S/180/60/000/01/004/027
E111/E135

Kinetics of Oxidation-Reduction Reactions in Welding

value with slag and impurities are almost completely oxidized even with high-carbon iron. With gaseous oxidation the oxygen supply is limited by the rate of convective diffusion from the surrounding atmosphere and its transfer through the oxide; both oxygen concentration and extent of impurity oxidation in the metal depend greatly on the deoxidizer-concentration in the electrode. With commercial coated electrodes or with flux the oxygen supply depends also on the relative weight of the coating.
There are 2 figures, 3 tables and 11 Soviet references.

Card 4/4

SUBMITTED: September 17, 1959

BYKOV, A.N., insh., YEROKHIN, A.A., kand.tekh.nauk

Characteristics of metal transfer in welding with use of coated electrodes; investigation by means of test rods. Svar. proizv. no.2:9-12 F '60. (MIRA 13:6)

1. Institut metallurgii im.A.A. Baykova AN SSSR.
(Electric welding)

B3477

S/125/60/000/05/01/015

18.7200

AUTHOR: Yerokhin, A. A.

TITLE: The Effect of Process Parameters on the Interaction of Molten Metal With Gases and Slag in Arc Welding

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 5, pp. 3-10

TEXT: Conclusions are made from data of 12 Soviet works and from experiments of the author's own institute with covered electrodes and varied welding current and voltage, influencing the dimensions of metal drops, their surface area, and their life period. Details of experiments are included. Standard electrode wires were used: "Sv 08A", "Sv-18KhGSA", "Sv-10GS", with different composition of the coatings. The following conclusions are drawn: 1) In welding with covered electrodes, the interaction of metal with gas and slag (coating) increases with the rising voltage (arc length) at constant current, and drops with increasing current (at constant voltage). The weld metal composition varies correspondingly. In the case of oxidizing reaction, the content of elements increases with dropping voltage and rising current and in deoxidizing reaction vice versa. 2) Weakened protection of molten

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The Effect of Process Parameters on the Interaction of Molten Metal With Gases and Slag in Arc Welding

metal from air with increasing arc length has no decisive effect. 3) The effect of arc voltage and current on the chemical composition of weld metal may be explained by the different duration of the life period of metal drops on the electrode end. 4) The effect of current is less regularly marked than the effect of voltage. 5) Simultaneous increase of current and voltage, which is usual in manual welding, has little effect on the content of manganese, silicon and chrome in welds, but systematically reduces the content of carbon, i. e. the effects of current and voltage seem to be added algebraically. There are 6 diagrams, 3 tables and 12 Soviet references.

ASSOCIATION: Institute metallurgii im. A. A. Baykova AN SSSR
(Metallurgical Institute imeni A. A. Baykov AS USSR)

SUBMITTED: November 26, 1959

Card 2/2

84696

S/135/60/000/005/002/009
A115/A029

1.2300 2208, 2708 only

AUTHORS: Yerokhin, A.A., Candidate of Technical Sciences; Silin, L.L., Engineer

TITLE: Methods of Introducing Ultrasonic Vibration Into the Melting Pool

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 5, pp. 4 - 7

TEXT: It has been proved that ultrasonic vibration applied to crystallization of metals causes degasing of the melt and change of the mechanical properties. Low-frequency vibration raises the impact viscosity of the seam whereby large-sized dendrites become small, diversely oriented crystals. If the amplitude of vibration is raised beyond a certain level, forming of a seam is prevented by splashing metal out of the melting pool. Ultrasonic vibration clears the way for raising the intensity of vibration, but there are still difficulties in transmitting intensified vibration to the melting pool; to get the necessary initial data, a series of tests was undertaken with aluminum bars weighing up to 1,000 g. The best reducing structure has been attained by direct contact of the vibrating surface with the melt (Fig. 1a). The force was lessened when vibration was applied only after a metal crust had been formed, i.e.,

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A115/A029

Methods of Introducing Ultrasonic Vibration Into the Melting Pool

30 sec after the metal filled the weld (Fig. 1b). Figure 1v shows macrostructures of a bar that has not been treated by ultrasonic waves. During uninterrupted action of ultrasonic waves, the crystallization of the surface does not set in immediately, but only about 10 - 20 sec after the weld had been filled in. The height of a metal bar exposed to the ultrasonic force is given by the amplitude of the force, and it has been proved, that to each value of amplitude corresponds a certain size of the metal. The shape of the melting pool is of no importance (Fig. 3). Transmission of ultrasonic waves through welded metals is possible through contact of a thermostatic instrument with the melting pool, or by additional feeding wire to the pool. Transmission through the welded metal proved inefficient as only a portion of energy is utilized. The transmission through direct contact with the pool (Fig. 4) keeps the set rate during the process of welding. The tip of the emitter must be of heat-resisting material. Cooling the tip by water would adversely affect the quality of the seam by withdrawing heat (Fig. 5). Application of tungsten tips does not lengthen the life of the instrument. The most suitable way of transmitting ultrasonic waves has been found in the use of an additional wire (Fig. 7a, b). This method

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A115/A029

Methods of Introducing Ultrasonic Vibration Into the Melting Pool

allows for selection of components of the seam, besides being the most simple and universal. There are 8 references: 7 Soviet, 1 American.

ASSOCIATION: Institut metallurgii im. A.A. Baykova Akademii Nauk SSSR (Institute of Metallurgy im. A.A. Baykov of the AS USSR)

Card 3/3

86692
S/180/60/000/006/002/030
E021/E335

1.2300 2308

AUTHOR: Yerokhin, A.A. (Moscow)

TITLE: Several Relationships for the Interaction of Metal and Slag During Welding

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 25 - 33

TEXT: An attempt is made to establish the connection between the changes in composition of a metal during welding and the equilibrium of the reaction between the metal and the slag or flux. It is shown that the nearer the quantities of any element in the metal and in the slag (or flux) approach their equilibrium values the smaller will the difference be between the initial and final contents of the element in the metal. This is demonstrated in Fig. 1 ((Mn), % versus (Mn) initial, %), where Curves 1 and 4 are equilibrium values, Curves 2 and 5 are final values and Curve 3 is the initial value for the manganese content during welding under a flux (Curves 1, 2, 3) or by electrodes (Curves 4, 5). This shows that the further the

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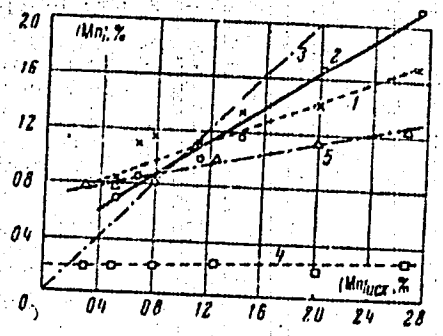
Several Relationships for the Interaction of Metal and Slag During Welding

contents are from the equilibrium values, the bigger the change in manganese content. The condition for maximum utilisation of alloying additions added to the flux or to the electrodes is, therefore, that the initial concentration should approach the equilibrium concentration as nearly as possible. The influence of the relative masses of the metal and slag was also investigated. A change in the relative mass changes the position of equilibrium and can alter the course of a reaction completely, thereby altering the composition of the fused metal. The greatest effect is obtained with low values of the distribution coefficient and low initial concentrations of the element in the metal, or at high coefficients of distribution and high initial concentrations of the element in the slag.

86692

S/180/60/000/005/002/030
E021/E335

# Several Relationships for the Interaction of Metal and Slag During Welding




Фиг. 1. Связь между равновесными (кривые *1, 4*), фактическими (кривые *2, 5*) и исходными (кривая *3*) концентрациями Mn при сварке под флюсом типа ОСЦ-45 (кривые *1, 2, 3*) или электродами типа ЦМ7 (кривые *4, 5*)

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S/180/60/000/006/002/030
E021/E335

Several Relationships for the Interaction of Metal and Slag During Welding

There are 5 figures, 2 tables and 16 references: 15 Soviet and 1 non-Soviet.

SUBMITTED: October 19, 1959

Card 4/4

84632

S/135/60/000/011/002/016
A006/A001

1.2300 2708, 2208 only
18.7530

AUTHOR: Yerokhin, A.A., Candidate of Technical Sciences

TITLE: Kinetics of Interaction of Molten Metal with Gases and Slag in Arc Welding Process

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 11, pp. 4-8

TEXT: Changes in the chemical composition of a metal, remelted during welding process, are mostly determined by the time and rate of reactions occurring between the metal, gases and slag, i.e., by the kinetics of the process. One of the factors determining the rate of reaction during welding, is the remoteness of the system from the equilibrium state. Thus, for the manganese reduction process during welding under flux, and probably for some other cases, changes in the concentration of components during welding are approximately proportional to the difference between the initial and the equilibrium concentration of the component. This is in agreement with data presented by K.V. Lyubavskiy (Ref. 4). Oxidation of the metal and its impurities, and probably many other reactions during welding, are limited by diffusion. The rate of reactions proceeding according to diffusion kinetics (limited by convective dif-

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S/135/60/000/011/002/016
A006/A001

Kinetics of Interaction of Molten Metal With Gases and Slag in Arc Welding Process

fusion) depends only slightly on the temperature, so that non-isothermal conditions of the process may be neglected. The experimental investigation was made of Mn and Si oxidation by air in drops during unshielded welding with 10G (10GS) electrodes with a thin chalk coating by short ignitions of the arc causing the fusion of the electrode tip. Arc ignition, drop formation, interrupted ignition behavior and cooling of the drop, were recorded with a СКС-1 (SKS-1) 28 camera by the shaded method, with the participation of IAFOKI AS USSR (operator B.A. Fadeyev). Spectral analysis of samples was made by V.V. Bogdanova. It appears that oxidation of Mn and Si, if their content in the metal is sufficiently high, i.e. over 0.5%, is limited by the stage of $O_2$ supply from the oxidation phase. The reaction rate in this case depends only on the amount of oxygen feed. At a lower content of the component, the reaction rate depends on its concentration in the molten metal and is evidently controlled by the diffusion of the component from the melt and also by the remoteness of the system from the equilibrium state. Conditions of interaction are different at various stages of the welding process. In a drop the specific surface is larger and concentration con-

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Kinetics of Interaction of Molten Metal With Gases and Slag in Arc Welding Process

ditions are more favorable (the system is usually more remote from the equilibrium). Therefore the reaction rate is higher at the stage of the drop than in the pool. As a result, in spite of the shorter interaction time, reaction at the stage of the drop is more complete than in the pool and sometimes attains practically full completion. As a result of parallel reactions the equilibrium conditions in the system may change during the process. This may cause not only changes in the reaction rate but also in its direction. Thus it was experimentally shown that Mn reduction from the slag in the drop might be changed over to this oxidation in the pool. A formula (1) is given to calculate the equilibrium concentration of a component in the metal:

$$x = \frac{[Me] - \xi(Me)}{1 + L\xi}$$

where [Me] and (Me) are the initial concentrations of the element in the metal and in the slag; L is the coefficient of distribution, and $\xi$ is the relative weight of the slag. Formula (3) is given to calculate the reaction rate:

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Kinetics of Interaction of Molten Metal With Gases and Slag in Arc Welding Process

$$W = \beta \gamma \frac{s}{G} c = kc,$$

where $\beta$ is the coefficient of mass transfer (diffusion rate constant) c is the concentration of the substance whose diffisuion is limiting the process, s is the interphase surface independent of time, $\gamma$ is the specific weight, and G is the phase weight. There are 8 figures, 2 tables and 26 references: 25 Soviet and 1 English.

ASSOCIATION: Institut metallurgii imeni A.A. Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov, AS USSR)

Card 4/4

YEROKHIN, A. A., Doc Tech Sci, "KINETICS OF the SMELTING OF METAL AND ITS INTERACTIONS WITH GASES AND SLAG IN ARC WELDING." Kiev, 1961. (Inst of Electric Welding imeni Ye. O. Paton of Acad Sci UkSSR). (KL-DV, 11-61, 216).

S/180/61/000/002/005/012
E073/E535

AUTHOR: Yerokhin, A. A. (Moscow)

TITLE: Main Stages of the Process of Arc Welding and their Metallurgical Features

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.2, pp.77-82

TEXT: In welding with fusible electrodes, the interaction of the metal with gases and slag begins in the drop at the tip of the electrode and is completed in the bath. At each stage the conditions of interaction are determined by the temperature, the interaction time, the area of contact of the interacting phases and also by the concentrations of the reacting substances. The temperature of the metal in the drop depends on the electrode material and diameter, the current intensity and other factors and for the wire Sv-08 (Sv-08) it may reach 2000°C and more. The average temperature of the bath at the root of the weld for carbon steel is of the order of 1700°C and is independent of the welding conditions. Many of the reactions which take place during welding are diffusional in character and, therefore, the difference in

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temperature at various stages should not influence greatly the speed of interaction. The most accurate information on the lifetime of the drops $\tau_K$ and its weight P can be obtained by means of high-speed motion pictures. In the case of welding with blank wire $\tau_K$ = 30 to 260 msec, P = 15 to 150 mg; in the case of welding in $CO_2$ with a thin wire $\tau_K$ = 7 to 36 msec, P = 2 to 10 mg. In the case of coated electrodes, $\tau_K$ and P are of the same orders of magnitude, although in some cases, for instance in the case of iron powder electrodes, $\tau_K$ may be as high as 500 msec. These data relate to the part of the drop which breaks away from the electrode and not to the whole drop. Recent investigations have shown that the weight of the part of the drop which remains on the electrode is 50 to 80% of the full weight of the drop, $m_K$. On the average the interaction time and the total weight of the drop will be about $3\tau_K$ and 3P, respectively. Assuming that the surface of the drop is a sphere, its specific area will be $\sigma_K = 1.32\ P^{1/3}$. Approximate calculations have shown that $\sigma_K$ is of the order of 1 to 10 $cm^2/g$, i.e. larger by 3 to 4 orders of magnitude than in an open hearth furnace. Study of the interaction at various

stages of the welding process involves great experimental difficulties. Analysis of the drops of the metal artificially ejected and dropped into water or of drops fixed on the tip of the electrode have shown that even during that period of the process reactions may have achieved a considerable degree of completion. These methods of separating the drops permit only qualitative conclusions. Better results are obtained by collecting the drops on a massive plate whilst rapidly displacing the electrodes, so that there is practically no liquid bath and isolated drops surrounded with slag are produced on the plate ("bathless process"). In this case the conditions of interaction are near to the real ones, provided that identical conditions are maintained, particularly as regards the arc length. Furthermore, it is possible to simulate also the subsequent stage, namely, the period of existence of a molten bath by means of the "dropless" process using non-fusible electrodes, i.e. argon arc welding with a tungsten electrode using a paste placed into an appropriate groove which is recessed into the plate. The dropless process was realized in the experiments using plates made of steel (0.38% C, 1.06% Mn and 1.20% Si) with

paste of hematite in layers of various thicknesses. It was found that the oxidation processes are slower in the bath than they are in the drops. This applies particularly to carbon for which the results of analysis were confirmed by metallographic investigations. Analysis of drops collected on a massive plate and of weld facings made into a copper mould with the same electrode has shown that in the case of a highly oxiding coating, Mn and Si burn off almost entirely, whilst the carbon burns off to an extent of 70 to 80%. In the case of an oxiding carbonate-fluorite coating, the total losses and the losses in the drop stage of the metal decrease and oxidation reactions develop to a greater extent in the bath, as can be seen from Table 3. Oxidation of Mn and Si in the bath may reach considerable proportions, although in none of the experiments was the interaction of the metal in the bath as complete as it was during the drop stage of the metal. This indicates that the drop stage provides more favourable physical and chemical conditions for the reactions during this stage. This is confirmed by the results obtained by B. I. Bruk (Ref.10). Using the method of tracer atoms he found that the losses of chromium from the base

metal are lower than they are from the electrode rod (2 to 12 and 12 to 19%, respectively). Comparing the coefficients of transfer during facing by welding in a $CO_2$ atmosphere, N. M. Novozhilov (Ref.11) also obtained greater losses of the individual elements which were contained in the wire, i.e. the elements which became transformed into drops. The results of N. M. Novozhilov as regards losses in the bath are far too low, since he assumed that there is no interaction in the bath, which is not in accordance with reality. On the basis of the obtained results, the following conclusions are arrived at:

1. The basic stages of the welding process are the periods of existence of the molten metal in the form of drops on the electrode and in the bath. However, in the case of presence in the coatings of metallic additions, it is also necessary to distinguish the stage of heating of the coating which precedes the stage of formation of metal drops. The interaction in this stage is primarily in the solid phase.
2. If the speed is high enough, the interaction reactions of the individual elements are to a large extent completed during the period of drop formation. In the case of welding with a non-fusible

electrode (absence of drops) reactions in the bath are highly developed, although not to the same degree as in the drops.
3. The greater degree of completion of the reaction processes in the drops of the metal is explained primarily by better conditions of contact of the interacting phase at this stage of the welding process.
4. Oxidation of the carbon in the bath (in contrast to other reactions) is very limited. Preferential development of this reaction in the drops of the metal, i.e. during the high temperature stage of the process, is elucidated by the fact that in contrast to what is valid for other oxides, the free energy of formation of CO increases with increasing temperature. There are 3 tables, 1 figure and 12 references: all Soviet.

SUBMITTED: May 30, 1960

Main Stages of the Process of ... S/180/61/000/002/005/012
E073/E535

Table 3

| Electrode Wire | Coating | Loss of elements, % In the drop stage C | Mn | Si | In the bath C | Mn | Si |
|---|---|---|---|---|---|---|---|
| 18ХГСА (18KhGSA) | Hematite K ~ 0.32 | 70.4 | 97.0 | ~100.0 | 14.8 | 1.0 | 0 |
| 35ГС (35GS) | Hematite K ~ 0.5 | 79.2 | ~97.0 | ~100.0 | 7.0 | 0 | 0 |
| 35GS | Marble 80% Fluorspar 20% K ~ 0.27 | 26.0 | 29.2 | 47.5 | 10.8 | 19.9 | 27.5 |
| 35GS | Hematite K ~ 0.3 | - | - | - | 5.0 | 75.0 | 80.0 |

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S/125/61/000/009/003/014
D040/D113

AUTHORS: Bykov, A.N.; Yerokhin, A.A.

TITLE: Metallurgical oxidation processes in ferromanganese in heated electrode coatings

PERIODICAL: Avtomaticheskaya svarka, no. 9, 1961, 10-19

TEXT: Phenomena causing different behaviour of electrothermic and blast furnace type ferromanganese in electrode coatings have been studied. General regularities of this behaviour difference had been observed in previous experiments (Ref.3: A.A.Yerokhin, A.N.Bykov, O.M.Kuznetsov, "Avtom.svarka", no.6, 1961). The present article gives information on the results of further experiments with same techniques, and an attempt is made to explain the causes for the difference in behaviour of two different types of ferromanganese. References are made to data of other authors that confirm the deductions (Ref.7: V.P.Yelyutin, Yu.A.Pavlov, B.Ye.Levin, Ferrosplavy /Ferroalloys/, Metallurgizdat, 1951; Ref.8: F.D.Richardson, J.H.E.Jeffes, "Iron Steel Inst", 160, 261, 1948; Ref.9: Yu.D.Brusnitsyn, "Svarka", no.2, Sudpromgiz, 1959). The following conclusions are drawn: (1) In marble-base coatings,

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electrothermic ferromanganese oxidizes with the formation of manganese carbide, and the carbon content in the nonoxidized part of ferromanganese may increase from 1 to 4-5%. Similar carbonization was observed in the oxidation of chromium. The oxidation of blast furnace ferromanganese is accompanied by a carbon monoxide decomposition reaction with the formation of soot carbon. (2) Two processes are possible in the oxidation of ferromanganese in ore-type coatings - reduction of manganese oxides by carbon contained in ferromanganese, and contact oxidation of manganese by iron oxides, or by oxides of other metals. (3) The degree of manganese oxidation in systems with hematite is higher than in systems with manganese ore. (4) The heat effect of manganese oxidation has a high influence on the course of reactions in heated coatings; this influence increases with the increase of the manganese content in the coating and the degree of its oxidation. Heat produced by the heat effect can cause abrupt local increase of temperature, which can result in direct reduction of manganese oxides by carbon, i.e. oxidation of soot carbon, fusion of ferromanganese particles and their coagulation, intensified interaction between slag and metal, etc. There are 4 figures, 5 tables and 9 references: 7 Soviet and 2 non-Soviet bloc.

Metallurgical oxidation processes .... S/125/61/000/009/003/014
D040/D113

The two references to English language publications read as follows:
M.Chatterjee and P.P.Dag, Trans. Indian Inst. of Metals, 12, 359-362, 1959;
F.D.Richardson, J.H.E.Jeffes, "Iron Steel Inst"., 160, 261, 1948.

ASSOCIATION: Institut metallurgii im. A.A.Baykova (Institute of Metallurgy im. A.A.Baykov)

SUBMITTED: August 4, 1960

Card 3/3

YEROKHIN, A.A.; BYKOV, A.N.; KUZNETSOV, O.M.

Manganese oxidation in basic-type electrode coatings. Avtom. svar. 14 no.8:13-19 Ag '61. (MIRA 14:9)

1. Institut metallurgii imeni A.A. Baykova.
(Electrodes)

30229

S/125/61/000/011/008/012
D040/D113

12300 1573

AUTHORS: Yerokhin, A.A., and Kuznetsov, O.M.

TITLE: Lowering the carbon content in weld metal when welding stainless steels

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1961, 53-54

TEXT: Experimental data indicated that the increase in the carbon content in the weld metal produced by low-carbon electrode wires was caused by marble in the wire coating. This was substantiated in experiments with varying marble content and constant quantities of ferroalloys in nonoxidizing coating. It was shown that 0.06% carbon was contained in the weld metal when electrodes without marble in the coating or with 5 to 15% marble were used; 0.7% carbon was present when the coating contained 20% marble. The finally selected coating composition contains 10% marble and 11% deoxidizers (ferrosilicon and ferrotitanium) and is called IMET-8 (IMET-8). It has been tested on two wire grades - Св-1Х18Н9Т (Sv-1Kh18N9T) with 0.056% C and Св-Х18Н11М (Sv-Kh18N11M) with 0.37% C. IMET-8 coating is recommended for

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the following standard wires: Св-02Х19Н9 (Sv-02Kh19N9), Св-04Х19Н9 (Sv-04Kh19N9), Св-04Х19Н9С2 (Sv-04Kh19N9S2), Св-04Х19Н11М3 (Sv-04Kh19N11M3) and other wires with specifications as per ГОСТ 2246-60 (GOST 2246-60). The weight coefficient of the coating is 30-35%, which corresponds to a 0.9-1.1 mm coating layer depth on wire, 4 mm in diameter. IMET-8 electrodes are suitable for welding with direct current and reverse polarity. The proper current for electrodes, 4-5 mm in diameter, is 110-140 and 130-180 amp respectively. As short as possible arc length is recommend - ed. There are 6 Soviet references.

ASSOCIATION: Institut metallurgii im. A.A. Baykova (Institute of Metallurgy im. A.A. Baykov)

SUBMITTED: April 4, 1961.

YEROKHIN, A.A. AND RYKALIN, N.N.

"Metal drop formation in the welding arc."

Report submitted to the Autumn Meeting of the Welding Research Institute London, England, 29 Oct-2 Nov 1962.

35769
S/180/62/000/001/005/014
E032/E314

1.1730

AUTHORS: Yerokhin, A.A. and Il'in, N.P. (Moscow)

TITLE: Distribution of elements in a drop formed on the electrode tip during arc-welding

PERIODICAL: Akademiya nauk SSSR, Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no. 1, 1962, 81 - 83

TEXT: The authors investigated the distribution of Fe, Ni, Mn and Cr on the longitudinal sections of drops fixed at the electrode tip. Three specimens were used as follows: specimen 1 was obtained by melting an electrode of a high-alloy wire Св-Х 25Н20 (Sv-Kh25N20) covered with a highly oxidizing coating (hematite and sodium silicate). During welding, chromium, manganese and other elements present in the electrode rod were oxidized and iron was reduced from the ferric slag. Specimens 2 and 3 were obtained by melting electrodes of an unalloyed wire, grade Св-08А (Sv-08A) covered with coatings containing ferromanganese (specimen 2) and ferrochromium (specimen 3). In these specimens one expected to observe the

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transfer of manganese and chromium from the coatings into the drop and further into the deposited metal. Metallographic sections were prepared from the drops and the wire of the above specimens in a longitudinal direction. The distribution of the elements in the drop was investigated using an X-ray spectrographic method of chemical analysis of micro-regions (2 - 3 μ in diameter). The intensity of characteristic $K_{\alpha 1}$ radiation was determined for iron, chromium, manganese and nickel at various points along the drop and the wire in the longitudinal and radial direction. The unmelted part of the electrode wire served as a standard for comparison. Examination of specimen 1 showed that the bulk of the drop was practically homogeneous with regard to chemical composition, both in the axial and radial directions. However, the composition of the drop differs considerably from that of the wire: the manganese content of the drop decreased nearly five times and the chromium content decreased 1.5 times, whereas the iron and nickel contents increased 1.2 and 1.1 times, respectively. The sudden change of composition between the bulk masses of the drop and the wire (electrode rod) is

Distribution of elements ....

located in a narrow zone adjacent to the unmelted part of the electrode rod. This transition zone extends approximately 300 - 400 μ along the electrode axis and since the drop is 4 - 5 mm long, the above zone occupies no more than 10% of the drop length. Similar examination of microcomposition in specimens 2 and 3 showed also a homogeneous distribution of elements in the drop, in spite of the fact that during melting the drop was considerably (up to 10%) enriched with manganese or chromium. The transition of concentration occurred in the region of 200 - 250 μ. The results of the present work have not confirmed previously published data. Convective diffusion in the drop produces good intermixing of the metal. Nevertheless, there should be some concentration gradient in the drop in the direction of the diffusion currents and this also applies to the axis of the drop. The absence of a concentration gradient can be explained by equalization of the composition of the drop, while it cools down after the arc is broken. High-speed cinematography studies have shown that this cooling time is sufficiently long compared with the life of the drop on the electrode tip

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during melting. The narrow zone in which an abrupt change in the chemical composition was detected adjacent to the unmelted electrode rod shows that in this region the overheating is small and the cooling rate of the metal high. However, in the remaining part of the drop convective diffusion brings about almost complete homogenization of the metal. Some gradient of concentration and temperature exists in the direction of the diffusion currents in the molten drop. There are 3 figures.

SUBMITTED: August 22, 1961

Card 4/4

S/659/62/009/000/029/030
I003/I203

AUTHORS: Yerokhin, A. A., Kuznetsov, O. M., and Bykov, A. N

TITLE: Arc welding of nickel-base heat-resisting alloys by means of molybdenum-alloyed electrodes

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam. v. 9. 1962. Materialy Nauchnoy sessii po zharoprochnym splavem (1961 g.), 238-242

TEXT: The resistance to cracking of welds made by ЭИ-435 (EI-435) and ЭИ-437 (EI-437) electrodes was investigated and as a result new electrodes were developed by alloyin the above with 18-20 % of mo. The new electrodes made of the EI-435 alloy are called ИМЕТ-4м (IMET-4м) and ИМЕТ-4п (IMET-4р) and those made of the EN-437A (EI-437A) alloy are called ИМЕТ-7м (IMET-7м). The mechanical properties and the mictrostructures are given of welds made with these electrodes. There are 3 figures and 2 tables.

Card 1/1

RYKALIN, N.N.; YEROKHIN, A.A.

Conference on the physics of the welding arc. Avtom.svar. 15 no.10:95 O '62. (MIRA 15:11)
(Electric arc)

YEROKHIN, A.A.

Heat balance in the drip melting process of electrodes in arc welding. Avtom. svar. 15 no.12:24-31 D '62. (MIRA 16:2)

1. Institut metallurgii imeni A.A. Baykova.
(Heat transmission) (Electric welding)

BYKOV, A.N., inzh.; YEROKHIN, A.A., doktor tekhn. nauk

Uniformity and stability of a welding bath composition.
Svar. proizv. no.7:1-4 Jl '63. (MIRA 17:2)

1. Institut metallurgii im. A.A. Baykova.

ACCESSION NR: AP3012231 S/0135/63/000/011/0015/0017

AUTHOR: Kuznetsov, O. M. (Engineer); Yerokhin, A. A. (Doctor of technical sciences)

TITLE: Welding of heat-resistant nickel alloys with IMET-4P electrodes

SOURCE: Svarochnoye proizvodstvo, no. 11, 1963, 15-17

TOPIC TAGS: nickel base alloy, nickel alloy welding, heat resistant nickel alloy, IMET 4P electrode, EI867 alloy, EI435 alloy

ABSTRACT: The Institut metallurgii im. A. A. Baykova (Institute of Metallurgy) has developed the IMET-4M and IMET-4P electrodes for manual welding of heat-resistant nickel-base alloys. The electrodes yield a weld metal with a molybdenum content of 18—20% (IMET-4M) and above 20% (IMET-4P). The weld metal (especially that of IMET-4P) has a high resistance to hot cracking. The weld metal of a multipass deposit with an IMET-4P electrode had a tensile strength of 51.5—68.4 kg/mm$^2$ and an elongation of 0.7—6.0%, both of which were lower than

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ACCESSION NR: AP3012231

the figures for weld metal deposited into a copper mold (66.1—72.5 kg/mm$^2$ and 3.2—9.2%) because of the more rapid solidification of the latter. The metal of IMET-4P multipass deposit has lower strength and elongation at room temperature that the Ni-base alloys EI437B[Nimonic 80A] and EI445P [0.08% C, 17—20% Cr, 2.2—2.8% Ti, 0.7—1.7% Al, 4—5% Mo, 4—5% W, 0.02% Ce, 0.01% B]. However, with increasing temperature the difference becomes less pronounced (see Fig. 1 of the Enclosure). The metal of the IMET-4P multipass weld in heat resistant alloys contains less molybdenum than metal deposited into the mold, but it has a higher content of tungsten, niobium and other alloying elements, which come over from the base metal. As a result, this metal has a higher heat resistance. The effect of the base metal on the weld metal is more pronounced in welding thin sheets, in which case the properties of the base and weld metals are almost identical. The 100-hr rupture strength at 850C of the IMET-4P multipass deposit was 8 kg/mm$^2$, compared with 3, 10, and 30 kg/mm$^2$ for the EI435 [Nimonic 75], EI437B, and EI867 [composition not given] alloys, and with 10.8 kg/mm$^2$ for the weld metal in the EI867 plate (15 mm thick). Postwelding austenitizing (at 1050C for 2 hr with air cooling) or austenitising with subsequent

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ACCESSION NR: AP3012231

single aging (at 850C for 5 hr) or double aging (at 660C for 16 hr, and at 790C for 16—12 hr) had no beneficial effect on the properties of the weld metal either at room or elevated temperatures. Orig. art. has: 2 figures and 6 tables.

ASSOCIATION: Institut metallurgii im. Baykova (Institute of Metallurgy)

SUBMITTED: 00 DATE ACQ: 22Nov63 ENCL: 01

SUB CODE: MM NO REF SOV: 005 OTHER: 001

Card 3/3

YEROKHIN, A.A.; LYUBOVSKIY, K.V., doktor tekhn. nauk, prof., retsenzent

[Kinetics of metallurgical processes in arc welding] Kinetika metallurgicheskikh protsessov dugovoi svarki, Moskva, Izd-vo "Mashinostroenie," 1964. 252 p. (MIRA 17:5)

YEROKHIN, A.A.; KUZNETSOV, O.M.

Increasing weld metal resistance to the formation of hot cracks.
Avtom. svar. 17 no.7:2-5 Jl '64. (MIRA 17:8)

1. Institut metallurgii im. A.A. Baykova.

YEROKHIN, A.

The first discoverers. Av. i kosm. 47 no.10:89-90 O '64.
(MIRA 17:10)

BYKOV, A.N., kand. tekhn. nauk; YEROKHIN, A.A., doktor tekhn. nauk

Oxidation of the bath during welding with a carbonate-fluorite coated electrode. Svar. proizv. no.7:25-28 Jl '65.
(MIRA 18:8)

1. Institut metallurgii imeni Baykova, Moskva.

ACC NR: AP7001835 SOURCE CODE: UR/0135/66/000/012/0003/0006

AUTHOR: Yerokhin, A. A. (Doctor of technical sciences); Sorokin, L. I. (Engineer)

ORG: none

TITLE: Effect of the type of specimen and conditions of welding on the hot cracking resistance of metal

SOURCE: Svarochnoye proizvodstvo, no. 12, 1966, 3-6

TOPIC TAGS: weldment testing machine, weld evaluation, test construction, welding electrode /IMET-TsNIIChM weldment testing machine

ABSTRACT: The hot cracking resistance of a metal during its welding is quantitatively estimated by means of forced deformation of the welding zone of the specimen and the determination of the maximum rate of deformation at which hot cracks still are absent in the zone of fracture. In this connection the effect of testing conditions on the critical deformation rate $v_{cr}$ of the specimen, characterizing the resistance of the weld metal to the formation of hot cracks, is examined with respect to the newly developed IMET-TsNIIChM test machine in which deformation is accomplished by means of longitudinal or transverse bending of a test specimen at a

Card 1/4 UDC: 621.791.01

ACC NR: AP7001835

fixed rate. Two principal types of test specimens were tested: the composite specimen, with the welding being performed by means of a consumable electrode across a joint held together by tack welds (Fig. 1, a) and the continuous specimen with a neck that is melted during the testing process by means of argon arc welding with a consumable (tungsten) electrode (Fig. 1, b).

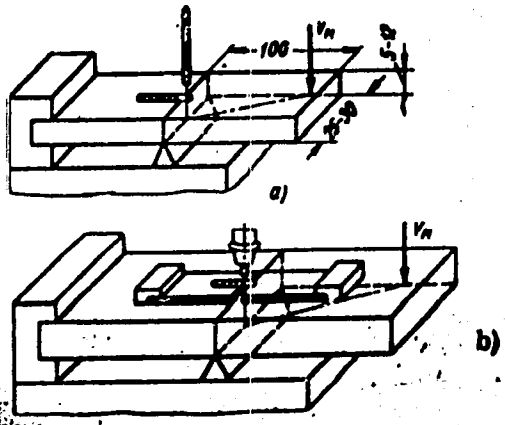


**Fig. 1.** Schematic representation of testing in the IMET-TSNIIChM machine during consumable-electrode welding of composite test specimens (a) and argon-arc tungsten-electrode welding of continuous test specimens (b)

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ACC NR: AP7001835

A new type of test specimen (Fig. 2) has also been proposed: following multi-layer welding with the tested electrode, a plate 17-20 mm wide is cut out of the weld metal and machined,

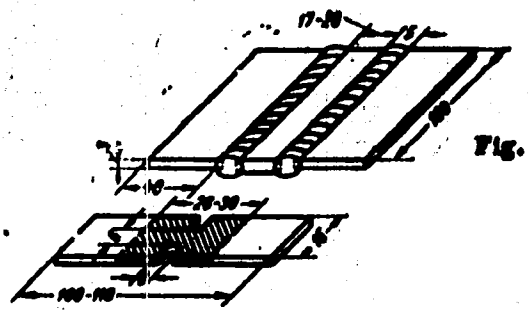

Fig. 2. Preparing a continuous specimen for the testing of weld metal

after which, on also using the tested electrodes, plates of base metal are welded on to both sides of this plate by means of a broad weld (~5 mm). After welding the reinforcement is removed and the specimen is cut across the weld. The width of the built-up metal then is 26-30 mm, compared with 10 mm for the specimens described above. And the influence of the base metal is almost completely eliminated. Both the composite and the continuous types of speci-

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ACC NR: AP7001835

mens showed a similar course of the dependence of $v_{cr}$ on the Mo and W content of the welding electrode: one a certain level of Mo (and W) in the weld is reached, $v_{cr}$ decreases and this is accompanied by a marked decrease in the plasticity of the weld metal (embrittlement). Thus both types of specimens for testing built-up metal more or less eliminate the influence of the base metal on the test results, and the tests of both types of specimens yield qualitatively similar but quantitatively somewhat different results. Further, the effect of welding regimes on $v_{cr}$ was investigated on using various types of electrodes (electrode diameter 3 mm, weldment thickness 7 mm); these experiments showed that during welding at a fixed rate (0.45 cm/sec) $v_{cr}$ reaches its maximum in the presence of a current of 80-85 a, and in general that the resistance of weld metal to hot cracking can be enhanced by using small-diameter electrodes, increasing the welding rate and employing various means of draining the heat from the weld. Orig. art. has: 7 figures.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 005

Card 4/4

L 16521-66 EWT(m)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k) JD/JM
ACC NR: AP6006179 (N) SOURCE CODE: UR/0135/65/000/002/0007/0009

AUTHOR: Yerokhin, A. A. (Doctor of technical sciences); Ishchenko, Yu. S. (Engineer)

ORG: none

TITLE: Regulation of the degree of melting in arc welding nonrotating tube seams

SOURCE: Svarochnoye proizvodstvo, no. 2, 1966, 7-9

TOPIC TAGS: arc welding, alloy steel, welding equipment, welding electrode, metallographic examination

ABSTRACT: Means of controlling melting during arc welding of 1Kh18N10T steel were studied and an apparatus which produced quality seam welds in nonrotating tubes by varying the internal pressure as a function of the torch position was designed. The weight of the molten pool was equilibrated by internal gas pressure which varied from 70 mm $H_2O$ for the vertical overhead position and -20 mm $H_2O$ for the underneath position. The pressure was regulated by a separate block mechanism. Schematic diagrams are shown of the removable pressure chamber, the regulating mechanism and the welding cycle. Formulas for the welding force acting on the wall surface in the

UDC: 621.791.75:621.9-462

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L 16521-66
ACC NR: AP6006179

joint are given. Experimental values of the welding force were obtained for 1Kh18N10T steel tubes of 3 to 6 mm thickness and 108 mm diameter as a function of the weld angle (α). Macrostructures of the welded tube (6 mm thick) are shown for different values of α ranging from 0 to 270° for currents of 200-210A. The electrode distance to the molten region for the 6 mm thick and 108 mm diameter tube was given as a function of α for ordinary welding methods and for the method described above. Only with internal pressure regulation was the distance constant: 0.2 mm under proper pressure and 0.6 under 5 mm $H_2O$ less. For ordinary arc welding the electrode distance varied from 1.8 mm at α = 0° to a low of -0.2 mm at 150°. The internal pressure method was recommended for metals with wall thicknesses between 3 to 8 mm; beyond this range, quality was found to drop. Orig. art. has: 7 figures, 7 formulas.

SUB CODE: 13/ SUBM DATE: 00/ ORIG REF: 002/ OTH REF: 000

Card 2/2

BOGOLEPOV, N.K.; YEROKHINA, L.G.

Pathology of the cerebral and spinal blood circulation in occlusions of the superior vena cava. Zhur. nevr. i psikh. 65 no.4:524-530 '65. (MIRA 18:5)

1. Kafedra nervnykh bolezney (zaveduyushchiy - prof. N.K. Bogolepov) II Moskovskogo meditsinskogo instituta im. Pirogova.

YEROKHIN, Yu.Ye.; KRASNOVSKIY, A.A.

Studies on the state and conversion of pigments in purple and green photosynthetizing bacteria. Biofizika 8 no.4:446-456 '63. (MIRA 17:10)

1. Institut biokhimii imeni Bakha AN SSSR, Moskva.

BACHURIN, Dmitriy Grigor'yevich; YEROKHIN, A.F., vedushchiy red.; BASOV, N.I., red.; LADONINA, L.V., tekhn. red.

[Study and uses of polymers in industry; a survey of foreign techniques]Issledovanie i primenenie polimerov v promyshlennosti. Moskva, GOSINTI, 1962. 111 p. (Obzor zarubezhnoi tekhniki. Tema 10) (MIRA 16:1)

(Polymers)

COUNTRY : [illegible]
CATEGORY : Farm Animals.
Small Horned Cattle.

ABS. JOUR. : RZhBiol., No. 6, 1959, No. 25865

AUTHOR : Yerokhin, A. I.
INST. : Scientific Research Institute of Animal*
TITLE : The Meat Production of Darvazskaya Sheep and Gorno-Darvazskaya Hybrids.

ORIG. PUB. : Tr. N.-i. in-ta zhivotnovodstva i vetrinarii. TadzhSSR, 1957, 1, 273-328

ABSTRACT : The average live weight of Darvazskaya sheep is for ewes 31 kg, for rams 33 kg. The slaughtered average weight of meat and fat amounts to 13-15 kg, the slaughtered yield to 45 percent. The meat of the Darvazskaya sheep is fine in fiber and contains few fat layers. The Darvazskaya sheep mature late. In order to improve on the fleshiness of the Darvazskaya sheep, they are crossed with Gornaya (Muertem-bag) sheep, their hybrids are crossed with Caucasian and Soviet Merino while their feeding

Card: 1/2

*Husbandry and Veterinary Science, Tadzhik SSR.

COUNTRY : USSR
CATEGORY :

ABS. JOUR. : RZhBiol., No. 1959, No.

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : and keeping conditions undergo improvement. The Gorno-Darvazskaya hybrids are heavy and well shaped in their meaty parts. The average live weight amounts in ewes to 55-60 kg, in rams to 75-80 kg. The average slaughtered meat and fat yield amounts to 52 percent. The meat has a large number of fat layers and is characterized by its high taste qualities. The animals fatten well and mature early. -- K. V. Tatariyskaya

CARD: 2/2

YEROKHIN, A. I.

USSR / Farm Animals. Sheep and Goats. Q-3

Abs Jur : Ref Zhur - Biol., No 10, 1958, No 45212

Author : Yerokhin, A. I.
Inst : Not given
Title : The Relative Weight of the Internal Organs of the Darvaz and Gornyy Darvaz Sheep.

Orig Pub : Izv. Otd. yestestv. nauk AN TadzhSSR, 1957, No. 18, 173-183

Abstract : A study of the changes dependent on age in the meat production of the Darvaz and Gornyy Darvaz sheep was carried out. The Gornyy Darvaz hybrids, as compared with the Darvaz sheep possess lesser relative weight of all internal organs. This puts them into a class of sheep which is closer to well-bred sheep, of the more refined type, characterized by a higher earliness and fleshing qualities.

Card 1/1 IN-TA zhivotnovodstva, AN Tadzhik SSR

YEROKHIN, A.I., Cand Agr Sci--(diss) "Age-related changes in meat productivity of Darvaz sheep and mountain-Darvaz hybrids." Stalinabad, 1958. 19 pp (All-Union Sci Res Inst of Animal Husbandry), 150 copies (KL,45-58, 150)

-115-

YEROKHIN, A.K.; IZVOZCHIKOV, V.A., assistant, nauchnyy rukovoditel' raboty

Effect of adsorption on the photoconductivity of lead oxide. Uch. zap. Ped. inst. Gerts. 239:65-68 '64.

(MIRA 16:3)

YEROKHIN, A.P.

About N.S.Lebedev's article "Standardization of forge furnaces."
Kuz.-shtam. proizv. 4 no.9:38 S '62. (MIRA 15:9)
(Furances, Heating) (Lebedev, N.S.)

YEROKHIN, A.P.

Mechanization and automatization in heat-treatment departments. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1953. 370 (1.e.307) p. (54-15747)

TS213.E7

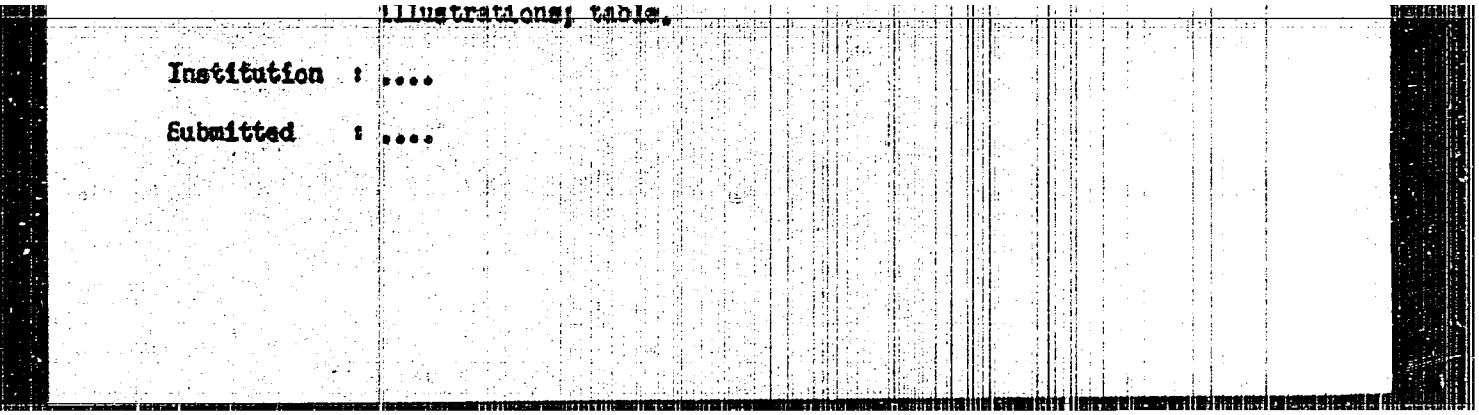
Card 1/1 : Pub. 128 - 3/31

Authors : Erokhin, A. P.

Title : The automatization of production of automobile springs

Periodical : Vest. mash. 10, 13 - 21, Oct 54

Abstract : A fully automatic production of automobile springs is discussed, and a description is given of production machines, lines of production



YEROKHIN, A. P.

112-1-1408

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 1, p. 214 (USSR)

AUTHOR: Yerokhin, A.P.

TITLE: Automation of Spring Production (Avtomatizatsiya ressornogo proizvodstva)

PERIODICAL: Sbornik: Avtomatizatsiya tekhnol. protsessov v mashinostr. Goryachaya obrabotka metallov. Moscow, AN SSSR, 1955, pp.117-126

ABSTRACT: Bibliographic entry

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69328

S/129/60/000/05/001/023
E091/E235

18.7100

AUTHOR: Yerokhin, A. P., Engineer

TITLE: The Method of Continuous Operation in the Automatic Heat Treatment of Metals

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, Nr 5, pp 2-7 (USSR)

ABSTRACT: The continuous method for heat treatment of metals has the following advantages over the batch process: (1) constant temperature and other conditions in all stages of the process and hence a constant consumption of electrical energy, heat, water, air, etc. (2) The process is rhythmical as the metal to be treated is fed at constant time intervals. Fig 1 is a graphical comparison of the two methods. The main advantage of the continuous process is its adaptability to automation. It is most effective when it is applied in mass production. The design of an automatic continuous machine is discussed, sketches of which are shown in Figs 2 to 5. Fig 2 shows the layout of an automatic continuous machine for the heat treatment of piece parts, which are loaded and unloaded in bulk. Fig 3 shows piece parts loaded on a tray. In Fig 4, the layout

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S/129/60/000/05/001/023
E091/E235

The Method of Continuous Operation in the Automatic Heat Treatment of Metals

of the automatic section of a plant for the heat treatment of small gears stacked on trays is shown. Fig 5 shows the layout of the automatic section of a plant for the heat treatment of rolls. There are 5 figures and 3 Soviet references.

ASSOCIATION: Giproavtoprom

Card 2/2

YEROKHIN, A.P.

Principles of automatic control in the thermal treatment of metals in the automobile industry. Avt. prom. 27 no. 5:33-35 My '61. (MIRA 14:5)

1. Gosudarstvennyy institut po proyektirovaniyu zavodov avtomobil'noy promyshlennosti.
(Automobile industry) (Automatic control)

YEROKHIN, Aleksandr Semenovich; TIMOSHINA, V.A., red.; GALAKTIONOVA, Ye.N., tekhn.red.

[Moscow - Yalta; road guide] Moskva - Yalta; putevoditel' po avtomobil'noi doroge. Izd.2., dop. i perer. Moskva, Nauchno-tekhn.izd-vo M-va avtomobil'nogo transporta i shosseinykh dorog RSFSR, 1960. 175 p. (MIRA 13:11)
(Automobiles--Road guides)

ACC NR: AR6022468 SOURCE CODE: UR/0169/66/000/003/D019/D019

AUTHOR: Lerner, B. L.; Levin, A. E.; Yerokhin, B. A.

TITLE: New apparatus incorporating an intermediate stage of magnetic recording as the basis for further improvement of the MOV method of seismic prospecting

SOURCE: Ref. zh. Geofiz, Abs. 3D118

REF SOURCE: Tr. Nizhne-Volzhsk. n.-i in-t geol. i geofiz., vyp. 2, 1964, 75-78

TOPIC TAGS: seismic prospecting, geophysic instrument

TRANSLATION: New apparatus, developed at the Design Bureau of the Nizhnevolganefte-geofisika includes a seismic station equipped with an SS-24-61M magnetic recorder, a PSZ-2 seismic recording converter and an MS-1 magnetic integrator. This stationary instrumentation is used to process the data which were magnetically recorded by the method of directionally controlled reception. One machine, the PSZ-2 can process seismograms recorded at 9 or 10 simultaneously operated stations. A. Fedorenko.

SUB CODE: 08

UDC: 550.834

Card 1/1

YEROKHIN, G.I.

Grinding of the necks of vacuum filter shafts and bearings. Sakh. prom. 36 no.7:52-53 Jl '62. (MIRA 17:1)

1. Digorskiy sakharnyy zavod.

KHARCHENKO, Nikolay Panteleymonovich; YEROKHIN, Gennadiy Ivanovich; SMAGORINSKIY, B., red.; BURYANOV, N., tekhn. red.

[Handbook for the operator of the DT-75 tractor] Traktoristu o traktore DT-75; spravochnik. Volgograd, Volgogradskoe knizhnoe izd-vo, 1963. 216 p. (MIRA 17:3)

SERGEYEV, Aleksandr Andrianovich, doktor tekhn. nauk; YEFOKHIN, G.M., red.

[Efficient utilization of ore deposits] Ratsional'noe ispol'zovanie rudnykh mestorozhdenii. Moskva, Izd-vo "Metallurgiia," 1964. 247 p. (MIRA 17:6)

KRASAVIN, Aleksandr Pavlovich; POPOV, Nikolay Nikolayevich; BOGUSLAVSKIY, Emil' Iosifovich. Prinimali uchastiye: TISHCHENKO, V.I.; KLYKOV, M.V.; YEROKHIN, G.M., red. izd-va; LAVRENT'YEVA, L.G., tekhn. red.

[Mine worker] Zaboishchik na rudnikakh. Moskva, Gosgortekhizdat, 1963. 150 p. (MIRA 16:8)
(Mining engineering)

CHINAKAL , N.A., red.; YEROKHIN, G.M., ved. red.

[Improving the technology of working ore deposits by underground methods] Sovershenstvovanie tekhnologii razrabotki rudnykh mestorozhdenii podzemnym sposobom. Moskva, Nedra, 1965. 185 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut gornogo dela. 2. Chlen-korrespondent AN SSSR (for Chinakal).

SUPRUNOV, N.N.; BESPAL'CHIK, L.M.; TIMOFEYEV, V.M.; BEZLYUD'KO, A.I., otv. red.; [redacted], ved. red.; NESTERENKO, V.I., red.; KUNIN, I.K., red.;

[Jet boring; studies] Termicheskoe burenie; sbornik trudov. Moskva, Nedra, 1965. 182 p. (MIRA 18:12)

1. Krivoy Rog. Institut "Giprorudmash."

BARSUKOV, Ye.Ya.; BOTNIKOV, Ya.A.; YEROKHIN, O.S.

Dynamics of gas flow in the operation of cyclone discharge pipes in petroleum refining units. Khim.i tekh.topl.i masel 5 no.4:45-49 Ap '60. (MIRA 13:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.
(Gas flow) (Petroleum--Refining)

BARSHUKOV, Ye.Ya.; YEROKHIN, G.S.

Methods of withdrawing trapped dust from cyclones in fluidized bed units. Khim.i tekh.topl.i masel 6 no.3:36-39 Mr '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gasa i polucheniyu iskusstvennogo zhidkogo topliva.
(Petroleum--Refining)(Fluidization)

VAKHRUSHEV, I.A.; YEROKHIN, G.S.

Mixing of solid particles in a fluidized bed. Khim.prom. no.11:810-815 N '62. (MIRA 16:2)
(Fluidization)

YEROKHIN, I. A.

18054

[redacted]/Elec Power Plant [redacted] Nov 1947

"Power Plant Among Pioneers on the Thirtieth Anniversary of the Great October Revolution," I. A. Yerokhin, Engr, 1½ pp

"Elek Stantsii" Vol XVIII, No 11

Describes plant with special mention of work done in use of peat as fuel and experimental work along such lines. Describes training program for personnel. Discusses plans for modernization of equipment.

[redacted] 18054

8(5)

AUTHORS: Toloknov, O.A., Chirkov, M.T., and Yerokhin, I.A. SOV/159-58-3-9/31

TITLE: A Generator - Motor System With Magnetic Amplifiers

PERIODICAL: Nauchnyye doklady vysshey shkoly, Mashinostroyeniye i priborostroyeniye, 1958, Nr 3, pp 58-61 (USSR)

ABSTRACT: For a number of production devices it is desireable to have an electric drive with an even wide control range. The generator-motor system satisfies this requirement. However, the normal generator-motor system does not provide different mechanical characteristics. This may be obtained by a complicated and uneconomical addition of auxiliary motors and devices. The generator-motor system suggested by the authors provides a wide and even range of rpm control for different mechanical characteristics. Prior to considering the generator - motor system with a magnetic amplifier, the authors point out some peculiarities of generator-motor systems with series excitation. They mention the complicated equipment required and that continuous motor speed control is of the

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order 1:10 by reducing the magnetic current in the motor and in the generator. Further, they point out the disadvantages of such a system. For eliminating these disadvantages and for providing a control range of 1:50, the authors suggest a generator-motor system with a magnetic amplifier as shown in figure 2. In a generator-motor system, having series excitation, residual magnetism currents are of great influence at loads close to zero. These residual magnetism currents are compensated in the system suggested by the authors. The suggested generator-motor system with a magnetic amplifier was tested on a low-power machine PI-45, operating at 110 volts, 28.2 amps, 2.5 kw, 1,000 rpm. The application of magnetic amplifiers provides the possibility obtaining different mechanical characteristics and regulating the motor speed by means of potentiometers. There are

A Generator - Motor System With Magnetic Amplifiers SOV/159-58-3-9/31

1 circuit diagram, 5 graphs and 4 Soviet references.
This article was presented by the Kafedra "Elektrotekhnika i elektrooborudovaniye" Moskovskogo vysshego tekhnicheskogo uchilishcha imeni Baumana (Chair "Electrical Engineering and Electrical Equipment" of the Moscow Higher Technical School imeni Baumen).

SUBMITTED: March 13, 1958

Card 3/3

GULYAYEV, G.I., kand.tekhn.nauk; YURGELENAS, V.A., kand.tekhn.nauk; YEROKHIN, I.N., inzh.; GALITSKIY, B.M., inzh.; DERGACH, A.Ya., inzh.; KIRVALIDZE, N.S., inzh.; KURILENKO, V.Kh., inzh.

Potentialities of pipe reduction in automatic pipe mills. Met.i gornorud.prom. no.5:33-36 S-O '62. (MIRA 16:1)

1. Ukrainskiy nauchno-issledovatel'skiy trubnyy institut i Yuzhnotrubnyy zavod.

(Pipe mills)

YEROKHIN, I.P.

Designing frameworks of open-hearth furnaces. Mat. po stal'. konstr. no.4:32-57 '59. (MIRA 13:8)
(Open-hearth furnaces)
(Steel, Structural)

YEROKHIN, I.P., nauchnyy sotrudnik

Study of the toxicity of carbon tetrachloride for sheep following its introduction into the rumen. Sbor.nauch.rab.Sar.NIVS 4:167-171 '60. (MIRA 15:7)
(Carbon tetrachloride--Physiological effect)
(Sheep--Diseases and pests)

YEROKHIN, I.P., nauchnyy sotrudnik

Seasonal dynamics of dictyocauliasis in sheep in Saratov Province.
Sbor.nauch.rab.Sar.NIVS 4:172-184 '60. (MIRA 15:7)
(Saratov Province--Sheep--Diseases and pests)

YEROKHIN, I.P., nauchnyy sotrudnik

Pharyngostomum cordatum as a new trematode in dogs. Sbor.nauch. rab.Sar.NIVS 4:185-188 '60. (MIRA 15:7)
(Dogs--Diseases and pests) (Trematoda)

YEROKHIN, I.P., nauchnyy sotrudnik

Infection of swine by invasive eggs of human ascariasis. Sbor. nauch.rab.Sar.NIVS 4:189-190 '60. (MIRA 15:7)
(Ascarids and ascariasis) (Swine--Diseases and posts)

YEROKHIN, I.P., inzh.

Calculating the buckstays of open-hearth furnaces. Mat. po met. konstr. no.7:108-118 '62. (MIRA 17:1)

YEROKHIN, I.S., dots., kand.tekhn.nauk; VEKLISTOV, Ye.M., assistent

Inductive pickup. Trudy MIIGAIK no.36:15-18 '59.
(MIRA 13:4)

1. Kafedra priborostroyeniya Moskovskogo instituta inzhenerov geodezii, aerofotos"yemki i kartografii.
(Surveying--Instruments)

YEROKHIN, L. N.

20/4917

USSR/Electricity Sep 48
Cables, Electric
Power Lines

"Periodic Maintenance Checks on Six-Kilovolt Cables," L. N. Yerokhin, Engr, 2 pp

"Elek Stants" No 9

Reports tests performed by Krasnodarelektroset' in 1946-47. Tabulates and discusses results. Criticizes official instructions issued by Ministry of Electric Stations on subject.

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YEROKHIN, M.M.; SIDERMAN, I.G.; CHERNENKOV, N.V.

Cutting the costs of coal in the "Leninugol'" Trust of "Kuzbassugol'" Combine. Ugol' 34 no.6:20-22 Je '59. (MIRA 12:8)

(Kuznetsk Basin--Coal mines and mining--Costs)

YEROKHIN, M.V. (Stavropol')

Use of relief maps in class. Geog. v shkole 22 no.1:60-61
Ja-F '59. (MIRA 12:4)
(Relief maps)
(Geography--Study and teaching--Audio-visual aids)

YEROKHIN, M.V. (g.Stavropol')

Tying in the teaching of geography with students' production work in the student's brigade. Geog.v shkole 22 no.4:53-57 Jl-Ag '59. (MIRA 12:11)
(Stavropol Territory--Education, Cooperative)
(Geography--Study and teaching)

YEROKHIN, N. A.

"Continuation of Abce (The Effect of Blasting on the Water permeability of Soils) with Reference to Excavating for Irrigation Purposes", Gidrotekh. Stroi, No. 5, 1949, Engr.

YEROKHIN, N.A.

99-58-5-2/10

AUTHORS: Yerokhin, N.A., Candidate of Technical Sciences; Spirina, V.M.

TITLE: Ways of Reducing the Expense of the Rural Water Supply in the Ukrainian SSR (Puti snizheniya zatrat na sel'skoye vodosnabzheniye v Ukrainskoy SSR)

PERIODICAL: Gidrotekhnika i Melioratsiya, 1958, Nr 5, pp 8-18 (USSR)

ABSTRACT: The construction of centralized or local water supply lines, together with the building of pumping, transportation and distributing installations is at present the most important task in the Ukraine. This republic is one of the leaders in the union in the number of artesian wells constructed yearly. Between 1955 - 1957, 6,919 new wells were drilled there. To reduce the costs of the construction of rural water lines, the central powers must develop and modernize conditions and standards. In the construction of new artesian wells, a combined system of drilling - rotor and percussive - should be used. The use of specially constructed filters, is also advised, as is the use of asbestos cement pipes. Unfortunately, deliveries of these pipes are still inadequate and force builders to use the more expensive cast iron ones. The

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99-58-5-2/10

Ways of Reducing the Expense of the Rural Water Supply in the Ukrainian SSR

authors recommend the use of a universal hydrant without cups constructed by the Engineer Rogozhkin, which will not freeze-up. The use of bacteryoidal rays for the sterilization of water is recommended; it works automatically and no reagents need to be added to the water.
There are 6 drawings.

AVAILABLE: Library of Congress

Card 2/2 1. Water supplies-USSR 2. Water supplies-Costs 3. Agriculture-USSR 4. Irrigation systems-Costs

SOV-99-58-9-1/9

AUTHORS: Yerokhin, N.A. and Dolinskaya, V.M., Candidates of Technical Sciences

TITLE: Standard Specifications for the Planning of Water Supply Lines on Livestockbreeding Farms (O normakh vodopotrebleniya dlya proyektirovaniya vodoprovodov v zhivotnovodcheskikh khozyaystvakh)

PERIODICAL: Gidrotekhnika i melioratsiya, 1958, Nr 9, pp 3 - 10 (USSR)

ABSTRACT: Research conducted since 1955 by the Ukrainskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii (Ukrainian Scientific Research Institute of Hydraulic Engineerig and Melioration), aims at fixing new norms for water consumption at livestockbreeding farms of the Ukraine, so future water supply lines can be constructed, as near as possible, to the needs of these farms. In the past, these needs were very often overestimated, and the water supply lines were constructed on a larger scale than necessary, which resulted in useless capital investments. As a result of experiments made, the authors established diagrams and

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Standard Specifications for the Planning of Water Supply Lines on Live-stockbreeding Farms SOV-99-58-9-1/9

tables, the application of which will cut down the water consumption in some of Ukrainian farms from 60 cubic m in 24 hours to 43 cubic m. The reduction of planned water supply lines will result in a reduction of capital expenditures by 12%. There is 1 photo, 6 graphs and 5 tables.

1. Agriculture--Water supply 2. Agriculture--Specifications
3. Water--Economic aspects 4. Animals--Reproduction

Card 2/2

YEROKHIN, N.A., kand. tekhn. nauk

Experiments in the use of polyethylene pipes in rural water supply in the Ukraine. Gidr. i mel. 15 no.9:34-40 S '63. (MIRA 17:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii.