L 11546-66 EWT(d)/EWP(k)/EWP(l)

ACC NR: AP6005030 SOURCE CODE: UR/0105/65/000/001/0092/0092

AUTHOR: Basharin, A. V.; Bystrov, A. M.; Veshenevskiy, S. N.; Voronetskiy, B. B.; Drozdov, N. G.; Druzhinin, M. M.; Il'inskiy, N. F.; Petrov, I. I.; Petrov, L. P.; Sandler, A. S.; Sokolov, M. M.; Chilikin, M. G.

30
37
B

ORG: none

TITLE: Professor Andrey Trifonovich Golovan

SOURCE: Elektrichestvo, no. 1, 1965, 92

TOPIC TAGS: electric engineering, electric engineering personnel

ABSTRACT: A brief obituary containing the following biographical information: Deceased was a doctor of technical sciences, a professor (Department of Electrical Equipment for Industrial Enterprises) of the Moscow Power Engineering Institute for the past 30 years, and a staff member since 1931 of the TsNIITMash (Central Scientific-Research Institute of Heavy Machine Building). Died 15 Sep 64, at age 63, after a long and severe illness. In 1926, after graduating from the Leningrad Electrical Engineering Institute im. Ul'yanov, deceased became director of a substation within the Gor'kiy GRES. At the TsNIITMash, the deceased worked out the methods for computing the electric drive of presses, drop hammers and other machine tools with percussion loads. The monograph on these methods has gained wide professional recognition. Deceased trained several thousand engineers and over 30 doctors and candidates of science. He authored over 50 scientific works, including the textbook "Osnovy Elektroprivoda" (Fundamentals of Electric Drive)

Card 1/2 UDC: 621.34(093.32)

L 11546-66

ACC NR: AP6005030

published in 1948, with a revised second edition in 1959. He was awarded the Order of the Badge of Merit twice, and other decorations. Orig. art. has: 1 figure.
[JPRS] 14

SUB CODE: 09 / SUBM DATE: none

HW

Card 2/2

ACC NR: AP6001977 SOURCE CODE: UR/0105/65/000/003/0090/0090

AUTHOR: Alekseenko, G. V.; Borisenko, N. I.; Voronetskiy, B. B.; Gladilin, L. V.; Druzhinin, N. N.; Petrov, I. I.; Syromyatnikov, I. A.; Tishchenko, N. A.; Chernichkin, D. S.; Chilikin, M. G.

ORG: none

TITLE: Professor Vyacheslav Semenovich Tulin on his 60th birthday

SOURCE: Elektrichestvo, no. 3, 1965, 90

TOPIC TAGS: mechanical engineering personnel, electric engineering personnel

ABSTRACT: Professor V. S. TULIN was born in November 1904 and graduated from the Kharkov Engineering Institute in 1925. He has since then specialized in the application of electric drives for the mining industry, in low-voltage apparatus and more recently in automation. At the present time he is the chairman of the Department of Automation and Control Machinery at the Moscow Institute of Radio-Electronics and Mining Electromechanics. He has made major contributions in his field: he is the author of 80 published works including a textbook on the automation of production processes in the mining industry; he also received an award in 1948 in connection with the Donets Basin development. He now participates in ministerial councils and committees concerned with scientific-research work, industrial coordination, also secondary and higher education. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 13, 09 / SUBM DATE: none

Card 1/1 HW

UDC: 621.34:65.011.56

L 27948-66

ACC NR: AP6017708 SOURCE CODE: UR/0105/66/000/001/0085/0086

AUTHOR: Bertinov, A. I.; Voronetskiy, B. B.; Gendel'man, B. R.; Girshberg, V. V.; Gromov, V. I.; Druzhinin, N. N.; Kunitskiy, N. P.; Naumenko, I. Ye.; Petrov, I. I.; Vetrov, G. N.; Rusakov, V. G.; Silayev, E. F.; Slezhanovskiy, O. V.; Syromyatnikov, I. A.; Tulin, V. S.; Filin, N. M.; Teelikov, A. I.; Chilikin, M. G.; Yun'kov, M. G.

ORG: none

TITLE: Engineer N. A. Tishchenko (on his 60th birthday)

SOURCE: Elektrichestvo, no. 1, 1966, 85-86

TOPIC TAGS: electric engineering personnel, metallurgic furnace, electric equipment

ABSTRACT: Nikolay Afanas'yevich Tishchenko completed the Khar'kov Electrotechnical Institute in 1930, after working as an electrician in a Metallurgical plant from 1923-1926. He was active in the development of domestically produced electrical equipment for rolling mills and metallurgical furnace works. He was active during WWII in restoring electrical equipment damaged by the Germans. After the war, he was active in developing electrical drive equipment for both domestic and foreign metallurgical plants. He has been active in scientific work, publishing over 45 works in such varied fields as electric drives, equipment reliability and productivity of labor. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 09, 13 / SUBM DATE: none

Card 1/1 BLG UDC: 621.34

DRUZHININ, N.S.; TSYLBOV, P.P.; SHKOL'NIK, K.A.

[Drawing course. Part 1; geometric drawing (drawing technique and geometric structures)] Kurs cherchcheniia. Chast' 1; geometricheskoe cherchenie (tekhnika cherchcheniia i geometricheskie postroeniia). Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1953- . (MLRA 6:8)
(Geometrical drawing) (Mechanical drawing)

DRUZHININ, N. S.

DRUZHININ, N.S.; TSYLBOV, P.P.; SHKOL'NIK, K.A.; SHCHUKIN, S.M., dotsent, retsenzent; SHIKIN, S.V., kandidat pedagogicheskikh nauk, retsenzent; SHELKOVNIKOV, G.I., inzhener, redaktor; MODEL', B.I., tekhnicheskiy redaktor; POPOVA, S.M., tekhnicheskiy redaktor

[Course in mechanical drawing] Kurs cherchenila. Izd. 2-e, ispr. Moskva, Gor. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry. Pt.1. [Geometric drawing; mechanical drawing technique and geometric construction] Geometricheskoe cherchenie; tekhnika cherchenila i geometricheskie postroenila. 1954. 220 p. (MLRA 7:9)
(Mechanical drawing)

DRUZHININ, N.S.; TSYLBOV, P.P.; SHCHUKIN, S.M., dotsent, retsenzent; [redacted], S.V., kandidat pedagogicheskikh nauk, retsenzent; ZHELKOVNIKOV, G.I., inzhener, redaktor; POPOVA, S.M., tekhnicheskiy redaktor

[Course in drawing] Kurs cherchenila. Moskva, Gos. nauchno-techn. izd-vo mashinostroit. lit-ry. Pt.2.[Projection drawing (perpendicular, axonometric projection and technical drawing)] proektsionnoe cherchenie (priamougol'nye, aksonometricheskie proektsii i tekhnicheskoe risovanie). 1954. 323 p. (MLRA 8:7)
(Mechanical drawing)

DRUZHININ, Nikolay Sergeyevich; TSYLBOV, Petr Petrovich; SHKOL'NIK, Konstantin Abramovich; SHCHUKIN, S.M., dotsent, retsenzent; SHIKIN, S.V., kand.pedagog.nauk, retsenzent; SHELKOVNIKOV, G.I., inzh., red.; SMIRNOVA, G.V., tekhn.red.

[Course of drawing] Kurs cherchenila. Izd.3., ispr. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Pt.1. [Geometrical drawing; drawing practice and geometrical constructions] Geometricheskoe cherchenie; tekhnika cherchenila i geometricheskie postroeniia. 1960. 176 p. (MIRA 13:7)
(Geometrical drawing)

DRUZHININ, Nikolay Sergeyevich; TSYLBOV, Petr Petrovich; SHCHUKIN, S.M., dotsent, retsenzent; SHIKIN, S.V., kand.pedagog.nauk, retsenzent; SHELKOVNIKOV, G.I., inzh., red.; YEGORKINA, L.I., red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Course in engineering drawing] Kurs cherchenila. Izd.2., perer. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Pt.3. [Mechanical drawing] Mashinostroitel'noe cherchenie. 1960. 267 p. (MIRA 13:12)
(Mechanical drawing)

DRUZHININ, Nikolay Sergeyevich; TSYLBOV, Petr Petrovich; SHCHUKIN, S.M., dotsent, retsenzent; SHIKIN, S.V., kand.pedagog.nauk, retsenzent; SHELKOVNIKOV, G.I., inzh., red.; YEGORKINA, L.I., red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Course in mechanical drawing] Kurs cherchenila. Izd.2., ispr. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Pt.2. [Projectional drawing; orthogonal, azonometric projections, and technical sketching] Proektsionnoe cherchenie; ortogonal'nye, aksonometricheskie proektsii i tekhnicheskoe risovanie. 1960. 311 p. (MIRA 13:9)

(Mechanical drawing)

DRUZHININ, N.I.; TSYLBOV, P.P.; RYAZANOV, A.V., kand. tekhn. nauk, retsenzent; DANILOV, L.N., inzh., red.; MODEL', B.I., tekhn. red.

[Course in mechanical drawing] Kurs cherchcheniia. Moskva, Mashgiz, 1964. 491 p. (MIRA 17:2)

DRUZHININ, N.V.

Control over the operation of mercury-arc rectifier networks.
Elek. i tepl. tiaga 2 no.1:24 Ja '58. (MIRA 11:3)

1.Nachal'nik remontno-revizionnogo tsekha Kurganskogo uchastka energosnabzheniya.
(Mercury-arc rectifiers)

AUTHOR: Druzhinin, N.V., Engineer SOV-135-58-9-15/20

TITLE: Welding Without Waste Electrode Ends (Bezogarkovaya svarka)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 9, pp 42-43 (USSR)

ABSTRACT: The article contains information on an electric holder used at the "Krasnyy kotel'shchik" Plant permitting complete utilization of electrodes without leaving waste ends. The used-up electrode can be replaced by placing the bent-off end of the holder into a special bunker (fig. 2) containing the new electrodes and contacting the end with an electrode by switching on the electric current. The author suggested that the straightening-cutting "POS-1" machine, available at the plant for cutting electrode rods into the optimum length of 400 mm, be redesigned. The suggested design is described and illustrated by kinematic diagram (fig. 3).

Card 1/2

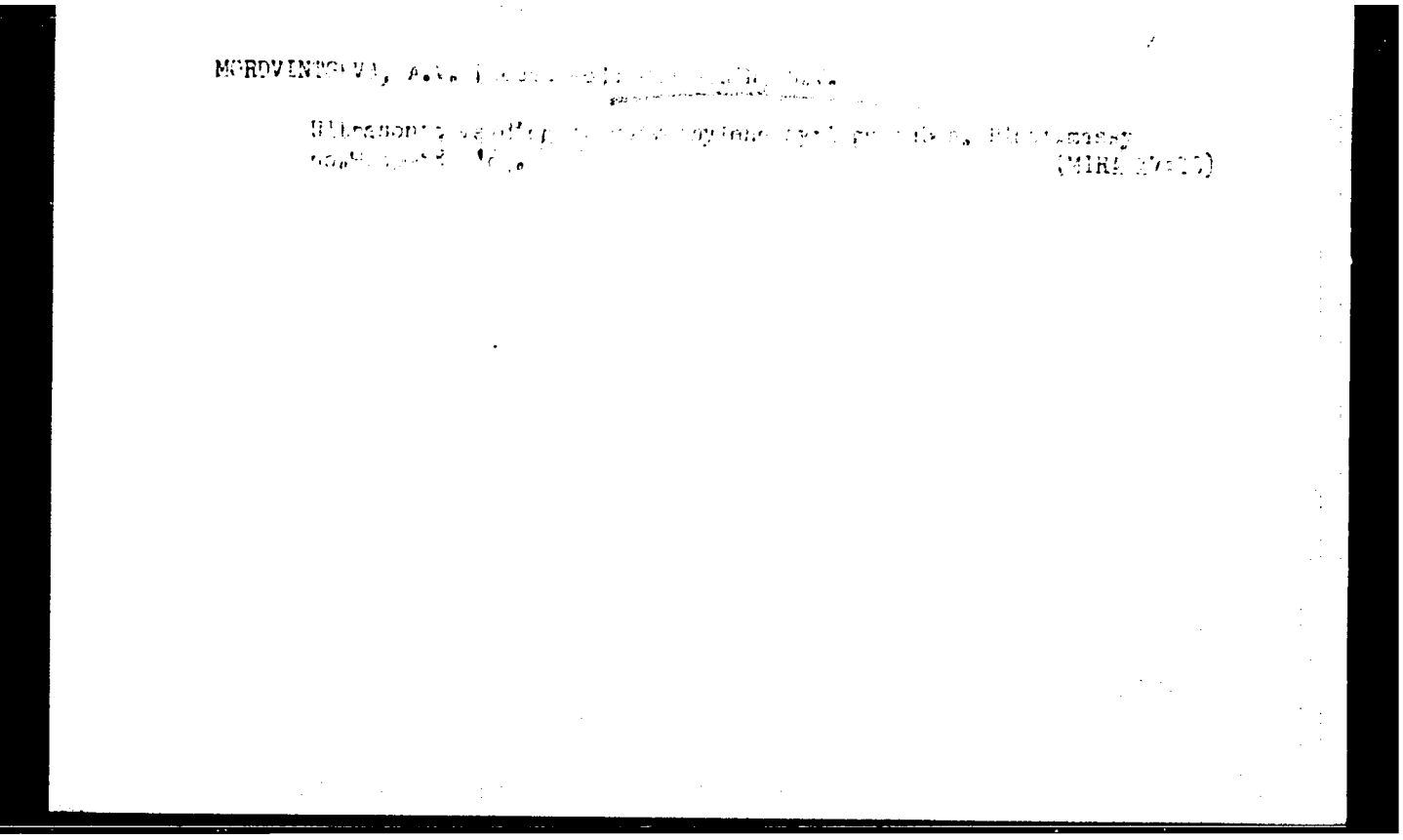
Welding Without Wast Electrode Ends SOV-135-58-9-15/20

The method of welding without waste electrode ends results in a yearly economy of 650 kg of electrodes per one operator, and in an increased work efficiency of 7%. There are 2 diagrams and 1 photo.

ASSOCIATION: Taganrogskiy zavod "Krasnyy kotel'shchik" (The Taganrog "Krasnyy Kotel'shchik" Plant)

1. Arc welding--Electrodes 2. Arc welding--Equipment

Card 2/2



ACC NR: AP6000967 (A) SOURCE CODE: UR/0206/65/000/022/0053/0053
EWA(c) JD/HM/RM

AUTHOR: Druzhinin, N. V. 33 B

ORG: none

TITLE: Device for ultrasonic welding of plastic. Class 39, No. 176381

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 53

TOPIC TAGS: ultrasonic welding, plastic fabricating machinery

ABSTRACT: This Author Certificate presents a device for ultrasonic welding of plastic, consisting of an acoustical unit, a waveguide, a support, and an ultrasound transmission period control (see Fig. 1). The ultrasound transmission period control is in the form of a terminal switch, operating with the deformation of the softened

Card 1/2 UDC: 678.029.43:534-8

ACC NR: AP6000967

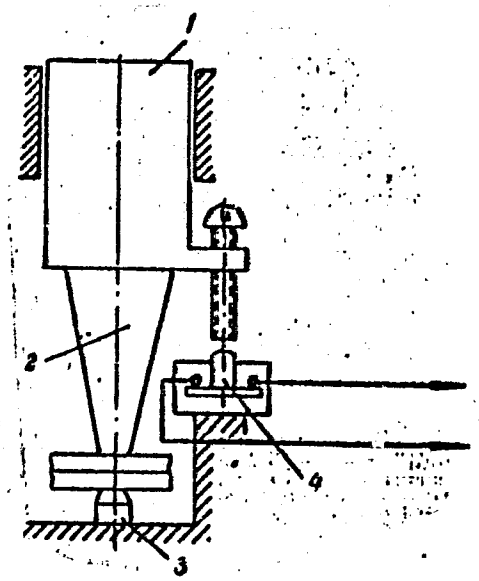


Fig. 1. 1 - Acoustical unit; 2 - waveguide; 3 - support; 4 - terminal switch.

film. Orig. art. has: 1 diagram.

SUB CODE: 13, 11/ SUBM. DATE: 08Oct62

jw

Card 2/2

L 43057-66 EWT(d)/EWP(k)/EWP(h)/T/EWP(v)/EWP(l) IJP(c) CC/BC/GD
ACC NR: AP6010021 SOURCE CODE: UR/0119/66/000/003/0003/0006

AUTHOR: Gluzman, S. S. (Engineer); Druzhinin, O. G. (Engineer); Martyushin, Ye. I. (Engineer)

ORG: none

59
B

TITLE: Modeling of industrial digital controls on analog computers

SOURCE: Priborostroyeniye, no. 3, 1966, 3-6

TOPIC TAGS: automatic control design, control simulator, computer control system, automatic control equipment, analog computer, digital computer system

ABSTRACT: Digital control computers are being utilized as multichannel regulators of technological processes. The authors discuss the circuits of such a multichannel system, analog-to-digital conversion, and the difficulties encountered in the design of such systems. The difficulties involve the analytical determination of time optimal control, the tuning parameters of each channel, the influence of the level quantization on the control process, etc. Since many such problems can be studied relatively simply on analog simulators the paper presents and discusses, among others, the block diagrams of a fixator model, a control-law components model, a variable coefficient block model, and a signal level quantization block model. Some

Card 1/2 UDC: 681.142.334

L 43057-66
ACC NR AP6010021

results of the modeling and an analysis of the newly acquired data are also given. Orig. art. has: 5 formulas, 5 figures, and 1 table.

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 003

Card 2/2 hs

DRUZHININ, P., tekhnicheskiy inspektor.

Work runs smoothly in good hands. Okhr. truda i sots. strakh. no.2: 41-43 Ag '58. (MIRA 12:1)

1. Luganskiy oblsovprof.
(Luganskoye (Stalino Province)--Locomotive works--Safety measures)

DRUZHININ, P., stalevar

Visiting Korean metallurgists. Metallurg 4 no.3:39 Mr '59.
(MIRA 12:4)

1. Zavod "Elektrostal'."
(Korea—Metallurgy)

DRUZHININ, Pavel Aleksandrovich, tokar'; SVET, Ye.B., red.; KOLBICHEV, V.I., tekhn.red.

[Universal indexing device] Universal'noe delitel'noe prisposoblenie. Cheliabinsk, Cheliabinskoe knizhnoe izd-vo, 1959. 10 p. (MIRA 13:5)

1. Elektrovozoremontnyy zavod, g.Chelyabinsk (for Druzhinin).
(Indexing (Machine-shop practice))

26.2181
26.5200

17.4430 (9902, 1327, 9901)

25670
S/096/61/000/009/007/008
E194/E155

AUTHOR: Druzhinin, S.A.

TITLE: The calculation of internal heat exchange during porous cooling

PERIODICAL: Teploenergetika, 1961, No.9, pp. 73-77

TEXT: The mechanism of porous cooling may be considered as consisting of two parts: the cooling medium extracts heat from the porous material on passing through the pores (internal heat exchange); the cooling medium leaving the pores forms a surface film which interacts with the heat source (external heat exchange). Western work on the theory of internal heat exchange in porous metal is reviewed, and it is concluded that as yet no procedure is available for calculating internal heat exchange in porous metals. Accordingly, the object of the present work was to find a criterial relationship between the heat transfer coefficient within porous metals and the flow of coolant and the wall temperature. The hydrodynamics of flow and heat exchange in porous metals is very similar to that in disperse media, which have been extensively studied. Accordingly, the criterial equations should be analogous for the two cases. However, in the

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case of powders of given grain composition the porosity may be calculated geometrically, but in the case of porous metals it is necessary to introduce the porosity factor, Π. The present work was carried out with only air as the cooling medium and with the porous specimen in the low temperature range of 25 - 95 °C; hence the temperature factor and the Prandtl criteria could be ignored. Therefore, the criterial equation of the process is of the following form:

$$Nu = f(Re, \Pi) \qquad (4)$$

In this case the Nusselt criteria has a special feature because of the use of the volumetric coefficient of heat transfer which is normally used for disperse and porous media. According to the theory of similarity, the form of the Nusselt criteria is established from consideration of the heat exchange equation, which for the internal problem in porous media is:

$$\alpha_v dV \overline{\Delta t} = - \lambda_{ox} \frac{\partial t}{\partial n} dF \qquad (5)$$

where: dV is the elementary volume of porous material; m^3;
$\overline{\Delta t}$ is the mean logarithmic temperature difference, °C;

λ_{ox} is the thermal conductivity coefficient of the cooling medium, kcal/m.hour,degrees; $\partial t/\partial n$ is the temperature gradient in the porous metal, degrees per metre; dF is the elementary area of volume considered, m^2. Accordingly the Nusselt equation is obtained in the form:

$$Nu = \frac{\alpha_v L^2}{\lambda_{ox}} \qquad (6)$$

The Reynolds criterion is conveniently expressed as follows:

$$Re = \frac{\beta' g_{ox}}{\alpha' \mu g} \qquad (7)$$

where: the ratio $\beta'/\alpha' = L$ is the determining dimension, m; α' is the coefficient of viscous resistance, $1/m^2$; β' is the coefficient of inertia resistance, 1/m.
Thus, in order to obtain the criterial equation (4) it is necessary to know the specific flow of cooling medium, the determining dimension for the given specimen, the volume heat transfer coefficient, the porosity of the specimen, and the temperature of the coolant and of the porous walls. The governing dimension is determined from hydraulic tests carried out on the same equipment

as the heat exchange experiments. The governing dimension was compared with similar values obtained by other methods and it is concluded that it is satisfactory. A method was developed for determining the volumetric heat transfer coefficient α_v under steady-state conditions; in essence the method consists in setting up surface heating of the specimen whilst ensuring free throughput of cooling medium and excluding the influence of any protective films. For this purpose it was convenient to heat the specimen by induced high-frequency currents and the electrical equipment necessary for doing this is described. The experimental procedure used in the main tests is described in some detail together with the instrumentation. In carrying out a test, the porous specimen was heated by high-frequency current to a temperature of 100-200 °C whilst spaced as closely as possible to the inductor and in the absence of cooling air. When the required temperature was reached the specimen was slowly drawn away from the inductor until a steady-state temperature was reached and then a small flow of coolant was applied. The specimen temperature dropped sharply and began to stabilise after 10-15 minutes. A glass sampler was then inserted in the centre of the specimen and the various magnitudes

were measured: the measurements were repeated every five minutes until steady-state conditions were established. On one of the specimens reverse tests were also made, i.e. air at a temperature of 60-120 °C was passed through a cold specimen and the corresponding measurements were made. The test results are plotted in criterial form in Fig.5 with the Nusselt value on the y axis and the Reynolds number on the x axis. The tests with hot air and cold specimen coincide with the general relationship. In the graph of Fig.5 the numbers against the experimental points refer to the specimen numbers. It will be seen that the experimental points are grouped to within ± 20% of straight lines which have the following equations: for specimens with a porosity of 30% $Nu = 0.0286\ Re^{1.84}$ (upper curve); for specimens with a porosity of 50% $Nu = 0.0060\ Re^{1.84}$ (lower curve). Since both curves have the same exponent of the Reynolds number for two porosities it may be expected that this relationship will be maintained for other porosities.

There are 5 figures, 2 tables and 12 references: 6 Soviet and 6 English. The four most recent English language references read:

25670
S/096/61/000/009/007/008
The calculation of internal heat E194/E155

Ref.3: R. Meyer, J. Bartas. "Jet Propulsion" No.6, 1954.
Ref.4: P. Grotenhuis, R. Mackworth, O. Saunders. Proc. of General Discussion on Heat Transfer, 1951.
Ref.5: P. Grotenhuis. J. of the Royal Aeronautical Society, V.63, No.578, 1959.
Ref.9: L. Green, P. Duwez. J. of Applied Mechanics, V.18, No.1, 1951.

ASSOCIATION: Kazanskiy aviatsionnyy institut
(Kazan' Aviation Institute)

Card 6/7

L 29818-66 EWT(d)/EWT(1) IJP(c) WW/JAJ

ACC NR: AP6012676 SOURCE CODE: UR/0170/66/010/004/0479/0481

AUTHOR: Druzhinin, S. A.; Leont'yev, A. I. 67 B

ORG: Thermophysics Institute of the Siberian Branch of the AN SSSR, Novosibirsk (Institut teplofiziki SO AN SSSR)

TITLE: Calculation of the temperature distribution on a porous plate

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 10, no. 4, 1966, 479-481

TOPIC TAGS: thermodynamic analysis, heat transfer temperature

ABSTRACT: It has been previously shown that to maintain the condition T_{wall} = const along the length of a porous plate, the flow rate of the injected gas must vary proportionally to $\bar{X}^{-0.2}$. In the case of uniform blowing, a case often occuring in practice, the wall temperature along the length will vary. Calculation of the distribution of $T_{wall} = f(\bar{X})$ can be carried out using the energy equation, the heat transfer law, and corresponding limits for a porous surface. Under these conditions, the energy equation, taking into account the velocity gradient, will be:

$$\frac{d\mathrm{Re}_T^{**}}{d\bar{X}} + \frac{\mathrm{Re}_T^{**}}{\Delta T}\frac{d(\Delta T)}{d\bar{X}} = \mathrm{Re}_e \bar{U}\mathrm{St}_0(\Psi_0 + b_T), \qquad (1)$$

Card 1/2 UDC: 536.21

ACC NR: AP6012676

where

$$\Psi_\theta = Kb_\tau, \quad (2)$$

$$K = (T_{cr} - T')/(T_\theta - T_{cr}), \quad (3)$$

$$b_\tau = \bar{j}_{cr}/\bar{U}\,St_\theta. \quad (4)$$

Calculated results are shown in a series of curves. One figure illustrates the dependence of F_1 on Ψ for calculation of the temperature of a porous wall. This curve is claimed to simplify the calculation. A second figure shows calculated and experimental data for a plate with $\bar{U} = 1$, for a middle cross section $\bar{X} = 0.5$ and extreme values of the Reynolds number. Orig. art. has: 11 formulas and 2 figures.

SUB CODE: 20/ SUBM DATE: 08Aug65/ ORIG REF: 003/ OTH REF: 004

KUTATELADZE, S.S.; LEONT'YEV, A.I.; RUBTSOV, N.A.; GOL'DSHTIK, M.A.; VOLCHKOV, E.P.; DAVYDOVA, N.V.; DRUZHININ, S.A.; KIRILLOVA, N.N.; MALENKOV, I.G.; MOSKVICHEVA, V.N.; MIRONOV, B.P.; MUKHIN, V.A.; MUKHINA, N.V.; REBROV, A.K.; FEDOROV, V.K.; KHABAKHPASHEVA, Ye.M.; SHTOKOLOV, L.S.; SHPAKOVSKAYA, L.I., red.

[Heat and mass transfer and friction in a turbulent boundary layer] Teplomassoobmen i trenie v turbulentnom pogranichnom sloe. Novosibirsk, Red.-izd. otdel Sibirskogo otd-niia AN SSSR, 1964. 206 p. (MIRA 18:1)

ACCESSION NR: AT4024396 S/2529/61/000/066/0063/0072

AUTHOR: Goldobeyev, V. I.; Druzhinin, S. A.

TITLE: The selection of characteristic dimensions for porous metals

SOURCE: Kazan. Aviatsionny*y institut. Trudy*, no. 66, 1961. Aviatsionny*ye dvigateli (Aircraft engines), 63-72

TOPIC TAGS: porous metal, characteristic dimension, hydraulic resistance, heat exchange, permeability, permeability coefficient, Darcy law, filtration velocity, viscosity, viscosity coefficient, porosity, air flow

ABSTRACT: In order to generalize experimental results by correlating the characteristic values obtained during investigations of hydraulic resistance and of internal heat exchange in porous metals, selection of a characteristic dimension is necessary. At present, different authors use different characteristic dimensions. While it is possible to assume the mean measured diameter of a particle as the characteristic dimension for granular or dispersed media, such dimensions cannot be obtained by direct measurement for a consolidated porous material. In a review by G. F. Terebin (Trudy* Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta, vy* p. III, 1954), it was indicated that either of the following two characteristic dimensions are most suitable for consolidated porous media: (1) the

Card 1/4

square root of the permeability coefficient k, or (2) the equivalent diameter d_{eq} of the pores. However, at sufficiently large discharge values of liquid or gas, the relationship between pressure drop and velocity is no longer linear and can be expressed as:

$$\frac{\Delta P}{h} = \alpha \mu V + \beta \rho V^2, \qquad (1)$$

where α is the coefficient of viscous resistance, β is the coefficient of mass force resistance, and ρ is the density of flowing fluid. In the present paper $L = \frac{\beta}{\alpha}$ was taken as the characteristic dimension, and was applied in some investigations of air-flow through porous metals. Comparisons were made by plotting L-values (obtained elsewhere) against porosity, and it was found that the curves obtained depend on the preparation of the porous metal. The three characteristic dimensions proposed above were then investigated with respect to their applicability to porous metals. Tests were conducted on 15 nichrome specimens of varying porosity (24.5-50.7%), diameter (58.20-59.22 mm) and thickness (1.07-4.06 mm). Air pressure was applied to these test specimens, and the following values were measured: air consumption -- by a double metering disk; air temperature -- by a nichrome-Constantan

thermocouple installed in the metering disk; atmospheric pressure — by a mercury barometer; pressure before the metering disk eleven; pressure before the test specimen; and differential pressure across the metering disk — by an alcohol piezometer. By changing the air bleed, changes in air-flow through the specimen were obtained. Upon evaluation of the test results, the Darcy law was verified by plotting the graph $V = f(\Delta P)$. It was found that for specific air consumptions in the range of 0-0.10 g/cm^2 sec, the relationship is linear, i.e., the Darcy law is applicable. For this range, the permeability coefficients were calculated by the Darcy formula. Evaluation of the experimental data gave the following functional relationships:

$$\sqrt{k} = 2.19 \times 10^{-6} \pi^{2.11} \quad (2)$$

and

$$d_{eq} = 1.23 \times 10^{-5} \pi^{1.6} \quad (3)$$

within the linear flow range. For non-linear flows, by a different method, the characteristic dimension L was found to follow the law

$$L = 2.0 \times 10^{-7} \pi^{-2.5} \quad (4)$$

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000411310009-2"

ACCESSION NR: AT4024396

which is valid for porous metal specimens manufactured by the same methods as in the above tests. Orig. art. has: 7 formulas, 2 tables, and 7 figures.

ASSOCIATION: Kazanskiy aviatsionny*y institut (Kazan Institute of Aviation)

SUBMITTED: 15Apr61 DATE ACQ: 15Apr64 ENCL: 00

SUB CODE: MM, ME NO REF SOV: 002 OTHER: 002

Card 4/4

GOLDOBEYEV, V.I.; DRUZHININ, S.A.

Selection of characteristic dimensions for porous metals. Trudy KAI no.66:63-72 '61. (MIRA 16:10)

(Porous materials--Testing)

L 46006-66 EWP(e)/EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD

ACC NR: AP6025944 SOURCE CODE: UR/0226/66/000/007/0097/0101

AUTHOR: Druzhinin, S. A.

ORG: Institute of Thermophysics, Siberian Department (Institut teplofiziki, Sibirskoye otdeleniye)

TITLE: On uniformity in the permeability of porous metals

SOURCE: Poroshkovaya metallurgiya, no. 7, 1966, 97-101

TOPIC TAGS: [redacted], powder metallurgy, stainless steel, porosity, porous metal

ABSTRACT: The author discusses two methods for checking uniformity in the permeability of porous metals. The first method is based on determining the average velocity of filtration with respect to various sections of the porous surface, while the second consists of direct measurement of the local filtration velocity at the output of a porous specimen. Stainless steel discs made by powder metallurgy methods with the addition of a volatile filler were tested by both methods. A semiconductor hot-wire anemometer was used for measuring the local filtration velocity in the second method. Experimental data for the average filtration velocity show that 78% of the specimens have a nonhomogeneity of less than 20%. However, measurements of local filtration velocity show that all specimens have small sections with higher permeability where the filtration velocity is approximately twice the average. Most of these high-permeability sections are located near the central region of the specimen. Orig. art. has: 4 figures, 1 table.

SUB CODE: 11, 20/ SUBM DATE: 02Dec65/ ORIG REF: 007

Card 1/1 mjs

29664
S/169/61/000/005/023/049
A005/A130

3,2410

AUTHORS: Danilov, A.A., Drushinin, S.N., Kapustin, I.N., Skripin, G.V.

TITLE: A counter telescope for measuring the hard component of cosmic rays below the ground

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 11, abstract 5 G 93. (Tr. Yakutsk. fil. AN SSSR. Ser. fiz., 1960, no. 3, 40-45)

TEXT: The authors describe the design of a cosmic ray counter telescope produced in Yakutsk. The telescope consists of three single blocks with a total area of about 0.9 m^2. To increase the efficiency of the equipment, a quenching circuit is introduced, counter end effects are excluded and automatic control of the stability of the high voltage supplying the counters is effected. The telescope of triple coincidence, installed at a depth of 60 m of water equivalent, allows the recording of the hard component of cosmic rays with an accuracy of 1.4% per hour. The device has been in operation since February, 1958.

[Abstractor's note: Complete translation.]

Card 1/1

DRUZHININ, V.

Druzhinin, V. "Exploration: The Achievements of Geochemistry." Nashi Dostizhoniia, Moscow, No. 3, 1934, pp. 152-155.

DRUZHININ, V.

[Soviet Estonia] Sovetskaia Estoniia. Moskva, Gos. izd-vo detskoy lit-ry, 1952. 90 p. (MLRA 7:1)
(Estonia)

DRUZHININ, Viktor Aleksandrovich; SEMENENKO, P.A., inzh., red.; SHILLING, V.A., red. izd-va; GVIRTS, V.L., tekhn. red.

[Hydraulic power units and devices with hydraulic clamps] Silovye gidroagregaty i prisposobleniia s gidravlicheskimi zashimami. Leningrad, 1961. 18 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Mekhanicheskaia obrabotka metallov, no.4) (MIRA 14:7)

(Oil hydraulic machinery)

DRUZHININ, V.A.; VOLOSATOV, V.A.; CHERVOVA, M.S., red.; PRESNOVA, V.A., tekhn. red.

[Cutter-presser] Rezchik-pressovshchik. Leningrad, Lenizdat, 1963. 144 p. (MIRA 16:12)
(Shears (Machine tools))

KAMENSHTEYN, S.D.; SMOLYAKOV, A.N.; DRUZHININ, V.F.

Casting threaded clutches in one-piece chills. Lit.proizv. no.11:42 N '61. (MIRA 14:10)
(Die casting) (Clutches (Machinery))

KAMENSHTEYN, S.D.; DRUZHININ, V.F.

Manufacture of pouring troughs for centrifugal machines with water-cooled molds Lit.proizv. no.4:40-41 Ap '63. (MIRA 16:4)
(Centrifugal casting)

AUTHOR: Druzhinin, V. G. (Moscow) SOV/103-19-11-7/10

TITLE: On the Number of "Reservation" Units (O chisle uchastkov rezervirovaniya)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol 19, Nr 11, pp 1062-1065 (USSR)

ABSTRACT: The following question is investigated here: into how many "reservation" units m must the basic system, with a probability of failure Q_o , be divided to obtain a "reservations" system which exhibits an extreme reliability, i. e. an extreme improbability of failure. The probability that a failure of the commutators may arise is q_U , and the degree of "reservations" is k . - From this, formula (7) is derived. Thus it becomes obvious that there will be the least probability of a failure of the "reservations" system with small q_U and Q_o values, and consequently the greatest efficiency of "reservation" when the amount m_1 of reservation units has been obtained. m_1 is determined by formula (7) . Values noted as m_1 must be rounded off to the nearest whole number. If $m = m_1$, the probability of failure Q of the

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"reservation" system is an extreme. - Formula (8) is obtained for the minimum probability of failure of the "reservation" system. Formula (10): $(q_U)_{opt} = (k-1)q_o$ is then obtained. This shows that the "reservation" achieves the greatest effect in those instances in which the probability of a failure of the commutators q_U is proportional to the probability of the failure of the "reservation" unit q, and the amount $k-1$ is the proportional factor of the additional complexes of equipment. By means of formulae (7), (8), and (10), the constructor can find an economic solution of the problem. There are 3 figures, 1 table, and 4 Soviet references.

SUBMITTED: November 6, 1957

DRUZHININ, V.I., inzh.; MATANTSEV, V.I., kand. tekhn. nauk

Wear of the parts of a scraper chain and the chute of a fl ible conveyor. Izv. vys. ucheb. zav.; gor. zhur. 8 no.7:145-147 '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut otkrytykh gornykh rabot.

DRUZHININ, V.I.

The UP-2M coal loading machine. Biul.tekh.-ekon.inform.Gos.-nauch.-issl.inst.nauch.i tekh.inform. no.3:16-17 '62.
(MIRA 15:5)
(Coal mining machinery)

DRUZHININ, V.I., inzh.; MATANTSEV, V.I., kand. tekhn. nauk

Results of experimental studies of a bending conveyor. Izv. vys. ucheb. zav.; gor. zhur. 6 no.8:74-80 '63. (MIRA 16:10)

1. RIORG.

DRUZHININ, V.I., inzh.

Use of power by a mobile conveyor in changing the parameters of bending. Izv.vys.ucheb.zav.;gor.zhur. 7 no.9:129-133 '64.

(MIRA 18:1)

1. Nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut po dobyche poleznykh iskopayemykh otkrytym sposobom. Rekomendovana kafedroy rudnichnogo transporta i gornykh mashin Sverdlovskogo gornogo instituta.

DRUZHININ, V.N.; FEDORISHCHEV, T.I.

New sizing material for wood fiberboards. Bum. prom. 36 no.7: 15-16 Jl '61. (MIRA 14:9)

1. Sverdlovskiy nauchno-issledovatel'skiy institut pererabotki drevesiny.

(Hardboard)

DRUZHININ, Vladimir Nikolayevich; KOVALEVSKIY, V.S., red.; KAPELUSH, S.I., red.; SHAPOVALOVA, N.S., mladshiy red.; VILENSKAYA, E.N., tekhn. red.

[Typhoon is in sight]V nashem kvadrate taifun. Moskva, Geografgiz, 1962. 220 p. (MIRA 15:8)
(Voyages and travels)

DRUZHININ, V.N.; FEDORISHCHEV, T.I.; KHODAK, V.M.; OSHURKOVA, I.K.

Use of hydrophobic additions obtained from turpentine industry wastes in the manufacture of particle boards. Der.prom. 11 no.1:25-26 Ja '62. (MIRA 15:1)

(Hardboard)

DRUZHININ, V.N.; FEDORISHCHEV, T.I.

New waterproofing materials obtained from the wastes of turpentine production. Gidroliz. i lesokhim.prom. 15 no.1:11-13 '62. (MIRA 18:3)

1. Sverdlovskiy nauchno-issledovatel'skiy institut pererabotki drevesiny.

DRUZHININ, V.P., inzhener.

Rapid cargo handling in the port of Kaliningrad. Mekh.trud.rab.9 no.2:43-46 F '55. (MLRA 8:4)
(Kaliningrad--Cargo handling)

DRUZHININ, Vladimir Pavlovich; RYZHOV, V.Ye., red.; ANDREYEVA, L.S., red. izd-va; LAVRENOVA, N.B., tekhn. red.

[Manual for a receiving and delivery clerk in sea harbors]Posobie dlia priemosdatchika morskogo porta. Moskva, Izd-vo "Morskoi transport," 1962. 87 p. (MIRA 16:1)
(Harbors) (Cargo handling)

DRUZHININ, V.P. (stantsiya Kurgan, Yuzhno-Ural'skaya doroga)

Instructive results; from practice operating the power supply system of the Kurgan-Makushino line. Elek.i tepl.tiaga no.9:24-26 S '57. (MIRA 10:10)

1. Nachal'nik uchastka energosnabsheniya Kurgan-Makushino.
(Electric railroads)

DRUZHININ, V.P., mladshiy serzhant

Attachment for a tape recorder. Vest. protivovozd. obor. no.7:71-72 JI '61. (MIRA 14:8)

(Radio, Military)

S/148/60/000/010/004/018
A161/A030

AUTHORS: Druzhinin, V.P.; Iodko, E.A.; Kitayev, A.T.; Krupman, L.I.; Tarapay, M.A.; Chevela, L.A.; Yankelevich, Ya.P.

TITLE: Investigation of the Thermal Behaviour of Intermediate Ladles

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, No. 10, pp. 58 - 66

TEXT: The investigation had been carried out to determine the heat losses from metal in intermediate ladles. Small ladles at the New-Tula Metallurgical Plant and large at the imeni Dzerzhinskiy Plant were studied. The small ladles were heated with blast furnace gas burning in an oxygen jet, and the large with coke gas; chromelalumel and platinumrhodium-platinum thermocouples were inserted into the ladle linings as shown in Fig. 1 and 2; the metal temperature in ladles was measured with platinumrhodium-platinum and tungsten-molybdenum immersion thermocouples; indicating and recording galvanometers and an ЭПП -09 (EPP-09) writing potentiometer were used. The duration of teeming was 20 - 26 min at the New Tula Plant (NTMZ) and 60 - 120 min at the imeni Dzerzhinskiy Plant. A graph gives the measurement results in a large ladle (Fig. 3) - there is practically no

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S/148/60/000/010/004/012
A101/A030

Investigation of the Thermal Behaviour of Intermediate Ladles

heat gradient inside the intermediate ladle, apparantly due to a feed of fresh hot metal from the main ladle. The lining temperature on the surface quickly reached the metal temperature; it dropped nearly 180°C during 5 min after the gas heating was stopped before teeming. E.A. Iodko and L.I. Krupman calculated the heating of lining to determine the effect of separate factors. The "working" layer of lining was stated to be 20 - 30 mm in small ladles, and 60 - 80 mm in large, which is less or equal to the usual fireclay lining depth and shows that additional heat insulation of the ladle casings is superfluous. The calculation is included in the article. The formula (13) determines the effect of the heat conductivity of the ladle lining on the drop in metal temperature in the ladle and shows that the relation is in direct proportion. The heat loss by radiation had not been considered. It was concluded that the heat conductivity in fireclay brick layers nearest to the contact surface with metal drops in the teeming process and the first metal portions in the intermediate ladle are cooled by the lining surface, whilst the heat gradient inside thelining has practically no influence. It is therefore proper to heat the lining at a high temperature on the surface ignoring high temperature gradients in the lining below the surface, and not to stop heating the ladle before the start of teeming. Cooling of the first metal

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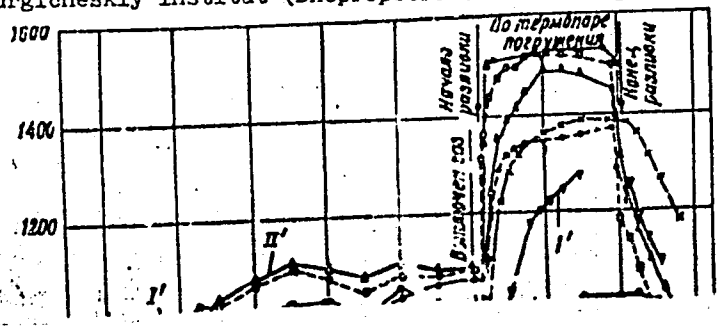
S/148/60/000/010/004/018
A161/A030

Investigation of Thermal Behaviour of Intermediate Ladles

portions can be decreased by faster filling. Brick with low heat conductivity on the surface must be used. The following participated in the investigation: Ye.I. Isayev, Yu.N. Yakovlev; V.M. Klippa; S.P. Yefimov; G.L. Dorenin; S.L. Sologub; N.A. Rokhlin; F.I. Krasinskiy. V.I. Lapitskiy was in charge. There are 6 figures, 2 tables and 4 Soviet references.

ASSOCIATION: Novo-Tul'skiy metallurgicheskiy zavod (New Tula Metallurgic Plant), Zavod imeni Dzerzhinskogo (imeni Dzerzhinskiy Plant), and Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: April 21, 1960



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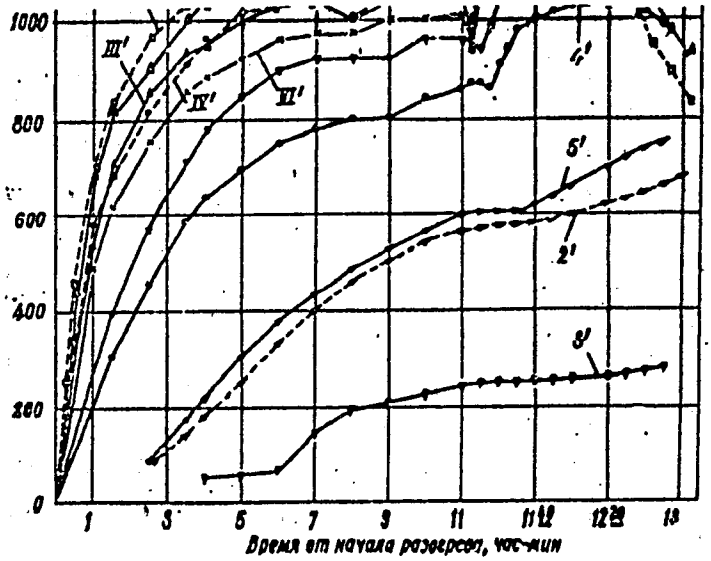
S/148/60/000/010/004/018
A161/A030

Investigation of Thermal Behaviour of Intermediate Ladles

Figure 3:

Variation of the metal and lining temperature in a large ladle during preheating and teeming. (Temperature from 0 to 1600°C; time from start of preheating from 1 to 13 h).



Card 4/4

S/133/61/000/005/002/00
A054/A133

AUTHORS: Druzhinin, V.P.; Mazun, A.I.; - Engineers

TITLE: Improving the design of crystallizer on continuous steel casting assemblies

PERIODICAL: Stal', no. 5, 1961, 409 - 411

TEXT: Tests carried out with conventional double-wall (steel + copper) crystallizers showed that the temperature of the copper wall decreases towards the bottom, mainly 200 - 350 mm below the poured metal level, and that the temperature in the crystallizer wall varies even at uniform distances from the metal surface, due to gas-filled gaps forming between the ingot case and the mold wall by the shrinkage of the metal and warping of the walls. The deviation of the wall from its plane (gaps, bulges, pit-holes) results in a zone of great temperature differences (from 170 to 40°C), causing rejects sometimes already after 250 - 340 tons have been cast. The thermal stresses which originate also cause the copper wall to creep; the wall thickness decreases in the maximum temperature zone, where wall and metal are in contact and it increases in length in the middle part. Hereby a gap is formed in the joint between the wide and the narrow

Card 1/3

walls of the mold and the airtightness of the mold is disturbed. In order to extend the service life of the mold, the following measures were taken: 1) The angle at the wall joints was formed without rounding off while the plate edge of the wide wall was sunk into the narrow one. 2) The holes drilled for the pins connecting the steel and copper walls were enlarged to prevent rupture. 3) Longitudinal grooves were made all along the copper walls, on the side of the water channels to prevent warping. Due to these measures the service life of the mold increased to 640 tons, but the deformation of the copper wall could not be avoided entirely. In the upper part of the mold there is a sector in which the case is pressed closely to the bulge of the metal, increasing the friction, while below this sector, where a pit-hole is formed, the heat-resistance of the ingot case copper wall system and the temperature of the case increase steeply, causing it to melt between the ingot and the wall. The increase in friction produces lateral cracks in the case. Moreover, as the deformation zone of the mold wall in relation to the metal level becomes smaller, its effect on the hanging of the case declines. It was also found that with the rise in pouring rate the trend to hanging also increases and with the wall deformations becoming greater, the pouring rate at which hanging can be eliminated decreases. As a result of structural changes the warping of the mold walls was slightly modified: instead of irregular

Improving the design of crystallizer on...

bulges and pit-holes a longitudinal wavy shape resulted which does not promote hanging and makes it possible to pour at a rate of 0.9 - 1.0 m/min. Moreover, any creep of the wide walls is almost eliminated. It occurs only in the narrow walls after a long service time causing gaps. Projections are, therefore, mounted on the narrow walls, the angles of the mold can thus be upset. With regard to lubricating substances, castor oil was found better than the paraffin used before, because it is liquid already at room temperature and imparts better sliding properties to the mold wall. There are 7 figures.

ASSOCIATION: Novo-Tul'skiy metallurgicheskiy zavod (Novo-Tul'sk Metallurgical Plant)

Card 3/3

S/130/61/000/012/003/006
A006/A101

AUTHORS: Druzhinin, V. P., Yevteyev, D. P., Katomin, B. N.

TITLE: The effect of the crystallizer on crack formation in continuous-cast ingots

PERIODICAL: Metallurg, no. 12, 1961, 12-15

TEXT: Experience has shown that cracks in continuous-cast steel ingots are caused by the design and assembly of the crystallizers, and some other factors. To reveal the location and time of crack formation, experiments were made determining the rate of increase of the crust thickness of the ingot in the crystallizer. It appeared that the initial stage of formation of the continuous-cast ingot proceeds not uniformly: the thickness of the crystallized crust is different. This can be explained by the scouring activity of the metal flow supplied, and by non-uniform heat emanation due to the formation of a gas gap between the ingot and the crystallizer wall. To determine the effect of the gas gap on non-uniform crystallization and hot crack formation, thermocouples and feeler gauges operating on the principle of tensometry were mounted on the copper walls of one of the crystallizers. To evaluate the magnitude of heat flows

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The effect of the crystallizer ...

thermocolumns were mounted into the larger crystallizer walls. The readings were registered by high-speed electronic potentiometers. The experiments show that during teeming the crystallizer walls are deformed and the distortion of their rectilinear shape attains 0.6 - 0.7 mm. The wall deformation affects considerably the heat flow from the ingot to the crystallizer. The effect of the gas gap on crack formation was investigated by applying a vertical 200 mm long, 8 mm wide and 0.3 mm deep groove on the crystallizer wall. When the depth was increased to 0.6 - 0.7 mm, longitudinal straight cracks appeared, whose location coincided with the groove. It was observed that cracks were not formed if the gas gap arose on different spots over the ingot perimeter and lasted a short time. If the gas gap arose on a definite spot and lasted longer, the ingot crust was weakened and cracks appeared. An extended gas gap can only be caused by a deformed area on the crystallizer wall below the metal level; then the moving crust of the ingot does not reach the wall, is heated and bursts. The location of the crack on the ingot wall depends in this case on the extent of the deformed area of the wall. A slight increase of the wall rigidity reduced sharply the amount of external cracks when teeming killed low-carbon steel, and eliminated cracks when teeming rimming steel. There are 5 figures.

ASSOCIATION: Novotul'skiy metallurgicheskiy zavod (Novotul'skiy Metallurgical Plant)

Card 2/2

FEYGIN, G.L.; DRUZHININ, V.P.

Operation costs for the maintenance of electric power supply systems are still very high. Elek.i tepl.tiaga 6 no.5:11-13 My '62. (MIRA 15:6)

1. Nachal'nik sluzhby elektrifikatsii i energeticheskogo khozyaystva Yuzhno-Ural'skoy dorogi (for Feygin). 2. Glavnyy inzh. sluzhby elektrifikatsii i energeticheskogo khozyaystva Yuzhno-Ural'skoy dorogi (for Druzhinin).
(Electric railroads—Current supply)

GLADYSHEV, N.G.; OYKS, G.N.; DRUZHININ, V.P.; FEDORCHUK, Ye.V.; GORLOV, S.M.

Mechanism of the formation of internal hot cracks in a continuous rectangular ingot. Izv. vys. ucheb. zav.; chern. met. 8 no.5:40-44 '65. (MIRA 18:5)

1. Novotul'skiy metallurgicheskiy zavod.

L 22928-66 EWT(1)/EWA(h) GW

ACC NR: AP6013163 SOURCE CODE: UR/0387/66/000/004/0036/0044

AUTHOR: Khalevin, N. I.; Druzhinin, V. S.; Rybalka, V. M.; Nezolenova, E. A.; Chukdakova, L. N.

ORG: Institute of Geophysics, Ural Branch, Academy of Sciences SSSR (Institut geofiziki, Ural'skiy filial, Akademiya nauk SSSR)

TITLE: Results of deep seismic sounding of the earth's crust in the central Urals

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 4, 1966, 36-44

TOPIC TAGS: deep seismic sounding, seismic profile, seismic discontinuity, deep drilling, Moho discontinuity

ABSTRACT: In 1962—1964 the Bizhenovsk Geophysical Expedition of the Ural Geological Administration of the Main Geological Administration of the RSFSR and the Institute of Geophysics of the Ural Branch of the Academy of Sciences SSSR carried out deep seismic soundings (GSZ) along a 450-km, east—west profile across the Urals between Krasnoufimsk on the west and Tyumen on the east. Both the GSZ and KMPV (longitudinal wave correlation) methods were used. In the GSZ operations, six shot points, spaced about 100 km apart with travel times of 300 km, were supplemented in the Asbest region by quarry explosions detonated

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simultaneously with the GSZ shots. Three shot points, spaced about 25 km apart with travel times of 50 km, were used in the KMPV operations. Instruments used in the KMPV method were SS—30/60 stations with SPEN-1 seismographs; the filtration was 2—2 for distances of less than 100 km, and 1—1 for longer distances. Seismographs were arrayed in groups of 3—4, 10—20 m apart with 100 m between the groups. Six main groups of reflected and refracted waves were distinguished (three discontinuities in the upper crust and three in the lower crust), the surfaces of the granite-gneiss basement and the Moho discontinuity being the best defined. Analysis of the seismographic data showed that the crust and upper mantle is layered, that the crust is characterized by a fault-block structure, and that the Moho discontinuity is downwarped under the Urals. The authors evaluate the data obtained in this study as being of great value in selecting the site for deep drilling in the Urals and recommend that additional profiles be run, especially in the Tagil'—Magnitogrosk area where an explanation for the 7000 m/sec velocity discovered in the present study at a depth of 5—6 km might be obtained. Orig. art. has: 3 figures.

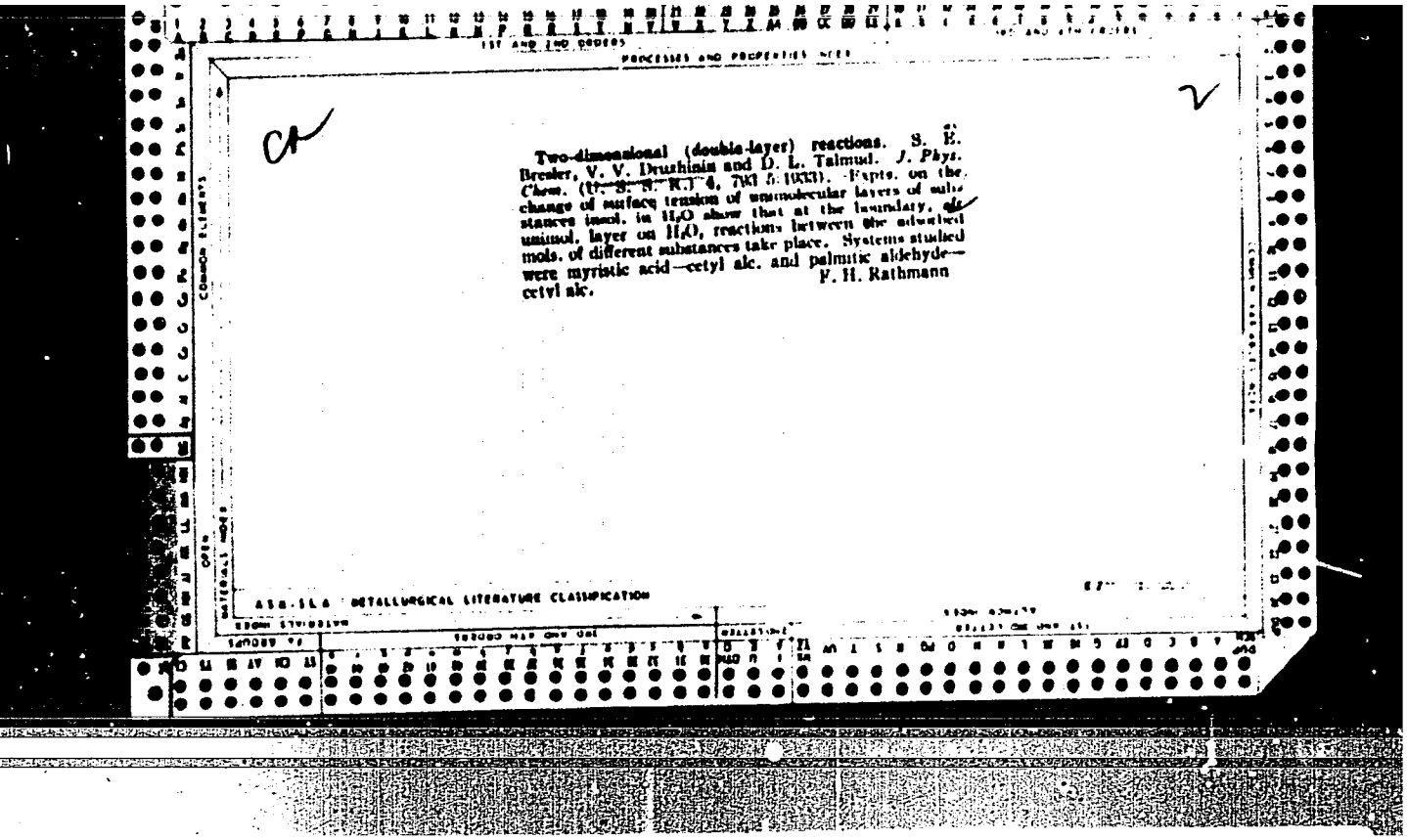
[ER]

SUB CODE: 08/ SUBM DATE: 26Dec64/ ORIG REF: 009/ OTH REF: 001
ATD PRESS: 4237

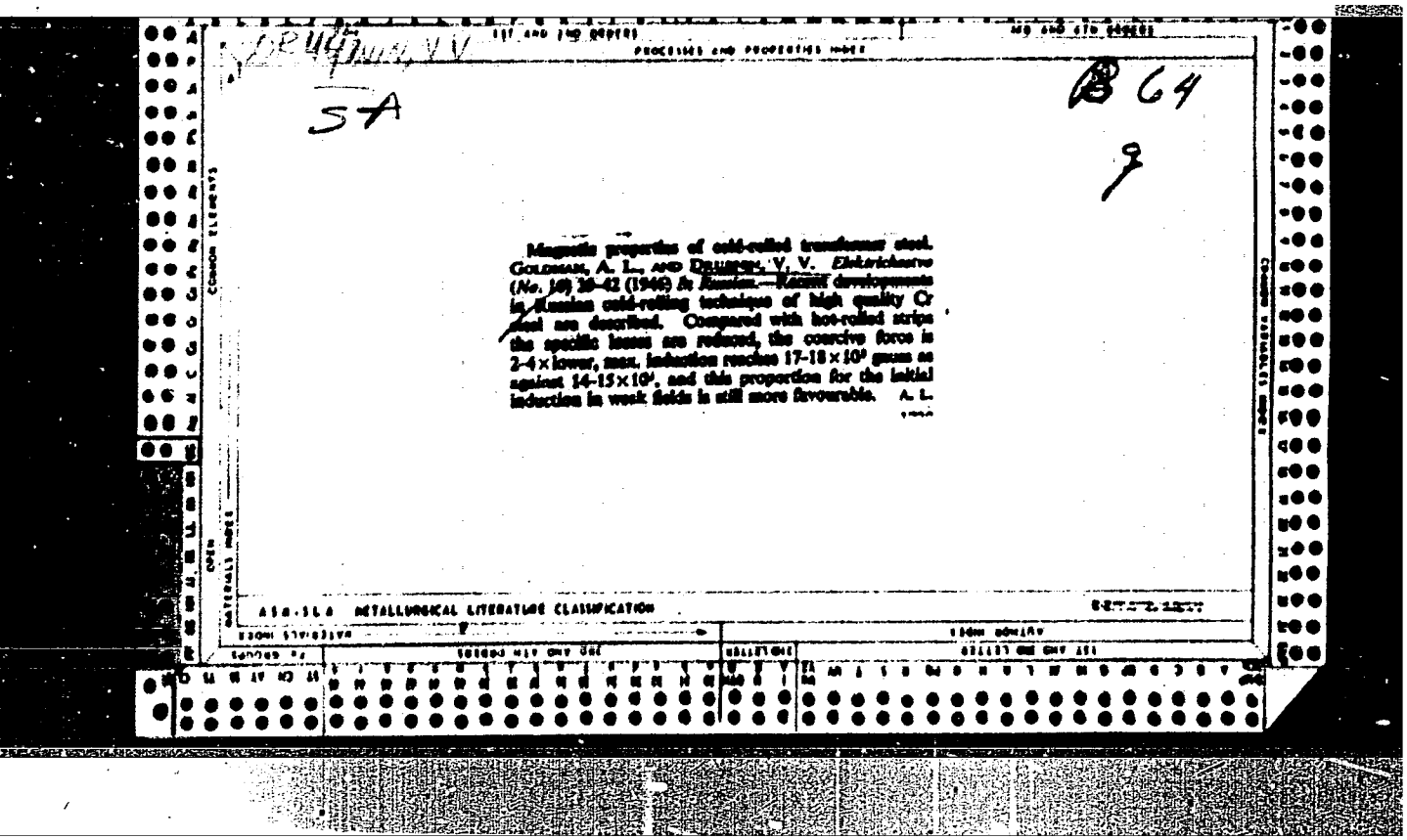
Card 2/2

TOMAKOV, Andrey Aleksandrovich; DRUZHININ, V.V., kand. tekhn. nauk, retsenzent; PEREGUDOV, V.N., inzh., retsenzent; YEGOROV, S.A., nauchn. red.; OSVENSKAYA, A.A., red.

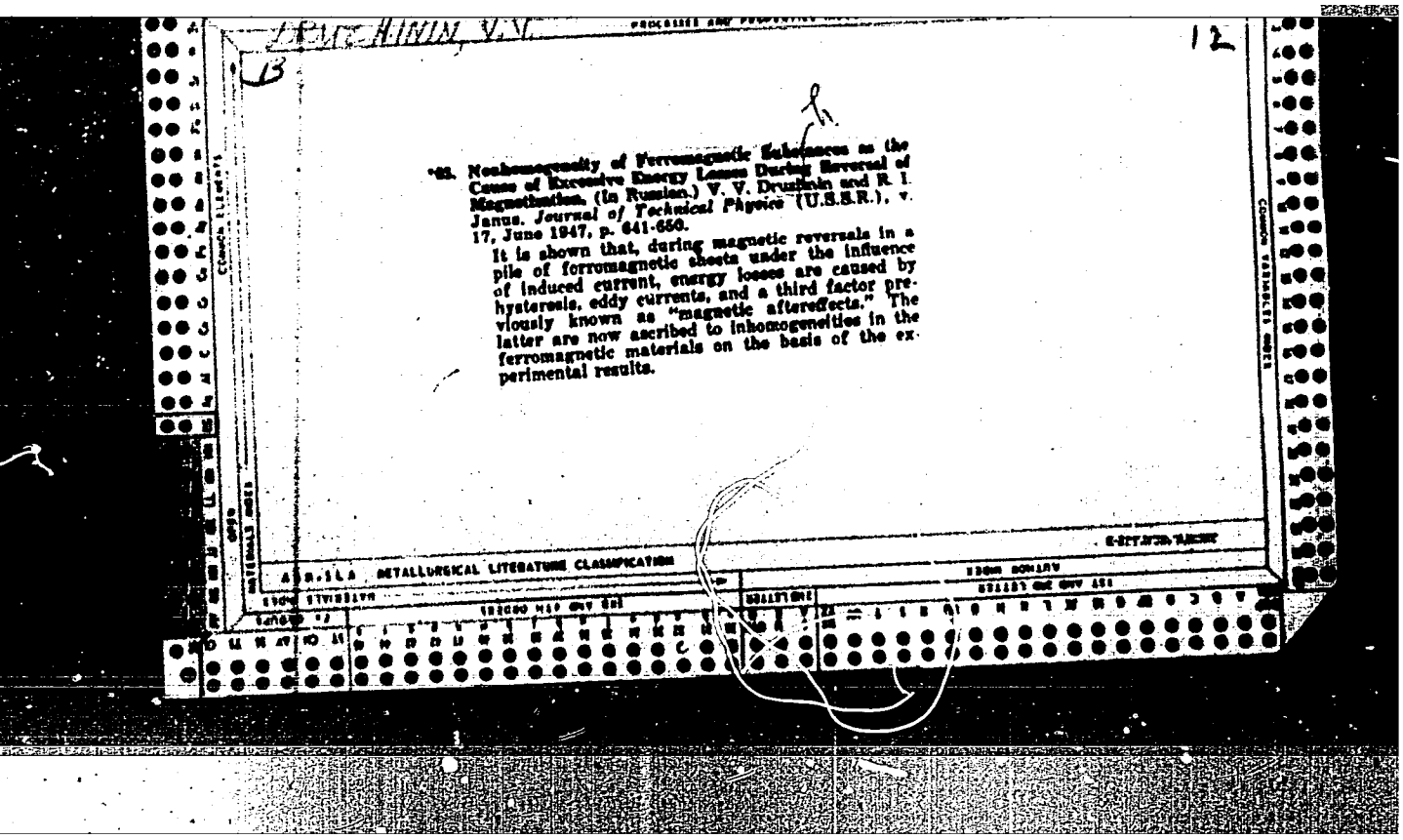
[Submarine transport boats] Podvodnye transportnye suda. Leningrad, Sudostroenie, 1965. 266 p. (MIRA 18:3)



Two-dimensional (double-layer) reactions. S. E. Breuer, V. V. Druzhinin and D. L. Talmud. *J. Phys. Chem.* (U.S.S.R.) 4, 761-5 (1933). Expts. on the change of surface tension of unimolecular layers of substances insol. in H_2O show that at the boundary, of the unimol. layer on H_2O, reactions between the adsorbed mols. of different substances take place. Systems studied were myristic acid—cetyl alc. and palmitic aldehyde—cetyl alc.
F. H. Rathmann



Magnetic properties of cold-rolled transformer steel. GOLDMAN, A. L., AND DRUZHOV, V. V. *Elektrichestvo* (*No.* 10) 38-42 (1946) *In Russian.*—Recent developments in Russian cold-rolling technique of high quality Cr steel are described. Compared with hot-rolled strips the specific losses are reduced, the coercive force is 2-4 × lower, max. induction reaches 17-18 × 10^3 gauss as against 14-15 × 10^3, and this proportion for the initial induction in weak fields is still more favourable. A. L.



*83. Nonhomogeneity of Ferromagnetic Substances as the Cause of Excessive Energy Losses During Reversal of Magnetization. (In Russian.) V. V. Druzhinin and R. I. Janus. *Journal of Technical Physics* (U.S.S.R.), v. 17, June 1947, p. 641-650.

It is shown that, during magnetic reversals in a pile of ferromagnetic sheets under the influence of induced current, energy losses are caused by hysteresis, eddy currents, and a third factor previously known as "magnetic aftereffects." The latter are now ascribed to inhomogeneities in the ferromagnetic materials on the basis of the experimental results.

DRUZHININ, V. V.

Feb 1947

USSR/Magnetite
Magnetite permeability

"The Accommodation of the Magnetic Permeability of Magnetite," A. M. Vyuchina, V. V. Druzhinin, J. S. Shur, R. I. Yanus, 14 pp

"Zhur Tekh Fiz" Vol XVII, No 2

Tables and graphs showing the relation between H and B for various temperatures, values of B_{max} and ΔB as functions of time, etc., for various compositions of magnetite.

11727

USSR/Physics - Susceptibility
Magnetism

May 50

"Anisotropy of Magnetic Susceptibility of Silicon Iron Monocrystals in Weak Magnetic Fields," A. L. Gol'dman, V. V. Druzhinin, R. I. Yanus

"Zhur Tekh Fiz" Vol XX, No 5, pp 571-578.

Experimentally shows that, for weak fields, lowest magnetic susceptibility (kappa) in monocrystal disks of an alloy of iron with 3% silicon is obtained during magnetization along diagonal axis fo cubic lattice, and highest is obtained along tetragonal axis. Anisotropy of susceptibility corresponding to N. S. Akulov's well-known "law of anisotropy" exists only for magnetizations that exceed considerably the region of maximum susceptibility. Submitted 25 Jun 49.

PA 164T53

DRUZHININ, V. V.

USSR/Electricity - Measurements, Magnetic Jul 51

"'The Tare Method" in Magnetic Tests of Dynamo and Transformer Steel in Differential Units," Prof R. I. Yanus; O. V. Grekhov, V. V. Drushinin, Engineers, Verkh-Isetskiy Metallurgical Plant

"Elektrichestvo" No 7, p 76

Suggests a method similar to the well-known "tare method" used in accurate weighings, The method substantially increases the accuracy of std magnetic tests without any addnl labor, expense, or complications of the testing methods. Submitted 24 Jan 51.

119T27

DRUZHININ, V. V.

USSR/Physics - Coercive Force, Magnetism May 52

"Anisotropy of the Coercive Force in Monocrystals of Ferrosilicic Alloy," V. V. Druzhinin, R. I. Yanus, Sverdlovsk

"Zhur Tekh Fiz" Vol XXII, No 5, pp 848-857

Anisotropy of coercive force in monocryst disks of ferrous alloys with 3% silicon, obtained from a cut of sheets of big crystallites of transformation steel of trademark KhVP, in which the plane of the dodecahedron of the cryst lattice is nearly parallel to the plane of disks, was studied

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experimentally. It was shown that the coercive force is proportional to the digonal axis of crystal, and not to the trigonal as previously stated by Williams (cf. Phys Rev, 52, 1937). Received 7 Feb 52.

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DRUZHININ, V.V.

Anisotropy of magnetic properties of steel used in electrical engineering. Fiz.met.i metalloved. 1 no.1:48-54 '55. (MLRA 9:3)

1. Verkh-Isetskiy metallurgicheskiy zavod.
(Steel alloys--Magnetic Properties)

DRUZHININ, V.V.; BURDAKOVA, Yu.P.; KOROLEVA, V.A.

Study of supplementary losses in steel used in electrical engineering. Fiz.met.i metalloved. 1 no.1: 75-83 '55. (MLRA 9:3)

1. Verkh-Isetskiy metallurgicheskiy zavod.
(Sheet steel--Magnetic properties)

DRUZHININ, V.V.

Magnetic anisotropy constants for iron-silicon alloys. Fiz.met.i metalloved. 3 no.1:47-54 '56. (MLRA 9:11)

1. Verkh-Isetskiy metallurgicheskiy zavod.
(Iron-silicon alloys--Magnetic properties)

USSR / Magnetism . Ferromagnetism F - 4

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9537

Author : Druzhinin, V.V., Burdakova, Yu.P.
Inst : Upper Iset' Metallurgical Plant, Sverdlovsk
Title : Ratio of Hysteresis to Eddy-Current Losses in Electric Steel.

Orig Pub : Electrichestvo, 1956, No 8, 50-54

Abstract : The authors have carried out an experimental investigation of the value of the electromagnetic losses due to hysteresis and due to eddy-currents in various brands of modern electric steel, as a function of the magnetization frequency and of the amplitude of the ac induction. It is shown that the reduction in the total electromagnetic loss, attained in recent years in the better grades of transformer steel, is due to a very sharp reduction in the hysteresis losses. With this, the eddy-current losses have not only not diminished,

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USSR / Magnetism . Ferromagnetism

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9537

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Abstract : but even increased by a factor of 1.5 -- 2 (for the same thickness of laminations and the same degree of alloying of metal), and have become by now the predominant portion of the total loss. For example, in textured cold-rolled transformer iron they amount to 60 -- 80% of the total loss. The predominant portion of the eddy-current losses are the so-called supplementary losses, whose dependence on the magnetization frequency and on the amplitude of the ac induction deviates substantially from quadratic, as is customary with "ordinary" losses for eddy-currents.

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DRUZHININ, V.V.

Measuring magnetic properties of equipment steel in conformity with the new standard. Zav.lab. 22 no.8:949-953 Ag '56.
(MLRA 9:11)

1. Verkh-Isetskiy metallurgicheskiy zavod.
(Steel--Magnetic properties)

DRUZHININ, V.V.; KOZHUROV, A.A.

Error in the measurement of losses in the Epstein-Lonkitsen differential apparatus. Zav. lab. 22 no.12:1460-1463 '56.
(MLRA 10:2)

(Steel--Testing)

Druzhinin, V.V.

28-5-17/30

AUTHOR: Druzhinin, V.V., Candidate of Physico-Mathematical Sciences, and Rudnyy, N.M., Candidate of Technical Sciences

TITLE: What Is Required of the Standard for Electrotechnical Sheet Steel (Trebovaniya k standartu na listovuyu elektrotekhnicheskuyu stal')

PERIODICAL: Standartizatsiya, 1957, # 5, p 71-72 (USSR)

ABSTRACT: The standard"ГОСТ 802-54"will be revised, and the Central Scientific Research Institute for Ferrous Metallurgy (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii) has worked out the project for the new state standard for electrotechnical steel.

Last May, a scientific-technical conference on this matter was organized by the Sverdlovsk branch of the All-Union Scientific Research Institute for Metrology imeni D.I. Mendeleyev (Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva, or VNIIM), the Commission for Magnetism of the Urals branch of the Academy of Sciences (Ural'skiy filial Akademii nauk) and the Urals House of Technique (Ural'skiy dom tekhniki).

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What Is Required of the Standard for Electrotechnical Sheet Steel

The authors point out some inadequacies in the standard project and suggest complements which would improve the acceptance rules and test methods.

The denotations by figures and letters are in some instances too complex (for instance, one grade with guaranteed specific losses is denoted by eight signs).

The experience of the Verkh-Isetsk Metallurgical Plant in sampling, in accordance with the old standard, shows that the method is fully satisfactory.

The scientific-technical conference was particularly concerned with the problems of testing electrotechnical steel, but the differential Epshteyn-Lonkitsen apparatus is left in the project as the basic method of evaluating specific losses at 50 cps and 25-300 ampere-turns per cm, whereas testing of steel with specific losses of $P_{10/50}$ less than 1 w/kg requires particular care. A test apparatus for evaluation of magnetic properties of electrotechnical steel sheets was tested at the Verkh-Isetsk Metallurgical Plant, and the results were satisfactory. This apparatus can be used for final evaluation of steel quality. Repeated annealing of specimens (if it will be

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included into the standard) will have to be strictly regulated and the temperature will have to be decreased to 680-700 °C. The absolute wattmeter method for evaluating specific losses at higher frequencies (400 cps), according to "ГОСТ 802-54" has proved completely satisfactory and will be kept.

Paragraph 37 of "ГОСТ 802-54" and its complement do not keep in view all of the conditions guaranteeing repetition of test results in evaluating magnetic induction in weak and medium magnetic fields by the ballistic method.

The consumers of electrotechnical steel do not need separate indications of properties, as are prescribed by the "ГОСТ 802-54" (as well as in all standards), but typical curves showing the dependence of the specific losses on induction, the induction on the magnetic field intensity, etc.

It is the opinion of the participants of the scientific-technical conference that it is necessary to compose test instructions for attestation of normal specimens, for application of the differential method, evaluation of magnetic properties in sheets, evaluation of losses at higher frequencies, testing in weak magnetic fields, etc.

What Is Required of the Standard for Electrotechnical Sheet Steel

The conference recommended including these instructions into the plans for research and experiments at the Sverdlovsk branch of the VNIIM and the Verkh-Isetsk Metallurgical Plant.

ASSOCIATION: Verkh-Iset' Metallurgical Plant (Verkh-Isetskiy metallurgicheskiy zavod) and Sverdlovsk Branch of the VNIIM (Sverdlovskiy Filial VNIIM)

AVAILABLE: Library of Congress

AUTHORS: Druzhinin, V. V. and Lazarev, Yu. A. 126-1-26/40

TITLE: On the transverse magnetostriction of iron-silicon alloys. (O poperechnoy magnitostriktsii zhelezokremnistogo splava).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 164-168 (USSR)

ABSTRACT: The results are described of investigation of the transverse magnetostriction of iron-silicon alloys containing 0.4 to 7% Si. The changes in the magnetostriction were effected by wire strain gauges which were not glued on to the specimen, according to a technique described in an earlier paper (Ref.4). Discs of 45 mm dia. were used as specimens; for eliminating the influence of work hardening the discs, which were made of sheet steel, were etched by a solution of blue vitriol. Sheets containing 1 to 4% Si were taken from normal production batches, whilst sheets containing 0.4, 5.0, 5.5 and 7.0% Si were taken from experimental batches. The study was effected on hot and cold rolled steel. The magnetostriction was measured as a function of the magnetisation of the specimen whereby the maximum magnetic field during magnetisation was 600 Oe.

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On the transverse magnetostriction of iron-silicon alloys.

The magnetisation field of the specimen reached saturation within the limits of 1% and the magnitude of magnetostriction was related to the saturation magnetostriction λ_s. In hot rolled dynamo steels the $\lambda_{\parallel}(B)$ and $\lambda_{\perp}(B)$ were recorded for the case of magnetisation of the specimens in the direction and transverse to the direction of rolling. In some specimens the magnetostriction was also measured under the angles of 22.5, 45 and 67.5° relative to the direction of magnetisation. In the cold rolled specimens the magnetisation was effected under the angles 0, 55 and 90° relative to the direction of rolling, i.e. corresponding to the directions of the main crystallographic axes. The results are graphed in Figs.1-6 and these show that the transverse magnetostriction of iron with 1 to 7% Si contents is in most cases positive in the same way as the longitudinal magnetostriction. The obtained data will be useful in studying the areas of spontaneous magnetisation for iron-silicon sheets.

There are 6 figures and 4 references, all of which are

 Slavic.

126-1-26/40

On the transverse magnetostriction of iron-silicon alloys.

SUBMITTED: November 1, 1956.

ASSOCIATION: Verkh-Isetskiy Metallurgical Works.
(Verkh-Isetskiy Metallurgicheskiy Zavod).

AVAILABLE: Library of Congress.

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DRUZHININ, V.V.

AUTHORS: Druzhinin, V.V., Lazarev, Yu.A. 32-12-24/71

TITLE: On the Conditions of the De-Magnetization of Samples of Electrotechnical Steel (Ob usloviyakh razmagnichivaniya obraztsov elektrotekhnicheskoy stali).

PERICDICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 12, pp. 1451-1454 (USSR)

ABSTRACT: In the introduction it is said that according to the instructions given out by the Soviet State (GOST 802-54) de-magnetization should be carried out with alternating current at 50 cycles frequency and with a gradual decrease of voltage: for the brands of steel "345" and "346" from three AW/cm to 0.002 AW/cm (AW here denotes ampère windings), and for the types of steel "347", "348" and "370" up to 0.1 AW/cm are used; however, as is mentioned here in the further course, the various circumstances of this process have not yet been fully explained, and to do so is the task of this paper. For the explanation of the ratio between the susceptibility (H) of steel and the duration of time of the de-magnetization process it is assumed, in principle, that the maximum susceptibility H_{max} is = 14 Örsted and the minimum susceptibility H_{min} = 0.003 Örsted; the actual time taken by the process of de-magnetization amounts to

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30, 60 and 120 minutes (according to a table). Numerous examples relating to tests carried out with the brands of steel mentioned are given in this paper; results are shown in form of 2 diagrams. Conclusions: 1.) During the process of de-magnetization every form of motion must be avoided (even touching the sample with a pencil may disturb the process of induction). This disturbance may amount to from 10 to 40%. 2.) Before measuring the field must be switched off before it is switched on again; measuring should be carried out as quickly as possible, because switching on the field produces a weakening effect at H. It is suggested that measuring should be duly carried out within one minute. There are 5 figures and 2 tables.

ASSOCIATION: Central Laboratory of the Verkh-Isetsk Metallurgical Plant (Tsentral'naya laboratoriya Verkh-Isetskogo metallurgicheskogo zavoda).

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Card 2/2 1. Degaussing-Methods

DRUZHININ, V.V., kand.fiziko-matematicheskikh nauk; KURENNYKH, L.K., inzh.; KOZHUROV, A.A., inzh.

Increase of losses in electric steel due to aging. Vest. elektroprom. 28 no.8:37-39 Ag '57. (MIRA 10:10)

1.Verkh-Isetskiy metallurgicheskiy zavod.
(Steel) (Electric conductors)

DRUZHININ V.V. 110-12-6/19

AUTHOR: Druzhinin, V.V., Candidate of Phys.Math.Sciences.

TITLE: On the Anisotropy of the Magnetic Properties in Cold-rolled Transformer Steel. (Ob anizotropii magnitnykh svoystv v kholodnokatanoy transformatornoy stali)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.12, pp. 20 - 24 (USSR).

ABSTRACT: An introductory description of the orientation of the main crystallographic axes of crystallites of cold-rolled steel in the plane of the sheet accompanies the diagram given in Fig.1. It is stated that the anisotropy of the magnetic properties of Soviet cold-rolled transformer steel has not been sufficiently studied and that the article gives new information on this subject.

The tests were made on production batches from the steel works at Novosibirsk, Magnitogorsk and also from the Zaporozhstal' Works.

The test specimens were rectangular strips of 500 x 300 mm, cut from sheets in such a way that the length of the strip was at a number of different angles to the direction of rolling. Specific loss measurements were made by an absolute wattmeter in an apparatus of the Epstein type. The bundles were each of

Card1/3 750 g and were butt-assembled. A special notation is used to

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indicate the angle between magnetisation and the direct of rolling.
Test results for steels Э330, Э320 and Э310 are in the form of graphs of loss against induction for a number of angles of magnetisation. B/H curves are also given.
The increase of loss with induction is not quite the same for all specimens. For steel Э330, 0.35 mm thick, the variations in isotropy were of the same order as in steel 0.5 mm thick.
There was no special difference between the magnetic properties of steel Э330 made in different works.
Crystallographic investigations of steel Э330 showed that there was no appreciable deviation from the crystallite orientation shown in Fig.1.
In studying the anisotropy of the magnetic properties of steel Э320 two cases are to be distinguished. When the specific loss of the steel corresponds to brand Э320, and the magnetic induction to brand Э330, the character of the anisotropy of the magnetic induction is given by Figs. 6 and 7. But when the steel corresponds to brand Э320 in both specific loss and magnetic induction, the anisotropy of magnetic properties is some-

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what less. The anisotropy of magnetic properties is more marked in steel 3310.
The tests were made on strip specimens, work-hardened at the edges where they were cut from the sheets. Repeated heat-treatment to relieve the stress causes appreciable reduction in the specific loss along the direction of rolling. The loss perpendicular to the direction of rolling may be increased or decreased by such treatment. Therefore, magnetic anisotropy is more strongly marked in heat-treated specimens. This is demonstrated by a short table of results.
There are 10 figures and 3 Slavic references.

ASSOCIATION: Verkh-Isetskiy Metallurgical Works (Verkh-Isetskiy [Sverdlovsk] Metallurgicheskiy Zavod)

SUBMITTED: June 8, 1957.

AVAILABLE: Library of Congress

SOV/137-58-11-23400

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 222 (USSR)

AUTHORS: Druzhinin, V.V., Koroleva, V.A.

TITLE: On the Effect of Heating and Cooling Rates During Final Annealing Operations Carried Out in Order to Obtain a Recrystallized Texture in Cold-rolled Transformer Steel (O vliyanii skorosti nagreva i okhlazhdeniya pri okonchatel'nom otzhige dlya polucheniya tekstury rekristallizatsii kholodnokatanoy transformatornoy stali)

PERIODICAL: V sb.: Metallovedeniye i term. obrabotka. Moscow, Metallurgizdat, 1958, pp 79-87

ABSTRACT: Studies were performed in order to determine the effect of various annealing conditions on the texture of recrystallization (TR), the grain size, and the magnetic properties of cold-rolled transformer steel containing 2.6 - 2.7% Si and 0.005 - 0.01% C. The specimens were annealed in a hydrogen atmosphere in intermittent and continuous furnaces. The intensity of the TR was determined by magnetometric techniques, the magnetic induction and coercive force by means of ballistic methods. It was established that the rate and temperature of heating have a considerable effect on the TR and the properties of the steel. During slow

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