Elec Welding im Ye O Paton AS UkrSSR

BLITSHTEYN, Aleksandr Zinov'yevich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; MAYEVSKIY, V.V., inzh., red.

[Electric plug and stud welding] Svarka elektrozaklepkami, privarka shpilek i shtiftov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 45 p. (MIRA 13:1)
(Electric welding) (Rivets and riveting)

ASNIS, Arkadiy Yefimovich; LATASH, Yuriy Vadimovich; MEDOVAR, B.I., kand.tekhn.nauk, red.vypuska; PATON, B.Ye., otv.red.; KASIMIROV, A.A., red.; PODGAYETSKIY, V.V., red.

[Cast iron welding] Svarka chuguna. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1959. 62 p. (MIRA 13:5)
(Cast iron--Welding)

ZARUBA, Igor' Ivanovich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; DUDKO, D.A., kand.tekhn.nauk, red.vypuska; MAYEVSKIY, V.V., red.

[Automatic and semiautomatic welding of sheet steel] Avtomaticheskaia i poluavtomaticheskaia svarka tonkolistovoi stali. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 62 p. (MIRA 12:11)
(Sheet steel—Welding) (Electric welding)

PATON B YE.

TARKHOV, Nikolay Alekseyevich; RAKHMANOV, Aleksandr Dmitriyevich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., kand.tekhn.nauk, red. vypuska; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; POD-GAYETSKIY, V.V., red.; MAYEVSKIY, V.V., red.

[Electrodes for arc welding and hard facing] Elektrody dlia dugovoi svarki i naplavki. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 63 p. (MIRA 13:2)
(Electric welding--Equipment and supplies)

KASATKIN, Boris Sergeyevich; MANDEL'BERG, Simon L'vovich; ASNIS, A.Ye., kand.tekhn.nauk, red.vypuska; PATON, B.Ye., otv.red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; MAYEVSKIY, V.V., inzh., red.izd-va

[Electric arc welding of low-alloy steels] Elektrodugovaia svarka nizkolegirovannykh stalei. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 68 p. (MIRA 13:3)
(Steel alloys--Welding)

RABKIN, Daniil Markovich; GUREVICH, Samuil Markovich; BUGRIY, Filipp Semenovich; PATON, B.Ye., otv.red.; ASNIS, kand.tekhn.nauk, red.vypuska; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; SERDYUK, V.K., inzh., red.

[Nonferrous metal welding] Svarka tsvetnykh metallov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 69 p. (MIRA 12:7)

(Nonferrous metals--Welding)

MEDOVAR, Boris Izrailevich; PATON, B.Ye., akademik, otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; PODGAYETSKIY, V.V., red.; MAYEVSKIY, V.V., inzh., red.

[Electric arc welding under flux] Avtomaticheskaia elektrodugovaia svarka pod fliusom. Kiev, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 73 p. (MIRA 12:11)

1. AN USSR (for Paton).
(Electric welding)

STERENBOGEN, Yuriy Aleksandrovich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; MANDEL'BERG, S.L., inzh., red.vypuska; SERDYUK, V.K., inzh., red.

[Electric slag welding] Elektroshlakovaia svarka. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 81 p. (MIRA 13:4)

(Electric welding)

FRUMIN, Isidor Il'ich; PATON, B.Ye., otv.red.; PODGAYETSKIY, V.V., kand. tekhn.nauk, red.vypuska; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; MAYEVSKIY, V.V., red.

[Automatic built-up welding under flux] Avtomaticheskaia naplavka pod fliusom. Moskva, Gos.nauchno-tekhn.izd-vo mashinostr.lit-ry, 1959. 109 p. (MIRA 12:10)
(Electric welding) (Hard facing)

PATON, B.Ye., akademik, red.; PISARENKO, M., red.; GUSAROV, K. [Husarov, K.], tekhn.red.

[E.O.Paton Institute of Electric Welding] Instytut elektrozvariuvannia im. IE.O.Patona. Pid.red.B.IE.Patona. Kyiv, Derzh.vyd-vo tekhn.lit-ry, 1959. 155 p. (MIRA 12:12)

1. Akademiya nauk USSR, Kiyev. Institut elektrosvarki. 2. AN USSR (for Paton).
(Kiev--Electric welding)

PATON, B.Ye., akademik, red.; PISARENKO, M., red.; GUSAROV, K., tekhn.red.

[E.O.Paton Institute of Electric Welding] Institut elektrosvarki im. E.O.Patona. Pod red. B.E. Patona. Kiev, Gos.izd-vo tekhn. lit-ry USSR, 1959. 159 p. (MIRA 13:4)

1. Akademiya nauk USSR, Kiyev. Institut elektrosvarki. 2. AN USSR (for Paton).
(Kiev--Learned institutions and societies)
(Electric welding)

25(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/, tom. 1: Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dikushin, Academician; Compiler: V.M. Raskatov; Ed. of Publishing House; V.A. Kotov; Tech. Ed.: I.F. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.N. Aksenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tselikov, A.D. Tomlenov and V.T. Meshcherin; welding - G.A. Nikolayev, B.I. Frolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

TABLE OF CONTENTS:

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PHASE I BOOK EXPLOITATION SOV/3947

Elektroshlakovaya svarka (Electroslag Welding) 2d ed., rev. and enl. Moscow, Mashgiz, 1959. 406 p. Errata slip inserted. 6,500 copies printed.

Reviewer: I.I. Zaruba, Candidate of Technical Sciences; Ed. (title page): B.Ye. Paton, Laureate of the Lenin Prize, Academician, Academy of Sciences USSR; Eds. (inside book): P.G. Grebel'nik, Candidate of Technical Sciences, and G.D. Tynyanyy; Chief Ed. (Southern Division, Mashgiz): V.K. Serdyuk, Engineer.

PURPOSE: This book is intended for technical personnel studying the electroslag-welding process.

COVERAGE: The book contains information on the essentials, characteristic features, and advantages of electroslag welding. Thermal and metallurgical characteristics of the processes of electroslag welding and surfacing of steels and other metals are described. Also described are constructions of welding equipment and automatic-control systems for electroslag welding. The following persons participated in writing the book: Candidates of Technical Sciences G.Z. Voloshkevich, S.A. Ostrovskaya, D.A. Dudko, I.K. Pokhodnya, Yu. A. Sterenbogen, G.V. Zhemchuzhnikov, P.I. Sevbo, B.I. Medovar, and D.M. Rabkin; Engineers I.N. Rublevskiy

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PATON, B. Ye.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 425 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

PATON, Yevgeniy Oskarovich [deceased]; SAVIN, G.N., akademik, red.; DOBROKHOTOV, N.N., red.; KHRENOV, K.K., red.; BELYANKIN, F.P., red.; PATON, B.Ye., red.; KAZANTSEV, B.A., red.izd-va; REMENNIK, T.K., red.izd-va; KADASHEVICH, O.A., tekhn.red.

[Selected works in three volumes] Izbrannye trudy v trekh tomakh. Kiev, Izd-vo Akad.nauk USSR. Vol.1. [Studies of the performance of bridge span structures] Issledovaniia raboty proletnykh stroenii mostov. 1959. 578 p. (MIRA 12:12)

1. AN USSR (for Savin).
(Bridges, Iron and steel)

Paton B. Ye

24(8) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

The high degree of purity necessary for satisfactory deformation of molybdenum can be obtained in electric arc furnaces only with high vacua of the order of 10^{-3} mm Hg and with proper deoxidation. Ingots weighing up to 15 kg, made under these conditions, are free of defects in the central zone, irrespective of the rate of cooling after melting. Because of their relatively fine grain structure and the distinctness of their grain boundaries, such ingots can be deformed by any method including hammer forging provided proper cooling and reduction conditions are adhered to. The deformed molybdenum exhibits satisfactory ductility characteristics at room temperature.

The method, based on the separation of elements during crystallization, makes it possible to obtain aluminum 99.9999 percent pure, but is at present very costly and time consuming.

The ingot is formed of metal from one or more melting electrodes.

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APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001239

PATON, B. Ye.; MEDOVAR, B. I.; LATASH, Yu. V.; MAKSIMOVICH, B. I.

Alektroshlakovyi pereplav raskhoduyemydh alektrodov v vodookhlazhdyemom kristallizatore.

report submitted for the 5th Physical Chemical Conference on Steel Production Moscow, 30 Jun 1959.

S/137/62/000/001/107/237
A052/A101

AUTHOR: Paton, B. Ye.

TITLE: New development of the welding technology

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 46, abstract 1E290 (V sb. "Vopr. vnedreniya v proiz-vo peredovoy tekhnol., uluchsheniya kachestva vypuskayemoy produktsii i snizheniya yeye sebestoimosti". Kiyev, AN UkrSSR, 1959, 23-30)

TEXT: This is a review of the present state and the prospects of development of welding in the USSR. Special attention is devoted to the automatic flux welding, electroslag welding, automatic flux building-up, gas electric welding, resistance welding. Examples of their effective application in industry and of the economic effect achieved are cited.

Ye. Terpugov

[Abstracter's note: Complete translation]

Card 1/1

PATON, B., akademik

Wide-rang daring. NTO no.1:7 Ja '59. (MIRA 12:2)

(Research)

PATON, B.Ye., akademik; GORBUNOV, G.V., inzh.; LEBEDEV, V.K., kand. tekhn. nauk; OSTAPENKO, N.G., kand. tekhn. nauk; LITVINCHUK, M.D., inzh.

Resistance welding of main trunk pipelines. Svar. proizv. no.2:1-5 F '59. (MIRA 12:1)

1.Institut elektrosvarki imeni Ye.O. Patona AN USSR.
(Pipelines--Welding) (Electric welding)

SOV/135-59-7-3/15

25(1,5) 28(1)

AUTHOR: Paton, B.Ye., Academician of the AS, UkrSSR,
Tebedev, V.K., Candidate of Technical Sciences

TITLE: Works of the Institute of Electrical Welding imeni Ye.O.Paton of the AS, UkrSSR in the Field of Resistance Welding

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 7, pp 7-12(USSR)

ABSTRACT: The author describes briefly the research performed by the Institut elektrosvarki imeni Ye.O. Patona AN USSR (Institute of Electrical Welding imeni Ye.O. Paton, AS UkrSSR) in the field of resistance welding. For butt welding of rails, engineers S.I. Kuchuk-Yatsenko and V.S. Sakharnov developed a new welding technology, based on the application of continuous fusion. The institute developed rail welding machines K-135 and K-134. Engineer N.V. Podola worked on the application of low-frequency current for butt welding reducing the operating frequency of the MTAR-25 welding machine from 50 to 10 cycles. Candidate of Tech-

Card 1/3

Works of the Institute of Electrical Welding imeni Ye.O. Paton of the AS, UkrSSR in the Field of Resistance Welding

nical Sciences, R.I. Yashkevich and engineer S.I. Kuchuk-Yatsenko worked on fusion welding of longitudinal pipe seams. Engineers Yu.D. Yavorskiy, M.D. Litvinchuk, and P.M. Prikhod'ko worked on an automatic welding machine producing valve blanks for internal combustion engines in cooperation with the Yaroslavskiy motornyy zavod (Yaroslavl' Engine Plant). Candidate of Technical Sciences Yu. A. Pachentsev, engineers V.A. Sakharnov and Yu.N. Yankin worked on suspended spot welding machines with built-in transformers. Engineers P.M. Prikhod'ko and V.A. Sakharnov worked on spot welding of T-joints. Candidate of Technical Sciences I.V. Kirdo and engineer I.Y. Oleynik worked on welding longitudinal seams of pipes with high frequency current. Engineers V.A. Zavadskiy, O.V. Popovskiy and Yu.S. Grodetskiy worked on automatic controls of welding operations. Candidate of Technical Sciences G.P. Sakhatskiy and engineer B.M. Shirokovskiy

Card 2/3

Works of the Institute of Electrical Welding imeni Ye.O.Paton of the AS UkrSSR in the Field of Resistance Welding

worked on a device for automatic thermal treatment of welded cable butts. There are 5 photographs, 4 graphs, 2 diagrams, 1 table and 11 Soviet references

ASSOCIATION: Institut elektrosvarki imeni Ye.O.Patona AN USSR (Institute of Electrical Welding imeni Ye.O. Paton, AS UkrSSR)

Card 3/3

PATON, B.Ye., akademik, laureat Leninskoy premii

New developments in electric welding. Nauka i zhyttia 9 no.10:16-20 O '59. (MIRA 13:2)

1. AN USSR, direktor Instituta elektrosvarki im. Ye.O.Patona AN USSR.
(Electric welding)

PATON, B Ye.

SOV/125-59-5-13/16

18(5,7), 25(5)
AUTHOR: None Given

TITLE: Scientific-Technical Conference on Questions of Welding Engineering

PERIODICAL: Avtomaticheskaya svarka, 1959, Vol 12, Nr 5 (74) pp 95-96 (USSR)

ABSTRACT: The scientific-technical conference on question of welding engineering convened in Khar'kov from March 11- 13, 1959. The following organizations convened in the conference: The Scientific-Technical State Committee of the Council of Ministers of the UkrSSR, the Khar'kov Sovnarkhoz, the Institute of Electric Welding imeni Ye.O. Patona of the Academy of Sciences of the UkrSSR, the Kiyev and Khar'kov oblast administrative NTO of the machine industry. After the introduction of the Chairman of GNTK UkrSSR, G.F. Kostenko, the conference heard the report of Academician AS UkrSSR, B.Ye. Paton "On the Reintroduction and production of Welding Engineering". After that, the following reports were heard at the conference: Member of Gos Plan UkrSSR

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SOV/125-59-10-4/16

18(5), 28(1)

AUTHOR: Paton, B.Ye., Academician, and Grodetskiy, Yu.S., Engineer

TITLE: The Programming of Welding Processes

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 10, pp 31-38 (USSR)

ABSTRACT: The article is concerned with programming installations for the automatic regulation of fast and prolonged welding operations, and the author divides the operations into 3 groups. The first one is that for fast welding processes, the program of which is illustrated in Fig 1. The program of the voltage may be arrived at simply and accurately by means of the lay-out given in Fig 2. The power of the resistances r is selected as being less than r_1, r_2, r_3; the voltage in the resistances r is thus $U_I' = r(i_1 + i_2 + i_3)$ and $U_I'' = r(i_5 + i_6 + i_7)$. In order to synchronize the voltage program with the circuit the switches k_1, k_2, k_3 must be switched off when the current transfer reaches zero, the required voltage being maintained by the connection of the appropriate switch (k_4 in Fig 2). This lay-out allows for a very accurate system which

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The Programming of Welding Processes

is also synchronized with the circuit, and can in addition be used for programming other factors, such as pressure. In this case peak-transformers (Fig 2) or rapid-action electromagnetic relays are inserted in the circuit; the peak-transformers have 2 peak windings, each feeding its own group of tiratron circuits (even and odd). This voltage cycle must be repeated periodically for the programming of roller welding, all the tiratrons being switched off in the same way as above by means of a discharge circuit (Fig 3). Fig 4 contains an oscillogram of the program voltage illustrated in Figs 2 and 3. In the section devoted to welding processes of average duration, the author deals with operations lasting 1-2 secs. These can be carried out in accordance with the aforementioned method, but to avoid an excess of switches, an auxiliary electro-mechanical apparatus is installed, which guarantees the regular discharge of impulses. This consists of a peak-transformer in which voltage peaks are formed at moments of sharp alteration in the magnetic current, caused by the proximity of a

The Programming of Welding Processes

steel disc, which is synchronized with the circuit (illustrated in Fig 5a); the voltage peaks are illustrated in Fig 5b. Since one path of movement for the steel discs is insufficient, several are used, the number of peak-transformers equalling the number of paths. Finally, the programming of prolonged welding processes is dealt with. Here there is no need for synchronization with circuit voltage or for maintaining program voltage during each half-period or period; a programming installation for this kind of welding process must be of constant voltage, alternating at fixed intervals, it must be simple to use and must have no moving contacts. Photoelectric installations are the best for the purpose, and the program can be carried out as a black-and-white film (Fig 6a). Changes in the proportions of black and white are reflected in the amount of photoresistance and Fig 6b shows the dependence of the voltage at the bridge exit on the amount of light. This system can be used for several programs by means of a revolving

The Programming of Welding Processes

drum and the appropriate films; its advantages are its simplicity, its diversity of application and its clarity, while it is marred by being somewhat inaccurate. The inductive feeder shown in Fig 7 is sometimes used instead, enabling the sensitivity to be raised and zero discharge voltage to be attained. There are 7 diagrams and 2 Soviet references.

ASSOCIATION: Ordena trudovogo krasnogo znameni institut elektrosvarki imeni Ye.O. Patona AN USSR (Order of the Red Banner of Labor Institute of Electric Welding imeni Ye.O. Paton AS UkrSSR); AS USSR (Paton)

SUBMITTED: August 4, 1959.

SOV/125-59-12-3/18

25(1)

AUTHORS: Paton, B.Ye. and Zavadskiy, V.A.

TITLE: Some Peculiarities of Welding Current Control Systems with Ignitron Interrupters

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 12, pp 22-27 (USSR)

ABSTRACT: Peculiarities of the systems mentioned in the title are considered and the expediency is shown of analyzing the operation of these systems with the use of "control characteristics", which determine the interdependence between the welding voltage and the ignition angle of the ignitrons. The dynamic and static properties of the systems are analyzed. The conclusion is drawn that statical regimes corresponding to the equilibrium of the welding current control system and the ignitron breaker are easily analyzed with the aid of the control characteristics of the welding machine and the statical characteristics of the current regulator. The loss of control by the ignitrons each half-period has a substantial influence on the dynamic properties of the

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Some Peculiarities of Welding Current Control Systems with Ignitron Interrupters

system. To make an automatic control which would fully work off the disturbances in the half-period following their appearance it is necessary to use rather complicated and quick-working parts for the computing devices. During the half-period, these parts must accurately determine the necessary ignition angle of the ignitron. Sufficiently high dynamic properties of the control can be obtained by the introduction of an inertial link. The magnitude of the time constant of this link depends on the amplification coefficient of the control, the permissable mismatch and the work section of the control characteristic. There are 4 graphs.

ASSOCIATION: Ordena trudovogo Krasnogo znameni Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Order of the Red Banner of Labor Institute of Electric Welding Imeni Ye. O. Paton of the AS UkrSSR).

SOV/125-59-12-3/18

Some Pecularities of Welding Current Control Systems with Ignitron Interrupters

SUBMITTED: October 23, 1959.

Card 3/3

ZHEMCHUZHNIKOV, Georgiy Vladimirovich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; MANDEL'BERG, S.L., kand.tekhn.nauk, red. MAYEVSKIY, V.V., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[Welding of metal structures] Svarka metallokonstruktsii. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 73 p. (MIRA 14:1)

(Structural frames--Welding)

POTAP'YEVSKIY, Arkadiy Grigor'yevich; PATON, B.Ye., otv.red.; ASNIS, A.Ye., red.; KAZIMIROV, A.A., red.; MEDOVAR, B.I., red.; PODGAYETSKIY, V.V., red.; ZARUBA, I.I., kand.tekhn.nauk, red.vypuska; MAYEVSKIY, V.V., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[Welding in a protective atmosphere] Svarka v zashchitnykh gazakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 97 p. (MIRA 13:9)

(Welding) (Protective atmospheres)

MATIYKO, Nikolay Mikhaylovich [Matiyko, M.M.]; PATON, B.Ye. [Paton, B.IE.], akad., otv.red.; HEMEHHIK, T.K., red.izd-va; KRYLOVSKAYA, N.S. [Krylovs'ka, N.S.], tekhn. red.

[Development of electric arc welding in the Ukraine] Rozvytok duhovoho elektrozvariuvannia na Ukraini. Kyiv, Vyd-vo Akad. nauk URSR, 1960. 154 p. (MIRA 13:6)

1. AN USSR (for Paton).
(Ukraine--Electric welding)

VLADIMIRSKIY, T.A., doktor tekhn.nauk; VROBLEVSKIY, R.V., inzh.; GLEBOV, L.V., inzh.; GODIN, V.M., kand.tekhn.nauk; GUZOV, S.G., inzh.; GULYAYEV, A.I., inzh.; YERSHOV, L.K., inzh.; KOCHANOVSKIY, N.Ya., kand.tekhn.nauk; LYUBAVSKIY, K.V., prof., doktor tekhn.nauk; PATON, B.Ye., akademik, prof., doktor tekhn. nauk; RABINOVICH, I.Ya., kand.tekhn.nauk; RADASHKOVICH, I.M., inzh.; RYKALIN, N.N., prof., doktor tekhn.nauk; SPEKTOR, O.Sh., inzh.; KHRENOV, K.K., akademik, prof., doktor tekhn.nauk; CHERNYAK, V.S., inzh.; CHULOSHNIKOV, P.L., inzh.; SHORSHOROV, M.Kh., kand.tekhn.nauk; BRATKOVA, O.N., prof., doktor tekhn.nauk, nauchnyy red.; BRINBERG, I.L., kand.tekhn.nauk, nauchnyy red.; GEL'MAN, A.S., prof., doktor tekhn.nauk, nauchnyy red.; KONDRATOVICH, V.M., inzh., nauchnyy red.; KRASOVSKIY, A.I., kand.tekhn.nauk, nauchnyy red.; SKAKUN, G.F., kand.tekhn.nauk, nauchnyy red.; SOKOLOV, Ye.V., inzh., red.; IVANOVA, K.N., inzh., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Welding handbook] Spravochnik po svarke. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.1. 1960. 556 p. (MIRA 14:1)

1. AN USSR (for Paton, Khrenov). 2. Chleny-korrespondenty AN SSSR (for Rykalin, Khrenov).
(Welding--Handbooks, manuals, etc.)

25(1) SOV/125-60-1-1/18

AUTHORS: Paton, B.Ye., Mandel'berg, S.L., Lashkevich, R.I., Markov, V.P.

TITLE: On the Choice of a Production Method for Manufacturing Straight-Seam Large-Diameter Welded Pipes

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 1, pp 2-14 (USSR)

ABSTRACT: Different methods of manufacturing welded pipes used abroad (USA, Canada, England, France and East Germany) and in the USSR are reviewed. The Chelyabinskiy trubo-prokatnyy zavod (Chelyabinsk Pipe-Rolling Plant) produces pipes of hot-rolled "19G" steel, a metal of approximately the same composition as that used in France and West Germany. However, sheet thickness tolerances are not so strict as abroad, and the selection of metal by its mechanical properties is neglected. This explains why the mechanical properties of completed pipes differ widely, particularly those produced from the expansion of "19G". The Khartsyzskiy

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On the Choice of a Production Method for Manufacturing Straight-Seam Large-Diameter Welded Pipes

trubnyy zavod (Khartsyzsk Pipe Plant) and the zavod im. Il'icha (Plant imeni Il'ich) use stamping presses and roller bending machines for bending pipe edges as is the practice at the Chelyabinsk plant. This technique varies from those used in the USA and at the German Mannesmann-Hoesch works where pipes are formed in three press operations. The authors recommend the use of this foreign technique in new Soviet plants. The pipe production-line at the Mannesmann-Hoesch plant turns out 30 pipe blanks per hour, while a similar line at the Chelyabinsk plant produces 60 to 70 in the same time. High welding rates of 120 - 140 m/hr for pipes with a 8 to 10 mm rim thickness have been achieved in the USSR by twin-arc welding. Such efficiency is due to the use of the special pumice-like "AN-60" flux. The order of welding the inside and outside pipe seams varies in different countries and plants. At the Chelyabinsk plant the outside seam is welded first.

On the Choice of a Production Method for Manufacturing Straight-Seam Large-Diameter Welded Pipes

On technical grounds, however, the authors recommend that inside welding should be completed first, provided that the new assembly-welding machines are used for this purpose. This new machine for the continuous assembly and welding of inner pipe seams (Figure 4) is being developed at the Elektrostal'skiy zavod tyazhelogo mashinostroyeniya (Elektrostal' Heavy Machine Building Plant). Brief general design information is given and the authors state that the first model of such a machine is under construction at the German "Mannesmann-Meer" works. For the expansion of pipes, the Chelyabinskiy plant uses expanders analogous to those in West Germany and France. The Chelyabinsk plant operates an inspection installation similar to the one in use at the German Phoenix Rheinrohr works for testing pipes by means of ultrasonic defectoscopes. It consists of a carriage with feelers on a hanger moving along the

On the Choice of a Production Method for Manufacturing Straight-Seam Large-Diameter Welded Pipes

pipe seam. Water is used to improve acoustic contact and the defects are indicated by a sound signal and a pulse visible on the defectoscope screen. There are 6 diagrams, 2 graphs, and 12 references, of which 4 are Soviet and 8 English.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR (Order of the Red banner of Labor Institute of Electric Welding imeni Ye.O. Paton AS UkrSSR) (Paton, Mandel'berg, Lashkevich); Gipromez (Markov).

SUBMITTED: October 20, 1959

Card 4/4

S/135/60/000/002/001/00
A115/A02

AUTHOR: Paton, B.Ye., Academician and Lenin Prize Winner

TITLE: Present State and Further Development of Welding Engineering in the USSR

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 2. pp. 1 - 5

TEXT: In 1959 the production of welded materials at Ukrainian plants increased by 330,000 tons compared to 1958. The Uralmashzavod (Ural Machine Plant) and the Novo-Kramatorskiy mashino-stroitel'nyy zavod tyazhelogo mashinostroyeniya (Novo-Kramatorsk Heavy Machinery Construction Plant) saved 2 million rubles by replacing forged and rivetted machine parts by welded units. At present there are 11,000 arc-welded automatic and semi-automatic machines in the USSR. The Zhdanovskiy zavod tyazhelogo mashinostroyeniya (Zhdanov Heavy Machinery Construction Plant), the Gor'kiy and Stalino Sovnarkhozes, the Chelyabinskiy trubopro-katnyy zavod (Chelyabinsk Tube-Rolling Mill), etc, have begun an overall mechanization of the welding process. Figure 1 shows a P -912 (R-912) automatic CO_2-shielded welding machine. The Chelyabinskiy traktorniy zavod (Chelyabinsk Tractor Plant) saved 300,000 rubles per year by use of a welding and assembly installation for automatic flux-shielded welding of C -100 (S-100) tractor channel bars.

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S/135/60/000/002/001/003
A115/A029

Present State and Further Development of Welding Engineering in the USSR

The Kalininskiy vagonostroitel'nyy zavod (Kalinin Railroad Car Construction Plant) produces passenger railroad cars of 12-16 mm thick aluminum alloy parts obtained by automatic semi-enclosed arc welding. Automatic assembly welding with A-501 (A-501) automatic welding machines was first used in furnaces of the Nizhne-Tagil and Kuznetsk Metal Combines (Fig. 2). Figure 3 shows a K-155 (K-155) suspension welder for contact butt welding of rails. To facilitate the mechanization the Ministerstvo stroitel'stva Ukrainy (Ministry of Construction of the Ukraine) organized special welding boards in the trusts "Donbasstal'konstruktsiya", "Dneprostal'konstruktsiya" and "Promtekhmontazh No. 2". Special build-up sections were formed in the Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metal Combine). An installation for wear-resisting building-up of furnace charging bells is used by the Dnepropetrovsk DZMO Plant (Fig. 4). Figure 5 shows a hydroturbine blade built-up by a stainless ribbon electrode in the Leningradskiy metallicheskiy zavod im. Lenina (Leningrad Metal Plant im. Lenin). Severe criticism is directed to the Moscow City and District Sovnarkhoz and to the Leningrad, Sverdlovsk and Novosibirsk Sovnarkhozes, as well as to the Ministry of Transport and Ministry of Agriculture because in 1959 only 15 % of the planned 45 %

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S/135/60/000/002/001/003
A115/A029

Present State and Further Development of Welding Engineering in the USSR

(1965) mechanization were reached. Acute shortage of alloyed wires, covered electrodes, shielding gases and rolled iron is mentioned. The following recommendations are made: designing of fully automatic equipment for arc and contact welding, intensified research on automatic point, seam and butt welders. Present research includes a self-adjusting contact welder with computation of technique elements. Particular attention should be paid to prompt assimilation of new metals and alloys and mass-production of equipment for vacuum electron-beam welding (Fig. 6), welding in a controlled atmosphere, ultrasonic and high-frequency welding, etc. The GNTK of the USSR plans the edition of a catalogue showing various types of welding machines and equipment. Standardized welding equipment and a workable method of wear-resisting build-up of cold rollers are of primary importance. Valuable work was done by the Coordination Board of the Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O. Paton) and by the TsNIITMASh, LPI, NIAT, VIAM and VPTI. There are 6 figures.

ASSOCIATION: AN USSR (AS UkrSSR)

Card 3/3

PATON, B.E., prof. dr. inz.; PIWOWAR, Liliana, mgr. inz. [translator]

Welding in the future. Przegl. spaw 15 no.10:205-209 O'63

1. Prezes Ukrainskiej Akademii Nauk, Dyrektor Instytutu Spawalnictwa im. E.O.Patona, Kijow (for Paton).

18.5200

78188
SOV/1[illegible]-60-1-17/[illegible]

AUTHORS: Tselikov, A. I. (Member-Correspondent of the AS USSR), Paton, B. E. (Academician of the AS USSR)

TITLE: Production of Large-Diameter Welded Pipes in the West German Federal Republic and France

PERIODICAL: Stal', 1960, Nr 3, pp 243-252 (USSR)

ABSTRACT: The authors report in detail on the above subject after having visited pipe plants in France and West Germany in December, 1958. There are 15 figures.

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S/125/60/000/007/001 [illegible]
A161/A029

AUTHOR: Paton, B.Ye.

TITLE: Cybernetic and Program Control Systems for Welding Processes

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 7, pp. 3 - 11

TEXT: The article gives the content of a report delivered by the author at the conference on the occasion of the 90th birth anniversary of Academician Ak UkrSSR Ye.O. Paton. A brief review is made of existing program and cybernetic systems and the trend of their further development and possible applications The general layout of program control system for arc welding is shown in block diagram (Fig. 2), designed for maintenance of the parameters of the welding con ditions by controlling the deviations from the controlled value and by compound ing connections on disturbances; similar systems may be used for maintaining the voltage, the metal pool depth and the speed in electric slag welding proces Re search is completed for spot welding control by a parameter reflecting the forma tion of the solid spot weld core. The dilatometric method must be investigated as just this method reflects the conditions of the spot weld core, though it is accompanied with splatter, dependent on the accuracy of the welding machine as

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Cybernetic and Program Control Systems for Welding Processes

sembly, gives too different expansion of the spot core in different metals. [illegible] application possibilities of automatic regulators for spot welding machines by the voltage developed recently in the U.S. have to be studied. Resistance welding machines with program control will apparently be extensively applied in mass production and for particularly critical structures. Prepared optimum welding control programs will be sent to industrial plants. For roller welding, the optimum control parameter has yet to be found. It is very difficult to check the heat process and the current density on the butt ends in continuous-fusion welding, and in welding with intermittent heating, therefore other parameters have to be used so far. In continuous-fusion process, it is better to work with fusion [illegible] speed program and compounding current connection; the cross section area of wire may require programming of the welding transformer output voltage. Voltage must drop in the fusion process, which may be achieved by using an ignitron cut off or other means. Regulators of such type are already used successfully in machines for welding rails by continuous fusion. It was for a long time accepted that resistance butt welding cannot be used for critical joints, but the modern control systems make such welds much more reliable. They are similar to the way it is

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Cybernetic and Program Control Systems for Welding Processes

Figure 2. The general form of cybernetic control systems is shown in Figure 3. It includes a ВКУ or vychislitel'noye i korrektiruyushcheye ustroystvo (computing and correcting unit). (Designations in Figure 3: ПУ - programming unit; УБ - controlling unit; СА - welding machine; ВКУ - computing and correcting unit; В - outer disturbances; УВ - controlling action). The system may be completed by other computers correcting the "ВКУ" characteristics. For surfacing worn parts with unevenly worn surface it is better to adjust continually the process to obtain the wanted geometry. A special pickup may be used here for recording and memorizing the worn surface and from the memory unit the signal would be sent into a unit selecting the process control. Cybernetic systems are to be expected to appear in mass production with the use of arc welding, as well as in electric slag welding. Institut avtomatiki i telemekhaniki AN SSSR (Institute of Automatics and Telemechanics AS USSR) has developed a cybernetic system for pipe welding stands in which the longitudinal seams are welded. The system passed tests at the Moskovskiy trubnyy zavod (Moscow Pipe Plant). It continually measures the thickness of the billet strip at the entry into the shaping stands, the measurement result is memorized and introduced into the control system. The memory unit is synchronized with the speed of the billet, and it is therefore continually

S/125/60/000/007/001/010
A161/A029

Cybernetic and Program Control Systems for Welding Processes

known what is the thickness of the billet under the rotary welding transformer. As not only the thickness may change in the process, the set current must be changed, and this is done automatically by correction for the seam temperature. Analogous systems ought to be used in automobile industry for welding bent elements and tight-sealed vessels. A possible block diagram of a general cybernetic system is illustrated (Fig. 4). (Designations in the diagram: СА - welding machine; БИЭП - unit measuring the power parameters; БИП - unit measuring and transforming non-electric values into electric; БП - memory unit; ПУ - programming unit; УС - comparison unit; УИБ - amplyfying servo unit; БКВ - correcting unit working with preset criteria). There exist also units permitting evaluation of the control quality in the process and if necessary correcting the operation of the correcting units. There are 4 diagrams.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN UkrSSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O. Paton of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: March 10, 1960

Card 4/4

PATON, B., akademik, laureat Leninskoy premii

A new branch of industry. NTO 2 no.8:2-4 Ag '60. (MIRA 13:10)

1. AN USSR. Direktor Instituta elektrosvarki im. Ye.O.Patona.
(Electric welding)

83635

S/029/60/000/009/001/005
B013/B060

1.2300
1 2310

AUTHOR: Paton, B. Ye., Academician of the Academy of Sciences UkrSSR, Lenin Prize Winner

TITLE: Sparks Jointing Metal

PERIODICAL: Tekhnika molodezhi, 1960, No. 9, pp. 1-4

TEXT: The author of the present article, Boris Yevgen'yevich Paton, Stalin Prize Winner, Academician Akademii nauk USSR (Academy of Sciences UkrSSR), Director of the Institut elektrosvarki imeni Ye O. Patona (Institute of Electric Welding imeni Ye. O. Paton), was awarded the Lenin Prize in 1956 together with a group of collaborators of his Institute for achievements in the development and introduction of molten-slag arcless electric welding. The Institute with its present staff totaling about 600 persons was awarded the Order of the Red Workers' Banner. Various welding techniques are discussed in the present article. Welding engineering has been shown a new road for its progress in the next seven years by a recent resolution adopted by the Sovet Ministrov SSSR (Council of Ministers USSR). The production volume of welded structures must be

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Sparks Jointing Metal

more than doubled by 1965 as compared with the 1958 figures. In addition, important qualitative changes are envisioned for this branch of engineering. The first specialized areas and plants for the production of welded structures and for the repair of parts by build-up welding, etc., are now being established in the USSR. The production of welding equipment is to be quadrupled by 1965 as compared with 1957. Together with electric oxy-cutting, welding has become one of the leading production techniques. Novel structure types with changed production techniques, such as in shipbuilding, blast-furnace construction, and pipe production thus arise. Great new possibilities arise in the heavy industry due to the introduction of molten-slag arcless electric welding. In the Novo-Kramatorskiy zavod tyazhelogo mashinostroyeniya (Novo-Kramatorskiy Heavy Machine Construction Works), for example, a 100-ton workpiece, 2 m thick and with a welding seam area of 6 m^2, was first welded in one working step. The application of build-up welding has made great achievements possible in ore mining and metallurgy. In the Leningradskiy metallicheskiy zavod imeni Stalina (Leningrad Metalworking Plant imeni Stalin), this technique is applied to the manufacture of turbine blades. The Institute of Electric Welding imeni Ye. O. Paton and the Chelyabinskiy truboprokatnyy zavod

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(Chelyabinsk Tube Rolling Mill) are successfully applying the new multiple arc welding technique to the production of petroleum pipelines at a rate of 210 m/h. Electric gas welding is now being developed by scientific institutes and factories, and is in the first place intended to replace manual arc-welding. Contrary to other methods, contact welding makes it comparatively easy to mechanize and automatize main and secondary processes. The development of automatic programming systems for contact welders is well under way. New methods, such as welding in a chamber with controllable pressure, ultrasonic, and high-frequency welding, are being made use of for the jointing of new metal types, alloys, and other construction materials. Mention is also made of another welding method developed by Soviet researchers, which involves an electron beam in vacuum. By a combination of contact welding with gluing, joints result to be two or three times sturdier as compared with riveting or welding. This technique was applied to the construction of O. K. Antonov's new airplane. New methods of autogenous welding and gas cutting are widely applied. Finally, the author mentions a few problems to be taken into account in the development of welding engineering. N. S. Khrushchev is mentioned. There are 28 figures.

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PATON, B.Ye., akademik, laureat Leninskoy premii

Objectives of the further expansion of welding techniques in transportation B.E.Paton. Zhel.dor.transp. 42 no.4:30-34 Ap '60. (MIRA 13:7)

1. AN Ukrainskoy SSR. Direktor instituta elektrosvarki AN USSR.
(Railroads--Maintinance and repair)

PATON, Boris Ye. Director, Institute of Electric Welding imeni Ye. O. Paton, Academy of Ukrainian SSR, Kiev.

"Electroslag Welding of Very Thick Materials".

report to be submitted for the American Welding Society (AWS), 42nd Annual Meeting, New York, N.Y., 17-21 Apr 61.

KHRENOV, K.K.[Khrenov, K.K.], akademik, otv. red.; DANILEVSKIY, V.V. [Danylevs'kyi,V.V., deceased], red.; BELYANKIN, F.P. [Bieliankin, F.P.], red.; DOBROKHOTOV, M.M., red.; PATON, B.Ye., red.; SUKHOMEL, G.Y.[Sukhomel, H.I.], red.; SHVETS', I.T., red.; KUCHEROV, P.S., red.; NESTERENKO, A.D., red.; POKHODZILO, P.V., red. izd-va; YEFIMOVA, M.I., tekhn. red.

[From the history of institutes of the Department of Technology] Narysy z istorii instytutiv viddilu tekhnichnykh nauk. Kyiv, Vyd-vo Akad. nauk URSR, 1961. 167 p. (MIRA 15:7)

1. Akademiya nauk URSR, Kiev, Komisiia z istorii tekhniky.
2. Chlen-korrespondent Akademii nauk USSR (for Kucherov).
3. Akademiya nauk USSR (for Khrenov).
(Academy of Sciences of the Ukrainina S.S.R.)

PATON, B. YE.

SOV/5975

PHASE I BOOK EXPLOITATION

International Institute of Welding

XII kongress Mezhdunarodnogo instituta svarki, 29 iyunya - 5 iyulya 1959 v g. Opatii (Twelfth Annual Assembly of the International Institute of Welding, Opatija, June 29 - July 5, 1959) Moscow, Mashgiz, 1961. 359 p. 3000 copies printed.

Sponsoring Agency: Natsional'nyy komitet SSSR po svarke.

Ed. (Title page): G. A. Maslov, Docent; Translated from English, French, and Serbo-Croatian by N. S. Aborenkova, K. N. Belyayev, E. P. Bogacheva, L. A. Borisova, K. V. Zvegintseva, V. S. Minavichev, and M. M. Shelechnik; Managing Ed. for Literature on the Hot-Working of Metals: S. Ya. Golovin, Engineer.

PURPOSE: This collection of articles is intended for welding specialists and the technical personnel of various production and repair shops.

Card 1/

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M

ORK TECHNIQUES
PARATION, HEATING, AND
OCESSING CONTROL)

Car oslovakia). Welding of Broken Crankshafts

36

PATON, Yevgeniy Oskarovich; SAVIN, G.N., akademik, otv. red.; DOBROKHOTOV, N.N., akademik, red.; KHRENOV, K.K., akademik, red.; BELYANKIN, F.P., akademik, red.; PATON, B.Ye., akademik, red.; REMENNIK, T.K., red.; KADASHEVICH, O.A., tekhn. red.

[Selected works; in three volumes] Izbrannye trudy; v trekh tomakh. Kyiv, Izd-vo Akad. nauk USSR. Vol.2. [Welded structures] Svarnye konstruktsii. 1961. 418 p. (MIRA 14:8)

1. Akademiya nauk Ukrainskoy SSR (for Savin, Dobrokhotov, Khrenov, Belyankin, Paton,B.Ye.)

(Structural frames—Welding)

PATON B Ye

115

PHASE I BOOK EXPLOITATION SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th, Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii (Physicochemical Bases of Steel Making; Transactions of the Fifth Conference on the Physicochemical Bases of Steelmaking) Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted. 3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg. Tech. Ed.: V. V. Mikhaylova.

Card 1/18

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

Physicochemical Bases of (Cont.)

PATON, Yevgeniy Oskarovich; SAVIN, G.N., akademik, otv. red.; DOBROKHOTOV, N.N., red.; KHRENOV, K.K., red.; HELYANKIN, F.P., red.; PATON, B.Ye., red.; REMENNIK, T.K., red. izd-va; KADASHEVICH, O.A., tekhn. red.

[Selected works in three volumes] Izbrannye trudy v trekh tomakh. Kiev, Izd-vo Akad. nauk USSR, Vol.3. [Welding under flux] Svarka pod fliusom. 1961. 557 p. (MIRA 15:4)

1. Akademiya nauk USSR (for Savin).
(Electric welding) (Flux (Metallurgy))

29352
S/133/61/000/011/005/[illegible]
A054/A127

1.2300

AUTHORS: Paton, B. Ye., Member of the Academy of Sciences UkrSSR, Rayevskiy, G. V., Candidate of Technical Sciences

TITLE: Flat-coiled tubes

PERIODICAL: Stal', no. 11, 1961, 101[illegible] - 101[illegible]

TEXT: The main drawbacks of conventional tube-production are that the tubes can only be delivered in relatively short lengths and that it is difficult to obtain thin-walled tubes with a sufficiently large tube-diameter-to-wall thickness ratio K = D/δ. These drawbacks can be eliminated by using "flat-coiled" tubes, the technology of which was developed 7 years ago at the Institut elektrosvarki im. Ye. O. Patona (Electric Welding Institute im. Ye. O. Paton). This type of tube was employed successfully at an MTS near Kiev, on the oil-fields of Tartary and the oil-fileds of Ukrglavneftsbyt near Kiyev. The tubes are 100 - 150 mm diameter and about 200 m long, their walls are 1.75 - 2.00 mm thi K. The considerable length of the tubes delivered substantially reduces the costs of labor and materials required for welding; the small wall thickness approximately halved the steel consumption as compared with the tubes hitherto used.

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29352
S/133/61/000/011/005/[illegible]
A054/A127

Flat-coiled tubes

The new tubes consist of double-walled flat blanks, which are coiled during storage and delivery. They are uncoiled only at the mounting place and inflated by compressed air. The consumption of compressed air is only 8 - 10% higher than the amount used for testing conventional tubes. Flat-coiled tubes can be produced in four ways: 1) by flattening conventional tubes produced on roller-type resistance welders. For this purpose low-carbon rimmed steel should be used while clearance should be left between the tube walls at least as big as the wall thickness; 2) from strip: either by folding the strip in two places and welding in the middle or by folding the strip on one side and welding it on the other side. The tubes can also be produced by casting hollow blanks which are then flattened in the rolling mill. The blank walls are in contact only at the sides; in the middle part a special lubricant should be used to avoid the wall sticking together. A simple method is to weld together two slabs. Also in this case the blanks must be kept from sticking together in the middle by lubrication. This method is being tested at the Electric Welding Institute im. Ye. O. Paton and the Dzerzhinskiy and Il'ich Plants. 4) The most simple way is to make the tube from two strips welded at the edges. The test equipment for producing flat-coiled tubes is shown. The strength of the tubes depends on the metal plasticity in the zones of deformation

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Flat-coiled tubes

during inflation of the tube. Low-carbon steels should therefore be used, with additives strengthening the ferrite. 08 кп (08kp) steel is more suitable than 10 сп (10sp). The steel should contain 0.07% C, 0.33 - 0.45% Mn and correspond to the following demands: $\sigma_B \leq 36$ kg/mm^2, $\delta_{10} \geq 35\%$. Flat-coiled tubes are produced from pickled and hot rolled strip - the authors presume that cold-rolled metal would improve the tube-quality. The surface requirements of the strip are lower than for steels used in extruding operations, the ferrite-grain index should be between 6 and 8, ГОСТ 5639-51 (GOST 5639-51), the index for cementite: 0 - 2. For flat-coiled tubes the following standards are set at present:

Tube diameter, mm	100 - 114	152 - 165
Inflation pressure, kg/cm^2	10	8
Maximum working pressure, kg/cm^2	8	6

Laminations in the metal and differences in wall thickness of the strip forming the tube will adversely affect the quality. Tests of the strength of the new tubes show that although their critical external pressure is lower than with conventional tubes, due to the peculiarities of their cross-section shape, they are still sufficiently strong for ordinary working conditions. The speed of roller resistance welding of tubes with 2-mm walls is very low (1 m/min at the Lenin Plant, 1.5 m/min at the Zaporozh'ye ZMK). Therefore the Electric Welding Institute

29352 S/133/61/000/011/002/01
A054/A127

Flat-coiled tubes

im. Ye. O. Paton has developed accelerated methods of roller resistance welding. On one of the strips longitudinal ribs are formed by rolling which indicates the place of the seam and promotes the heating of the metal in the zone being welded. The higher welding rate makes it possible to work without ignitron breakers and to use 50 cps alternating current. Under the supervision of A. I. Tsaikov, Member of the Academy of Sciences USSR a high-capacity machine for continuous [illegible] resistance welding has been designed, operating at a rate of 20 m/min. The [illegible] forming device of the machine makes it possible to weld the end of each strip to the beginning of the next. Flat-coiled tubes are now produced in three plants. with diameters of 75 - 155 mm, wall thickness up to 2 mm and in lengths of 200 - 280 m; the external diameter of the coil can be 1.8 m. Special flanges on the tube ends eliminate the need to weld them together under field conditions. The use of the new tubes results in considerable savings. Assuming that 36 tons (3,300 m) of 4 - 12" tubes are used per oil-well, replacement of the conventional tubes by flat-coiled ones saves about 14.5 tons of metal. Laying 1 km of ordinary tubes costs 2,607.6 rubles compared to 1,301 rubles for flat-coiled ones. The amount saved per well is 4,312 rubles, i.e. 2 1/2 times the saving in metal. During the 7-Year Plan period the new tubes will save 90 million rubles. These cal-

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Flat-coiled tubes

culations were made by Ye. P. Martinson. There are 6 figures.

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Electric Welding Institute im. Ye. O. Paton of the Academy of Sciences Ukrainskaya SSR)

X

PATON, B.Ye., akademik

Modern welding technology. Elektrichestvo no.12:9-16 D '61. (MIRA 14:12)

1. AN USSR.

(Welding) (Hard facing)

PATON, Boris Yevgen'yevich, akademik

Great opportunities for welders; interview with B.E. Paton.
IUn.tekh. 6 no.12:50-54 D '61. (MIRA 14:12)

1. AN USSR.

(Welding research)

S/125/61/000/004/003/013
A161/A127

AUTHORS: Paton, B. Ye., Gavrish, V. S.

TITLE: Optimum control system of the power parameters of spot and seam welding processes

PERIODICAL: Avtomaticheskaya svarka, no. 4, 1961, 18 - 24

TEXT: The article presents a discussion of various possible control and regulating systems of spot and seam welding, and it is proven which system is the most suitable. The following systems are discussed: 1) rigid control; 2) automatic compensation; 3) automatic regulation; 4) combination of rigid control, automatic compensation and regulation. The systems are illustrated with block diagrams. The advantages and disadvantages of systems 1) - 3) are emphasized: rigid control is employed extensively in spot and seam welders and permits the inertia-free variation of current parameters by programs, but the control does not adjust itself to the real welding process; the automatic compensation system requires too complex circuits and is not sufficiently accurate; automatic regulation is relatively simple and dependable, but the controlling of processes lasting only several current pulses is not good, and automatic inertia-free current (or voltage) re-

Card 1/2

gulators with an ignitron interrupter in transformer circuits are failing even at low amplification and insignificant disturbances; inertia-free operation is impossible. It is recommended to employ the combined system no. 4. The welding program is fed to the regulator in the system through a special device synchronized with the network voltage. The programming unit, that may be used in various welding machines will be described in a separate article. The operation of system 4) is described. Its measuring circuit and phase shifter are illustrated by circuit diagrams. The combination system possesses good static characteristics and accuracy in transition periods that are normally lasting one cycle only. Conclusions: 1) The rigid program control systems with feedback by the controlled value may be used for mild and medium-hard spot and seam welding processes; 2) The combined automatic control system with devices compensating the voltage fluctuations in networks are recommended for quick spot and seam welding. There are 6 figures and 1 Soviet-bloc reference.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye. O. Patona AN USSR ("Order of the Red Banner of Labor" Electric Welding Institute im. Ye. O. Paton AS UkrSSR)

PATON, B. Ye.; POKHODNYA, I.K.

Welding techniques in Great Britain. Avtom. svar. 14 no.6:75-92 Je '61. (MIRA 14:5)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye. O. Patona AN USSR.
(Great Britain—Welding)

1.2300

22946
S/125/61/000/007/002/013
D040/D112

AUTHORS: Paton, B.Ye., Gavrish, V.S., Grodetskiy, Yu.S.

TITLE: Universal Welding Programmer

PERIODICAL: Avtomaticheskaya svarka, no.7, 1961, 15-20

TEXT: The Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN SSSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton AS UkrSSR) has developed a new universal programming system called УПУ (UPU) for resistance welding machines. It eliminates the deficiencies of previously described programmers (Ref.2: B.Ye. Paton, Yu.S.Grodetskiy, "Avtom.svarka", no.10, 1959; Ref.3: V.N.Nikulin, V.I.Skurikhin, "Avtom.svarka", no.10, 1960) that were complicated and had no dependable program carrier. The UPU is a discrete system with a numerical binary code by which any number can be presented as a sum

$$N = \sum_{k=0}^{k=n-1} a_k 2^k,$$

where a_k can only have one of two meanings - 0 or 1. An example: the

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Universal Welding Programmer

number 53= $1 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0$ = 110 101, i.e. 53 will be represented by six digits on the program carrier. The system is illustrated in a block diagram (Fig.1) where the program carrier in the input bloc (BП) is a punched disc (Fig.2,b). It is driven by a synchronous motor, and the program can easily be synchronized with the network voltage and repeated. The photoelectric information reader unit (СП, Fig.1) cannot cause disc wear. The third link of the UPU is the decoder (Д). The reading head is placed above the rotating punched disc and consists of a set of air-cooled germanium phototriodes, 6.3 v, 0.28 amp light bulbs, and an orifice plate with slits. The perforations in the disc give the program of welding current and pressure; 4-5 rows of perforations are sufficient for current, 1-2 for pressure, and one for start synchronization. Programs can be prepared at industrial plants without complex computing devices. Tables must be prepared by production engineers, and then the discs punched according to the table data in a puncher consisting of two discs with drilled holes. A black paper sheet is put between the discs and punched. The presence of a hole in the carrier means 1, the absence of a hole - 0. Light passing through perforations and falling on a phototriode produces voltage pulses in an electrical circuit. These pulses are fed through an amplifier unit into

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Universal Welding Programmer

the decoder, at whose output a stepped program voltage (Fig.3) is obtained. This voltage can easily be converted by phase shifters into the phase of the ignition angle of thyratrons in the power circuit. The decoder (Fig.4) consists of a row of trigger cells (T_1, T_2, ..., T_m) with thyratrons passing a current flow $I_{c.fl}=1 \cdot 2^n$ current through the resistor R_m. The exponent n is different for each cell and is determined by the formula

$$n = k \frac{U_n}{R_m + R_{thyr}},$$

where U_n is the trigger feed voltage, R_m - resistance in the cathode, R_{thyr} - the thyratron resistance, k - the proportionality factor. The exponent n can be chosen by selecting resistances R_m to pass current I_{fl}, $2I_{fl}$, $4I_{fl}$, $8I_{fl}$, etc. The current through the common resistor (R_o) will be:

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S/125/61/000/007/002/013
D040/D112

Universal Welding Programmer

This resistor adds the trigger cells current, and the voltage drop in it (stepped) is the output of the whole programmer. The punched disc is driven by a synchronous motor, and the phototriode pulses and the output voltage are synchronised accurately with the network, which is important for operation with ignitron interrupters. Multiple repetition of the program for seam welding is possible. A special trigger cell is controlled by a voltage pulse from the start holes on the punched disc and makes it possible to start welding only at a definite moment, regardless of when the operator steps on the control pedal. Pressure on the electrodes in spot welding can be varied by a program recorded on the same program disc. The described universal programmer can work with thyratrons in trigger cells, or with transistors. Conclusions: (1) The developed programmer permits any desired variations of current and pressure; (2) The computing techniques ensure high interference-killing capacity and dependability of the system; (3) Punched program discs may be produced at a center and supplied to the plant; this will result in strict technological discipline, higher precision and stability of program

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Universal Welding Programmer ....

repetitions. There are 6 figures and 3 Soviet-bloc references.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton AS UkrSSR)

SUBMITTED: March 13, 1961

X

Card 5/6

PATON, B.Ye., akademik, laureat Leninskoy premii

Welding in construction. Mont. i spets. rab. v stroi. 23 no. 1:4-8 Ja '61. (MIRA 14:1)

1. AN USSR.

(Electric welding)

PATON, B.Ye., akademik

The whole world recognizes the supremacy of Soviet welding technology. Tekh.mol. 29 no.9:28 '61. (MIRA 14:10)

1. Akademiya nauk USSR. Direktor Instituta elektrosvarki imeni Ye.O.Patona.
(Welding)

PHASE I BOOK EXPLOITATION SOV/6330

Paton, B. Ye., Lenin Prize Winner, Academician, ed.

Tekhnologiya elektricheskoy svarki plavleniyem (Technology of Electric Fusion Welding) Moskva, Mashgiz (Southern Dept.), 1962. 663 p. Errata slip inserted. 25,000 copies printed.

Ed.: M. S. Soroka; Tech. Ed.: M. S. Gornostaypol'skaya; Chief Ed.: V. K. Serdyuk, Engineer.

Review: Department of Welding, Leningrad Polytechnic Institute; and Department of Welding, Moscow Higher Technical Institute imeni Bauman.

PURPOSE: This handbook is intended for students of schools of higher education who specialize in welding. It may also be used by engineering personnel of scientific research organizations and plants.

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Technology of Electric Fusion (Cont.)

COVERAGE: The book reviews the basic principles of the technology of electric fusion welding of various metals and their alloys. Classification of welding processes and comparative characteristics of mechanized and manual welding methods are presented. Weldability problems and causes of defects in welded joints are discussed. Information on materials, equipment, and conditions of welding and surfacing of various metals, alloys, and structures is given. Brief information on the use of heat sources employed in special types of welding and on safety precautions is also given. The Introduction, Chapter I (except the part headed "Arc Welding" in section 1), Chapter II (except the part headed "Cold Cracks" in section 5, the part on methods of determining resistance to brittleness in sections 6, 7, 8, 9, 11, and 14) are the work of S. A. Ostrovskaya, Candidate of Technical Sciences. The part entitled "Welding Arc" in paragraph 1 was written by Ostrovskaya in cooperation with D. M. Rabkin, Candidate of Technical Sciences. A. M. Makara, Candidate of Technical Sciences, wrote the parts entitled "Cold Cracks" in

section 5 and 20. The part on methods of determining the temperature of transition to brittle behavior in section 6 is the work of V. V. Shevernitskiy, Candidate of Technical Sciences. Section 10 was written by A. Ye. Asnis, Candidate of Technical Sciences. I. K. Pokhodnya, Candidate of Technical Sciences, wrote section 12 and Chapter IX, while section 13 and Chapter XI were written by V. V. Podgayetskiy, Candidate of Technical Sciences. Chapter V is the joint effort of B. Ye. Paton and M. G. Bel'fer, Engineer. S. L. Mandel'berg, Candidate of Technical Sciences, is author of Chapter VI and section 19. Section 21 was written by B. I. Medovar, Doctor of Technical Sciences, and section 22 by Rabkin. Section 23 is the work of Yu. V. Latash, Candidate of Technical Sciences, while Chapter X was written by I. V. Kirdo, Candidate of Technical Sciences. The authors thank Doctors of Technical Sciences N. O. Okerblom and G. A. Nikolayev, respective heads of the reviewing departments, for their valuable comments. There are 31 references, all Soviet.

PATON, B.Ye., akademik

Prospects for expanding the production of large diameter, electrically welded pipe. Met. i gornorud. prom. no.4:26-31 Jl-Ag '62. (MIRA 15:9)

1. Institut elektrosvarki imeni Ye.O. Patona. Akademiya nauk SSSR.

(Pipe, Steel—Welding)

PATON, B.Ye., akademik; MEDOVAR, B.I., doktor tekhn.nauk; LATASH, Yu.V., kand.tekhn.nauk

Present state and prospects for the further development of electric slag refining in the Ukraine. Met.i gornorud.prom. no.5:12-19 S-O '62. (MIRA 16:1)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye.O.Patona AN UkrSSR. 2. Akademiya nauk SSSR (for Paton).
(Zone melting) (Ukraine--Steel--Metallurgy)

S/030/62/000/006/005/007
I046/I246

AUTHOR: B.E. Paton, Academician

TITLE: Research development in the Academy of Sciences of the UkrSSR

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 6, 1962, 56-62

TEXT: The author reviews the current projects of the Academy of Sciences of the UkrSSR. In the cybernetics division, a laboratory of mathematical linguistics and a laboratory of theoretical cybernetics were established. In nuclear physics, the Ukrainian scientists have an outstanding reputation in the physics of low and moderate energies; new 100 MeV and 250 MeV cyclotrons are under construction in this department. Research in radiation physics of the solid state deals with the effects of particles and high-energy quanta on structure and on properties of solids. In the department of semiconductors, the emphasis is on the general theory of the semiconducting state, on crystal quantum states, quantum transitions and interaction between current carriers and lattice vibrations. In solid state physics, the metallic state is stressed; advanced theoretical research is conducted in the kinetics of structural changes in crystal lattices, resonance phenomena in metals, ferromagnetic and anti-

Research development...

ferromagnetic state. The department of low temperature physics is developing new vacuum techniques and new methods for obtaining ultralow temperatures. Radiophysicists, radio engineers and electronicists in the Academy deal with the transmission of signals and problems of communication at cosmic distances; they study the interaction between radiowaves and matter looking for new sources of radiowaves among various solids, liquids and gases. The department of astronomy studies the physical conditions on the moon and the planets; new methods are developed for refining the orbit and mass determinations in the solar system. The mathematics department concentrates on applied research, automatic control of industrial projects, mathematical description and modelling of industrial processes; the Ukrainian mathematicians are the most outstanding in the USSR in fields of asymptotic methods and non-linear mechanics. The chemistry department studies the problems of chemical structure, kinetics and reactivity, liophilic substances and stability of dispersed systems; theoretical research on catalysts is closely linked with such applied subjects as synthesis of ammonia and methanol, oxidation of alcohols; due representation is given to complex chemistry and radiation chemistry; much attention is paid to control of

Research development...

chemical reactions with prediction of results and products; the Institute of Physical Chemistry of the Academy of Sciences of the UkrSSR is one of the outstanding institutes in the USSR in the field of the kinetics of catalytic processes. Geologists study the formation and distribution of fossils and minerals in the earth's crust, the structure and the evolution of the earth, and the practical problems associated with very deep bore holes in the Ukraine. The biologists concentrate on human and animal physiology, functional biochemistry of the nervous system and biological functions of the proteins; research work done on insect viruses gave definite clues to the mechanism of transmission of hereditary information. The division of radiobiology studies tissue dosimetry and the linked problems of protection from radiation. The work in this department is strongly hampered by the absence of specialists in genetics and biophysics. The applied engineering research deals with fundamental industrial problems developing general procedures. Among these are projects on direct conversion of thermal energy into electricity, and the associated problems of production of alloys for high temperatures and pressures, generation of magnetic fields of desired configurations, plasma aerodynamics, and research at ultrahigh temperatures; investigation of the physico-chemical

and mechanical properties of materials, and development of the theory of strength and plasticity are necessary preparatory stages in attaining full control of alloy properties and in developing new materials with present qualities; the Ukrainian engineers occupy one of the outstanding position in the USSR in metal ceramics and problems of electric welding. In 1962, more than 300 research projects undertaken in various departments of the Academy are to be assimilated in industry; a portable digital computer for engineers, new insecticides, herbicides, fungicides, new electrolytic methods for production of bismuth and lead, new contact and magnetic materials are among the most recent achievements of the Academy. Despite the impressive record, the Academy still suffers from inefficient coordination between the various departments and from acute shortage in trained personnel; scientists from the best universities should be invited to join the 20,000 person staff of the Academy. To achieve still better results in applied and theoretical research, the Academy should concentrate on fewer projects: in 1962 the creative efforts were spread thin over 120 research projects, 65 of which were undertaken by the department of social sciences.

ASSOCIATION: AN USSR (AS UkrSSR)

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S/125/62/000/005/001/010
D040/D113

AUTHORS: Paton, B.Ye., Gavrish, V.S., and Grodetskiy, Yu.S.

TITLE: Decatron programmer

PERIODICAL: Avtomaticheskaya svarka, no. 5, 1962, 1-4

TEXT: The programming system for spot and seam resistance welding is an improved version of a universal programmer, previously described by the authors ("Avtomaticheskaya svarka", no. 7, 1961), which had a punched disc, mechanical elements for inserting the program, too many electron tubes and thyratrons, and did not permit immediate repetition of the program. The program carrier in the new system is an immobile punched card, the reader arrangement a set of contacts connecting through the card holes. A -101 (A-101) commutating decatrons accurately scan the program in step with the supply network voltage. The maximum cycle time depends on the number of decatrons used. The decoder comprises a series of transistorized amplifier-limiters, the current from which passes one resistor; the output voltage from the resistor controls the phase shifter. The

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Decatron programmer

start circuit includes blockings and auxiliary units, and is switchable for spot or seam welding. Programming calculations using tables ("Avtomaticheskaya svarka", no. 7, 1961) are not time-consuming and require no computers. A detailed description of the decatron programmer design and operation principles is given. There are 4 figures.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O. Paton, AS UkrSSR)

SUBMITTED: January 19, 1962

Card 2/2

S/125/62/000/006/001/013
D040/D113

12300

AUTHORS: Paton, B.Ye., and Slutskaya, T.M.

TITLE: [illegible]unshielded bare electrode arc welding

PERIODICAL: Avtomaticheskaya svarka, no. 6, 1962, 1-5

TEXT: Investigations were conducted at the Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O.Paton) in order to find a new method of using a bare electrode of continuous cross-section for machine welding joints in different spatial positions and in difficultly-accessible places. For this purpose a 20ГСЮТ (20GSYuT) wire per ЧМТУ/ЦНИИЧМ-438-61 (ChMTU/TsNIICHM-438-61) was developed. Data of welding are given and photographs of joints welded in different spatial positions included. Conclusions: (1) the new method can be used in vertical, horizontal and downhand welding and has the following advantages: reduced time taken for replacing electrodes and removing slag; improved welding conditions because of the absence of poisonous coating materials; no shielding gas required; simplified apparatus; (2) in bare-wire welding,

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a weld metal of required quality can be obtained in spite of high nitrogen content, and the mechanical properties are the same as when using 3 50(E50) electrodes; (3) in welding carbon steels with the 20GSYuT wire produced at the "Serp i molot" zavod ("Serp i molot" Plant), the weld metal is highly resistant to crystalline corrosion; (4) the process was stable and experiments showed that the addition of not more than 0.3% of rare earth elements can double the impact strength and improve the plasticity of cast machinery steel. There are 6 figures and 3 tables.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.Ye.O. Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im.Ye.O.Paton, AS UkrSSR)

SUBMITTED: February 15, 1962

40791
S/125/62/000/010/001/004
D040/D113

12300

AUTHORS: Paton, B.Ye., and Podola, N.V.

TITLE: New automatic control and regulation systems for resistance welders

PERIODICAL: Avtomaticheskaya svarka, no. 10, 1962, 1-8

TEXT: Automatic control and regulation systems for seam and spot resistance welding, developed at the Institut elektrosvarki im. Ye.O.Patona (Electric Welding Institute im. Ye.O.Paton), are described. The new K-155(K-155), K-163(K-163) and K-190(K-190) continuous-fusion butt welders, designed for welding heavy elements (surface areas up to 35,000 mm^2), are fitted with programmers reducing the voltage and adjusting the fusion rate. As a result, a wide heating-up zone and sound joints are obtained. An optimalizing control system for welding thin metal has a proportional-step optimizer which controls the fusion rate according to either the extreme pulse frequency of the welding current or the maximum power between electrodes. Numerical control systems for spot welding, with ferrite-transistor cells or decatrons as counters, control the spot welding time within 2 sec and include high-speed relays and ignitron contactors. A decatron system

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S/125/62/000/010/001/004
D040/D113

New automatic control.....

for low-voltage spot welders with a three-phase frequency converter permits setting the time for 7 successive operations (compression, preheat, welding, cooling, annealing, forging and weld interval) and controlling the current frequency. A program welding current regulator maintains the welding current strength with ± 1.5% accuracy during disturbances by means of pulse width modulation. It is made of semiconductors and is small and lightweight. A universal programmer, for seam and spot welding, sets the program of welding current and pressure and operates in conjunction with a current regulator and an ignitron interrupter. A program pickup with a stationary punched card is an improved version of this system, has no mobile mechanical elements, and permits rapidly repeating the program. The described systems are illustrated. There are 10 figures.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye... Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton, AS UkrSSR)

SUBMITTED: April 7, 1962

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41586
S/125/62/000/011/001/003
12300 D040/D114

AUTHORS: Paton, B.Ye., and Medovar, B.I.

TITLE: Improving the quality of steels and alloys for critical weldments

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1962, 1-7

TEXT: Three metal refining methods - (1) electroslag remelting, (2) melting by electron beam in vacuum, and (3) the Perrin process which is claimed to have been initially developed by A.S. Tochinskiy in the USSR - are discussed in connection with the dependability of weldments in pressure vessels, hulls of sea-going ships, etc. Recent experiments of TsNIIChM with the Perrin-Tochinskiy slag refinement process at large Soviet metallurgical plants and Soviet achievements in metal refinement are quoted. Extensive research into the use of the Perrin process for various steel grades, such as common carbon steel, low-alloy grades for pipelines, boiler steel, bridge steel, etc., is considered necessary. It is suggested to employ slag refinement in the continuous casting process, and recommended (1) to use electroslag remelting for special steel grades and alloys, and

Card 1/2

PATON, B.Ye., akademik; MEDOVAR, B.I., doktor tekhn.nauk; LATASH, Yu.V., kand.tekhn.nauk; MAKSIMOVICH, B.I., inzh.; STUPAK, L.M., inzh.

Achievements and further prospects for electric slag refining. Stal' 22 no.11:1001-1005 N '62. (MIRA 15:11)

1. Institut elektrosvarki im. Ye.O.Patona AN UkrSSR.
(Zone melting) (Electrometallurgy)