and growth of fatigue cracks, the role of plastic deformation in fatigue fracture, an accelerated method of determining fatigue strength, the plotting of fatigue diagrams, and various fatigue test methods. New data are presented on the sensitivity of high-strength steel to stress concentration, the effect of stress concentration on the criterion of fatigue failure, the effect of the size factor on the strength of metal under cyclic loads, and results of endurance tests of various machine parts. Problems connected with cyclic metal toughness, internal friction, and the effect of corrosion media and temperature on the fatigue strength of metals are also discussed. No personalities are mentioned. Each article is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

NATURE OF FATIGUE FRACTURE

EFFECT OF ENVIRONMENT ON THE FATIGUE STRENGTH

ACCESSION NR: AR4041610 S/0137/64/000/005/1050/1050

SOURCE: Ref. zh. Metallurgiya, Abs. 51292

AUTHOR: Postnikov, V. S.; Zolotukhin, I. V.

TITLE: Investigation of thermal fatigue of alloys of aluminum with copper by method of internal friction

CITED SOURCE: Sb. Relaksats. yavleniya v met. i splavakh. M., Metallurgizdat, 1963, 105-111

TOPIC TAGS: thermal fatigue, aluminum alloy, copper containing alloy, internal friction

TRANSLATION: By method of internal friction the influence of cyclical heat treatment on form change of single crystals and polycrystalline alloys of system Al-Cu was investigated (0.5; 4; 5.5; 10 and 33.8 weight % Cu), possessing isotropic properties with respect to thermal expansion. Samples in the form of wire 100 mm

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ACCESSION NR: AR4041610

in length and 1 mm^2 in section were annealed at a temperature equal to $0.8T_m$ for 1 hour and then were tested on special installation, with the help of which internal friction was measured and cyclical heat treatment was carried out. Change of length of samples as a result of cyclical heat treatment was controlled with the help of MIR-12 microscope with accuracy up to 0.02 mm. Experiments showed that dependences of high-temperature part of internal friction (background) and δ with given cyclical heat treatment (number of cycles n = 0 and 2000 cycles) on composition of alloy have identical character. Level of internal friction at room temperature and δ in region of low concentrations (up to 0.5% Cu) are changed differently. Increase of maximum temperature of cycle causes sharper decrease of background with growth in n and leads to growth of internal friction at room temperature. The latter is connected with formation of Guignor-Preston zones during cooling of sample from maximum temperature of cycle. Character of change of temperature dependency of internal friction during cyclical heat treatment for poly- and single crystals is approximately identical. For alloy with 0.5% Cu as a result of cyclical heat treatment on temperature curves of internal friction of single crystals and polycrystalline samples there appears a peak whose height

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ACCESSION NR: AR4041610

is the higher, the greater the maximum temperature of cycle. High-temperature annealing for 5 hours completely destroys this peak in the case of single crystals. In case of polycrystalline samples annealing even for 35 hours does not destroy peak appearing as a result of cyclical heat treatment, but only displaces it into region of higher temperatures. Bibliography: 9 references.

SUB CODE: MM, TD ENCL: 00

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ACCESSION NR: AT4014055 S/3073/63/000/000/0275/0282

AUTHOR: Postnikov, V. S.; Zolotukhin, I. V.

TITLE: Investigation of thermal fatigue of alloys by the method of internal friction

SOURCE: Prochnost' metallov pri peremennykh nagruzkakh; materialy* tret'yego soveshchaniya po ustalosti metallov, 1962 g. Moscow, Izd-vo AN SSSR, 1963, 275-282

TOPIC TAGS: alloy, thermal fatigue, internal friction, cadmium zinc alloy, zinc containing alloy

ABSTRACT: The physical nature of the thermal fatigue of alloys of cadmium and zinc containing from 0.5 to 24% zinc has been studied by the metallographic and internal friction methods. The cast polycrystalline specimens were annealed at 200 C for 1 hour. Monocrystals of some specimens containing 1.5-17% zinc were obtained using a device similar to that used by Lichtmann and Maslennikov. The dependence of internal friction and relative elongation on alloy composition at $\Delta T = 150$ C and $t = 30$ seconds is shown in Figure 1 of the Enclosure. The lowest relative elongation and internal friction was shown by alloys corresponding to the limiting solubility of zinc in the alpha phase at 266 C. The effect of temperature and duration of the cycles of heating on the internal friction of

Card 1/5

ACCESSION NR: AT4014055

the alpha solid solution of zinc in cadmium is shown in Figure 2 of the Enclosure. At $\Delta T = 150$ C, maximal changes in internal friction occur in the area of the first thousand thermocycles when t = 30 seconds. After 2000 thermocycles, the changes in internal friction are very slight. The effect of structure on the relationship between internal friction, temperature and the number of thermocycles is shown in Figure 3 of the Enclosure. The metallographic investigation of pure polycrystalline metals and of alloys containing 1.5% zinc showed, after a few thermocycles, lines of sliding in the separate grains of the pure metal and separate microcracks in the alloy. After 250 cycles, fatigue cracks were formed and in the area of 1500-3000 cycles, the individual grains and their boundaries were destroyed and complete destruction of the metal due to fatigue was seen. Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 03

SUB CODE: MM NO REF SOV: 020 OTHER: 003

Card 2/5

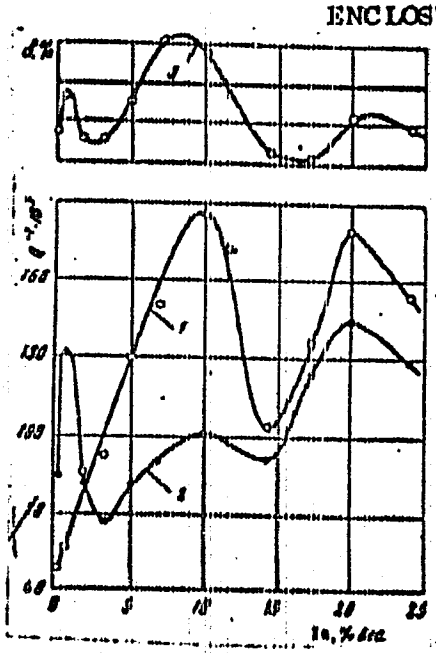
ACCESSION NR: AT4014055

ENCLOSURE:01

Fig. 1 - Relationship between internal friction, relative elongation and alloy composition during cyclic heat treatment at $\Delta T = 150C$ and $t = 30$ seconds.;

1 - $T = 0.8\ T_g$, $n = 0$; 2 - $T = 0.8\ T_g$, $n = 3000$ cycles

3 - $T = 20°$, $n = 3000$ cycles



Card 3/5

ACCESSION NR: AT4014055

ENCLOSURE: 02

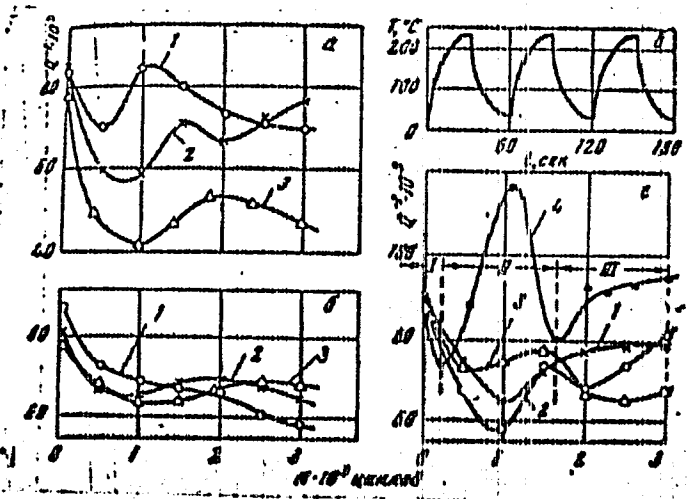


Fig. 2 - Effect of cycle length t and temperature interval ΔT on internal friction $Q^{-1}(T)$ of Cd-Zn alloys at $T = 0.8\ T_S$.
a - 1.5% Zn, τ - 60 sec. (1 - $\Delta T = 60°$, 2 - $\Delta T = 150°$, 3 - $\Delta T = 200°$);
b - 2.95% Zn, $\tau = 30$ sec. (1 - $\Delta T = 60°$; 2 - $\Delta T = 100°$; 3 - $\Delta T = 150°$);
c - shape of the thermal cycle
d - 1.5%, Zn, $\Delta T = 150°$ (1 - $\tau = 30$ sec.; 2 - $\tau = 60$ sec. 3 - $\tau = 90$ sec.; 4 - $\tau = 120$ sec.

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ACCESSION NR: AT4014065

ENCLOSURE: 03

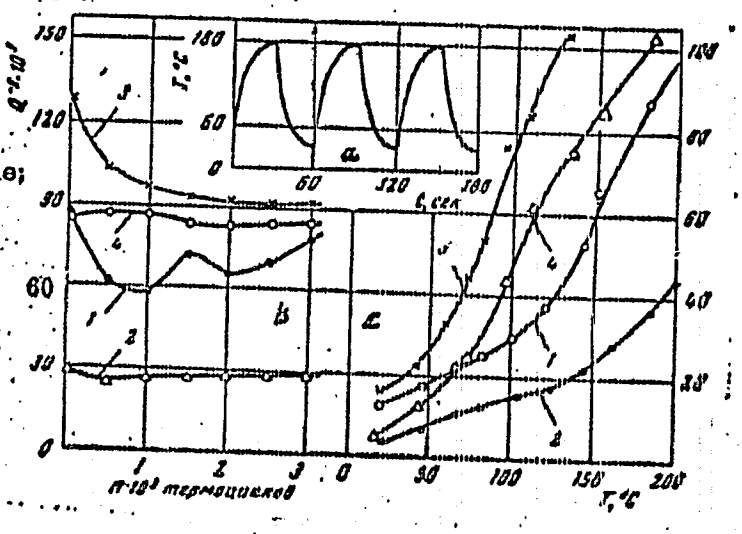

Fig. 3 - Relationship between internal friction temperature, number of cycles and state (A or B) or Cd-Zn alloys.
a- shape of the thermal cycle;
b - t = 30 sec.,
Δ T = 150°, T = 0.8Ts
(1 - A, 1.5% Zn; Σ- B, 1.5% Zn; 3 - A, 17.4% Zn; 4 - B, 17.4% Zn);
c - n = 0 (1 - A, 1.5% Zn; 2 - B, 1.5% Zn; 3 - A, 17.4% Zn; 4 - B, 17.4% Zn)

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Card

S/058/63/000/001/089/120
A160/A101

AUTHORS: Postnikov, V. S., Zolotukhin, I. V., Gorshkov, G. A.

TITLE: An investigation of the mechanical and thermal fatigue of metals by the internal friction method

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 94, abstract 1E637 (In collection: "Tsiklich. prochnost' metallov." M., AN SSSR, 1962, 218 - 226)

TEXT: Investigated was the low-frequency internal friction of Cd, Zn, Al, and Au under mechanical and thermal fatigue conditions. It was established that the total amount of defects in polycrystals especially strongly increased during the first $2 \cdot 10^3$ cycles, and then a saturation takes place up to the failure. During the first $2 \cdot 10^3$ cycles, an accumulation of the defects takes place, and then defect coagulation processes and other preparational fracture processes commence. The amount of defects for the single crystals continuously increases up to the failure. The peak of the internal friction, which is characteristic of polycrystalline metals, disappears during a cyclic load. This is

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S/058/63/000/001/089/120
A160/A101

An investigation of the...

apparently caused by the broadening of the relaxation time spectrum of sliding along the division boundaries. The thermal cycles also destroy almost completely the peak of the internal friction in the polycrystalline metal. The latter seems to be caused by a fractionation of the grains. In proportion to an increase of the number of the thermal cycles, the background of the internal friction increases, passes through the maximum and then decreases. Hereby, the background of the internal friction of the metal which is subjected to a large number of thermal cycles has a smaller magnitude than the background for an annealed metal.

L. Mirkin

[Abstracter's note: Complete translation]

Card 2/2

ZOLOTUKHIN, K.I.

Organizational and methodological work of a district stomatologist. Stomatologiia 36 no.4:74-75 Jl-Ag '57. (MIRA 10:11)

1. Iz Gelendzhikskogo rayonnogo otdela zdravookhraneniya (zav. N.G.Kostyuk) i Krasnodarskoy krayevoy stomatologicheskoy poliklinniki (konsul'tant - dotsent Yu.I.Bernadskiy)
(MOUTH--DISEASES)

ZOLOTUKHIM, K. I., Engineer

"Tool Manufacturing Technology,"
Stanki i Instrument, 10, No. 12,
1939.

Report &-1505, 4 Oct 1951.

ZOLOTUKHIN, A. A.

"The USSR Hydrometeorological Service," Meteorologiya i Gidrologiya, No 1, pp 3-9, Leningrad, 1953

ZOLOTUKHIN, G.Ye.

Investigating the effect of electrode cooling conditions on the intensity of spectral lines. Fiz.sbor. no.4:289-291 '58. (MIRA 12:5)

(Spectrum analysis) (Electrodes)

ZOLOTUKHIN, I.A., insh.

Improved pipe-wrench clamp. Rats. truda v prom. 1 no.12:31 D '57.
(MIRA 12:3)
(Wrenches)

Zolotukhin, K. D.

PHASE I BOOK EXPLOITATION SOV/4266

Progressivnaya tekhnologiya i vysokoproizvoditel'nyy instrument; opyt KhTGZ imeni Kirova (Advanced Processing and Highly-Productive Tools; Experience of the Khar'kov Turbogenerator Plant imeni Kirov) Moscow, Mashgiz, 1960. 155 p. 5,500 copies printed.

Reviewer: P. Ye. Dudnik Engineer; Ed.: M. S. Soroka; Chief Ed. (Southern Division, Mashgiz): V. K. Serdyuk, Engineer.

PURPOSE: This booklet is intended for technical personnel and innovators.

COVERAGE: The booklet discusses the experience of innovators and technical personnel in introducing advanced processes and machine tools at the KhTGZ imeni Kirov (Khar'kov Turbogenerator Plant) for the manufacture of steam turbine rotors, for tapping coarse threads, processing steam turbine blades. Experience in introducing artificial cooling for interference fits, and in mastering the manufacture of welded steam-turbine rotors is described. The

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Advanced Processing (Cont.) SOV/4266

booklet covers the advances in technology developed and introduced at the factory in the last few years. No personalities are mentioned. No references are given.

TABLE OF CONTENTS:

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Advanced Processing (Cont.) SOV/4266

AVAILABLE: Library of Congress

VK/rn/ec
11-14-60

Card 3/3

SLESARCHUK, G. P., Engineer; ZOLOTUKHIN, K. I., Engineer

"Tool Manufacturing Technology," Stanki i Instrument, 10, No. 12, 1939

Report U-1505, 4 Oct 1951.

ZOLOTUKHIN, K.I.

Frequency of paradontosis in deaf-mutes. Stomatologiia 39 no.6:30 N-D '60. (MIRA 15:1)

1. Iz kliniki stomatologii Kubanskogo meditsinskogo instituta.
(GUMS--DISEASES) (DEAF)

ZOLOTUKHIN, K.S.; ULANOV, I.M.

Thermocouples for measuring temperatures of the hot blast and of the crowns of hot-blast stoves. Stal' 25 no.8 690-691 Ag '65. (MIRA 18:8)

1. Cherepovetskiy metallurgicheskiy zavod.

LISITSYN, M.S., professor, zasluzhennyy deyatel' nauki; ZOLOTUKHIN, N.A. kandidat meditsinskikh nauk.

Hemostatic action of resorptive gauze (oxidized cellulose)
Vest.khir.76 no.9:69-74 O '55. (MLRA 9:1)

1. Iz kliniki obshchey khirurgii (nach-prof. M.S.Lisitsyn) Voyenno-morskoy meditsinskoy akademii.
(CELLULOSE,
oxidized cellulose gauze, hemostatic action)
(HEMOSTASIS,
hemostatic action of oxidized cellulose gauze)

84325

18.1200 2308 only

S/128/60/000/008/009/014
A105/A029

AUTHOR: Zolotukhin, N.I.

TITLE: Production of Silicon Magnesium Addition Alloy in Ferroalloy Plants

PERIODICAL: Liteynoye proizvodstvo, 1960, No. 8, p. 46

TEXT: Experiments were carried out by the author in cooperation with A.A. Kuz'mina and Yu.A. Shul'te in the Zaporozhskiy ferrosplavniy zavod (Zaporozh'ye Ferroalloy Plant) by applying a simplified method of production of silicon magnesium alloys containing 8 - 30% Mg. As a starting material 75 - 80% ferrosilicon of first melt were used, melted in a 3-phase electric smelting furnace of 9,000 kva and magnesium pigs ГОСТ 804-49 (GOST 804-49). A description of the melting procedure is given and the components of three alloys are cited. It was established that the waste of magnesium depends on the temperature of molten ferrosilicon and the alloy. By improving these methods the waste could be reduced to 10%. The simplicity of the proposed process makes it possible to produce cheap ferrosilicon magnesium alloys with various compositions and specific gravities in large quantities at insignificant supplementary losses during the production of cast iron grids used for this process. There are 2 tables and 1 Soviet reference.

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S/128/60/000/004/002/006
A104/A133

AUTHOR: Zolotukhin, N. I.

TITLE: The practice of oxygen-enrichment of the cupola blast

PERIODICAL: Liteynoye proizvodstvo, no. 4, 1960, 12-13

TEXT: A method of smelting with oxygen enrichment to obtain ferritic malleable cast iron and magnesium iron is described. The method is applied at the "Kommunar" Plant in Zaporozh'ye in a 700 mm diameter cupola and one row of tuyères and in the "Zaporozhastal'" plant in a 600 mm diameter cupola and three rows of tuyères. The choice of the most advantageous admission point of oxygen and its quantity presented considerable difficulties due to contradictory scientific data. At the "Kommunar" Plant oxygen was supplied to each tuyère from a cylinder fitted on a special platform. Experimental data are given in a table. Oxygen supply into the upper tuyères and particularly into the third row of tuyères increases the temperature of the flue gases and increases the heat loss. It is recommended to supply oxygen into the lower row of tuyères of cupolas with a receiver and into the second row of tuyères of cupolas without receiver. Specific oxygen consumption is 0.32

Card 1/2

The practice of oxygen-enrichment...

- 0.5 m^3 per 1°C and ton of overheated metal. Oxygen enrichment has no effect on the carbon loam (36 - 38%) whereas manganese and silicon loams decrease from 25.5 to 24%. Oxygen blowing reduced the coke consumption from 17 to 14% and its supply to the lower row of tuyères did not affect the cupola lining. Based on the described tests, the enrichment with 0.5 m^3/ton of oxygen per °C for cast iron smelting is recommended. When oxygen was supplied to the lower tuyères in cupolas with receivers, the metal was produced at 1,380 - 1,400°C and in cupolas without receivers at 1,400 - 1,420°C. There are 2 tables and 14 Soviet-bloc references.

Card 2/2

SOV/123-59-16-65202

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 16, p 213 (USSR)

AUTHOR: Zolotukhin, N.I.

TITLE: An Efficient Method of Admitting Oxygen Into the Cupola Furnace

PERIODICAL: Tekhn.-ekon. byul. Sovnarkhoz Zaporozhsk. ekon. adm. r-na, 1958, Nr 7, 35 - 37

ABSTRACT: In order to obtain cast iron with a high superheat tests were carried out to blow O_2 into a cupola furnace of 700 mm in diameter with one row of tuyeres without forehearth and into a cupola furnace of 600 mm in diameter with three rows of tuyeres with forehearth and without. In the latter case O_2 was admitted separately to each row of tuyers. The O_2 was forced in through a nozzle of 3 - 5 mm in diameter, with a pressure of 6 - 12 at. The most favorable effect is reached if O_2 is forced into the lower row of tuyeres. When being forced into the upper rows the temperature of the waste gas rose and increased the heating of the lining. It is recommended to force O_2 into the second row as the lower row of tuyeres is filled with slag. The most favorable consumption of O_2 for an additional

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An Efficient Method of Admitting Oxygen Into the Cupola Furnace

superheating of 1 t of metal by one degree centigrade varies from 0.32 to 0.5 m^3. By blowing O_2 into the cupola furnace it is possible to smelt wrought iron and magnesium cast iron.

L.A.M.

S/182/60/000/006/001/009
A161/A029

AUTHORS: Moshnin, Ye.N.; Zolotukhin, N.M.

TITLE: Determination of the Forging Pressure

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, 1960, No. 6, pp. 1 - 5

TEXT: It had been noted before by many authors that the actual forces acting in forging of large metal masses are considerably lower than calculated by theoretical formulae. S.G. Golovanov (Ref. 3) and S.I. Gubkin (Ref. 1) experimentally found correction coefficients to the formulae (according to S.I. Gubkin the correction coefficient is reduced from 1 to 0.4 with a forging volume increasing from 25 to 25,000 cm^3). To study peculiarities of deformation in large forgings, an experimental investigation has been carried out at TsNIITMASh with a 1,500-ton press and at the Novo-Kramatorskiy mashinostroitel'nyy zavod (Novo-Kramatorsk Machinebuilding Works) with 3,000 and 10,000-ton presses. The cooling process in air and during deformation has been investigated. The former conclusions drawn by D.I. Berezhkovskiy (Ref. 6) concerning the heat effect proved wrong. The results of temperature measurements in the surface and center layers of forgings of 0.5 tons and 360 mm in diameter to 100 tons and 1,820 mm in dia-

Determination of the Forging Pressure

meter (cooling in air) and the observed changes of pressing effort, pressure and deformation resistance are shown in curves for a 123-ton ingot of "45" steel on a hydraulic 10,000-ton press. It was observed that forgings cooled faster during deformation due to separation of scale and heat transfer into the fullers, than during transportation from the heating furnace and placing on the press. The cooling rate during deformation was approximately 3 times higher than in air. The perceptible effect of the deformation rate on the deformation resistance starts with a 10 times higher deformation rate. It is concluded, therefore, that this effect may be ignored when using laboratory test data for the calculation of swaging process forces, but correction coefficients must be used and the deformation resistance of the forging at the end of deformation will be

$$S_{\phi} = S_{\mu} k_1 k_2 k_3 \qquad (3)$$

where S_{μ} is the highest deformation resistance value at mean temperature of the forging, determined in mechanical tests; k_1 - a coefficient accounting for deformation resistance drop in large relative deformations; k_2 - a coefficient accounting for the duration difference of heating and holding a test specimen and an actual forging at forging temperature; k_3 - a coefficient accounting for the respective difference of deformation. Extensive experimental investigation

Determination of the Forging Pressure

is yet necessary to determine these coefficients. It is recommended to calculate the actual deformation resistance of large forgings (ingots) approximately, using the formula $S_\phi = S_M k$ (4) where k is a coefficient allowing for the values of the coefficients k_1, k_2, and k_3. For forgings (ingots) of plain carbon steel or low-alloy steel being deformed to half of the initial height, the k coefficient values (taken with some reserve in view of uncertainty) are given in a table:

Factors	Weight of forging (ingot) in tons				
	0.5	6.0	20	50	100
Transportation time of the forging to the press, in min.	12	15	20	22	25
Swaging time, in min.	1.5	2	3	4	5
Conditional total time, in min.	16.5	21	29	34	40
Temperature of the forging surface (maximum mean) in °C	850	880	900	930	960
Coefficient k	0.8	0.7	0.6	0.55	0.5

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Determination of the Forging Pressure

So calculated, the resistance in a 123-ton carbon steel ingot heated to 1,200°C will be 1.4 kg/mm^2 (the actual resistance is lower). In general the results of the investigation coincide with data obtained by S.G. Golovanov (Ref. 14) who obtained about 1.3 kg/mm^2 in a comparable case, and by A.D. Tomlenov (Ref. 15) who concluded that in swaging of large ingots with the diameter nearly equal to the height and heated to 1,200°C, the swaging pressure q for structural carbon steel is about 1.25 - 1.55 kg/mm^2. The chosen k coefficient values are close to (slightly higher) the values of an analogous coefficient that was suggested by S.I. Gubkin (Ref. 1). The following conclusions are drawn: 1) The heat effect in deformation has no material influence on deformation resistance in forging carbon and low-alloy steel on hydraulic forging presses. 2) For large forgings, the mean deformation resistance corresponding to the mean temperature in the cross section area is to be accepted for calculations. 3) The mean temperature in cross section is to be determined allowing for the parabolic heat distribution curve. 4) When using data of tests on small specimens, corrections are necessary: a) for dropping resistance at high-degree deformation (in 900 - 1,250°C); b) for different heating time of laboratory specimens and actual forgings; c) for the difference between swaging deformation (in one press stroke) and the relative theoretic deformation, at which the deformation resistance reaches the maximum.

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Determination of the Forging Pressure

S/182/60/000/006/001/009
A161/A029

5) The actual deformation resistance in large forgings is about 0.5 - 0.8 of the resistance determined in tests at a temperature corresponding to the mean temperature in the forging. There are 4 figures and 15 references: 13 Soviet, 2 English.

Card 5/5

ZOLOTUKHIN, N.M.; ENTIN, I.Z.; GETMANSKIY, A.P.

Investigating the distribution of plastic deformations by the photoplasticity method. Izv. vys. ucheb. zav.; chern. met. 8 no.5:76-81 '65. (MIRA 18:5)

1. Kramatorskiy irdustrial'nyy institut.

ZOLOTUKHIN, N.M.; ENTIN, I.Z.

Optical polarization for the study of deformations in three-dimensional plastically-deformed plexiglas models. Kuz.-shtam. proizv. 5 no.10:10-13 O '63. (MIRA 16:11)

S/182/61/000/003/005/009
A161/A133

AUTHORS: Moshnin, Ye. N., Zolotukhin, N. M.

TITLE: Improving the accuracy of determining the upsetting stress of forgings

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 3, 1961, 18 - 19

TEXT: The article presents supplementing data on the results of an experimental investigation of factors affecting the deformation in hot upsetting processes [Ref. 1: Ye. N. Moshnin and N. M. Zolotukhin, "Kuzn. shtamp. proizvodstvo", no. 6, 1960]. A method had been suggested in the first article to determine the required upsetting stress, that included the assumption that the cooling of the forging is stabilized by the end of the upsetting process, i.e. that the cooling has reached the center of the forging. Additional investigations revealed that this may be assumed for forgings not above 15 ton weight, but that the upsetting of 20-ton and heavier forgings ends with irregular cooling that must be taken into account to prevent a considerable error in the rated required stress. The information in this second article includes two heat distribution graphs; a new equation for the determination of the mean temperature during an irregular cooling process:

$$t_{mean} = t_{surface} + a\,(t_{center} - t_{surface}); \qquad (2)$$

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S/182/61/000/003/005/009
A161/A133

Improving the accuracy of determining the...

empirically determined values of the a-factor, and a table of deformation resistance values determined for forgings of 0.5, 6, 20, 50 and 100 tons of the "45" grade steel in accordance with new and more accurate data. There are 2 figures, 1 table and 2 Soviet-bloc references.

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S/182/61/000/004/003/007
D038/D112

AUTHORS: Zolotukhin, N.M. and Mil'chevskiy, V.Ya.

TITLE: Upsetting pipes

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 4, 1961, 13-15

TEXT: The article describes a method of upsetting thickened end sections of pipes for excavators. The method of upsetting pipes both in a calibrated ring and without dies was submitted in 1955, and is under development at the NIIPTMASh (Kramatorsk). The NIIPTMASh in conjunction with NKMZ have tested 299 x 12, 299 x 14, and 180 x 12 mm dimension pipes for excavators for which grade 20 or M steel with no more than 0.12% C, 1.3-1.7% Mn, 0.3-0.6% Si, 0.15-0.4% Cu, 0.01-0.03% Ti, 0.3% Cr and Ni, 0.045% S and 0.04% P, were used. The device, mounted on a lathe frame, comprised: a working tool, a wedged mechanism with hydraulic drive for clamping down the upset pipes, a hydraulic drive for feeding the pipes, and a device for the coordination of pipe and inductor feed. It is stated that (1) the mechanical properties and fiber texture in the upset metal did not differ from the initial metal; (2) the metal grain microstructure could be controlled by the temperature of upsetting and (3) it was possible to upset pipes with a 2-3 fold wall thickening in a single operation by a continuous step-by-step method. Candidate of Technical

Card 1/2

Upsetting pipes

S/182/61/000/004/003/007
D038/D112

Sciences N.M. Zolotukhin supervised the work, and Engineer V.Ya. Mil'chevskiy developed the method (Author's Certificates no. 104402, 114615 and 117296). There are 7 figures and 1 Soviet reference.

Card 2/2

ZOLOTUKHIN, N.M.

Modeling processes of hot forging [with summary in English].
Insh.-fiz.zhur. no.12:59-63 '58. (MIRA 11:12)

1. Kramatorskiy filial TSentral'nogo nauchno-issledovatel'skogo instituta tekhnologii i mashinostroyeniya, g.Kramatorsk.
(Engineering models) (Forging)

ZOLOTUKHIN, N.M., kand.tekhn.nauk

Solving the differential equation of heat conduction applicable to the problems of heating of forging and rolling ingots. Konstr.i tekh.mash. no.1:174-181 '61. (MIRA 15:2)
(Heat--Conduction)

ZOLOTUKHIN, N.M., kand.tekhn.nauk

Calculating the heating of ingots and blanks for forging and their cooling during the forging. Konstr.i tekh.mash. no.1:182-202 '61. (MIRA 15:2)

(Heat--Conduction)
(Forging)

ZOLOTUKHIN, N.M., kand.tekhn.nauk

Modeling processes of hot forming of metals. Vest. mash. 38 no.9:36-39 S '58. (MIRA 11:10)
(Engineering models)

ZOLOTUKHIN, N. M.

Zolotukhin, N. M.

"A method of approximate modeling of the process of hot deformation of metals." Min Heavy Machine Building (TsNIITMash). Moscow, 1956. (Dissertation for theDegree of Candidate in Technical Science).

So: Knizhnaya letopis'
No. 25, 1956. Moscow

MOSHNIN, Ye.N.; ZOLOTUKHIN, N.M.

Greater accuracy in the methods of determining forces required for upset forging. Kuz.shtam.proizv. 3 no.3:18-19 Mr '61. (MIRA 14:6)

(Forging machinery)

S/123/62/000/015/011/013
A052/A101

AUTHORS: Zolotukhin, N. M., Kuz'mintsev, V. N.

TITLE: On the drop of deformation resistance of metal when forging large ingots

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 15, 1962, 3, abstract 15V13 (In collection: "Konstruir. i tekhnol. mashinostr.". Moscow-Kiyev, Mashgiz, no. 1, 1961, 203 - 207)

TEXT: When forging blanks out of large ingots, a drop of the deformation resistance takes place as the degree of deformation increases. So when sinking a 125 t 40H (40N) steel blank the deformation resistance decreases in the process of sinking from 2.52 kg/mm^2 at the first pressing to 1.28 kg/mm^2 at the last one. The deformation resistance of a metal is affected by the temperature, degree and rate of deformation. When forging large blanks the inner temperature practically does not change. The conversion of a part of mechanical energy into thermal energy of the forging contributes to this phenomenon. For this reason the main bulk of metal, with the exception of surface layers, has a constant

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temperature. As in the process of forging the degree of deformation increases the deformation resistance can decrease due to the crushing of the cast dendrite structure; this crushing facilitates the softening processes. An increase of external friction forces with the increase of the degree of deformation has an insignificant effect on large forgings, since because of their large dimensions the relation of the contact surface to the volume is rather low as compared with small blanks. The rate of deformation when sinking heavy ingots decreases considerably in the course of one pressing and also from pressing to pressing, particularly when the press is working at the limit of its capacity which is the case at last pressings. At the same time the rate of deformation drops from its maximum value to zero. Such a sharp decrease of the rate results in a considerable decrease of the deformation resistance of the metal of the blank. A very considerable decrease of the deformation resistance at the end of a pressing, when the speed of the crosshead approaches zero, takes place also as a result of the strain relaxation, that is of the transition of a part of elastic deformation into plastic one; because of this transition, the forging receives some deformation at a considerably lower deformation resistance. There are 2 references and 2 graphs.

[Abstracter's note: Complete translation]

V. Pavlyuchenko

Card 2/2

ZOLOTUKHIN, N.P.

Surgery in a 14-week-old child for "double esophagus" (entero-genic cyst. Vest.khir.76 no.8:112-113 S '55. (MLRA 8:11)

1. Iz 2-y fakul'tetskoy khirurgicheskoy kliniki (nach.prof. P.A.Kurpiyanov) Voyenno-meditsinskoy ordena Lenina akademii im. S.M.Kirova Leningrad, Stalingradskiy pr. d.158 kv.8.
(ESOPHAGUS, abnormalities
double duplication, surg. in 14-week-old child)
(ABNORMALITIES,
duplication of esophagus, surg. in 14-week-old child)

BYKHOVSKIY, Izrail' Adol'fovich; ZOLOTUKHIN, N.S., nauchnyy red.; VASIL'YEV, A.V., red.izd-va; GURDZHIYEVA, M.K., tekhn.red.

[Atomic warships of the NATO countries are weapons of imperialistic aggression; stenographic record of a lecture given in various establishments in Leningrad] Boevye atomnye korabli stran NATO - oruzhie imperialisticheskoi agressii; stenogramma loktsii, prochitannoi na predpriiatiiakh Leningrada. Leningrad, O-vo po rasprostraneniiu polit. i nauchn.znanii RSFSR, Leningr.otd-nie, 1959. 51 p. (MIRA 12:12)

(Atomic ships)

LOSKUTOV, K.; ZOLOTUKHIN, P., aviatekhnik

Our experience in the use of a motor winch. Kryl.rod. 10 no.3: 18-19 Mr '59. (MIRA 12:4)

1. Nachal'nik planernoy stantsii g. Yoshkar-Ola (for Loskutov).
2. Planernaya stantsiya g. Yoshkar-Ola (for Zolotukhin).
(Gliding and soaring)

ZOLOTUKHIN,P.

LOSKUTOV,K.; BONDARENKO,N., instruktor-letchik; ZOLOTUKHIN,P., aviatekhnik

Some problems in elementary training of glider pilots. Kryl.rod. 6 no.8:7 Ag'55. (MLRA 8:10)

1. Nachal'nik Yoshkar-Olinskoy planernoy stantsii (for Loskutov)
(Gliding (Aeronautics))

BYKHOVSKIY, Izrail' Adol'fovich; ZOLOTUKHIN, M.S., otvetstvennyy redaktor; MISHKEVICH, G.I., redaktor; SHISHKOVA, L.M., tekhnicheskiy redaktor

[Atomic submarines] Atomnye podvodnye lodki. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1957. 76 p. (MLRA 10:10)
(Atomic submarines)

ZOLOTUKHIN, O. G.

Awarded the order of the RED STAR, for a prolonged service in the troops and organs of the Ministry of State Security.

Soviet Source: N: Radyan's Ukrayina Kiev 10 Sept. 47
Abstracted in USAF "Treasure Island", on file in Library of Congress,
Air Information Division,
Report No. 89771. Unclassified

LOSKUTOV, K.; ZOLOTUKHIN, P.

Chassis for the A-I glider. Kryl.rod. 4 no.8:9 Ag '53. (MLRA 6:7)
(Gliders (Aeronautics))

ZOLOTUKHIN, P.D.

KIZIMOV, Nikolay Afanas'yevich; ZOLOTUKHIN, P.D., redaktor; ABRAMOV, V.I. redaktor; PROZOROVSKAYA, V.L., tekhnicheskiy redaktor.

[Booklet for operators of mine hoisting and hauling winch] Pamiatka dlia mashinista shakhtnoi pod"emnoi i otkatochnoi lebedki. Moskva, Ugletekhizdat, 1955. 52 p. (MLRA 8:8)
(Mine hoisting--Safety measures)

ZOLOTUKHIN, P. E.

Production accounting and calculation in local industry. Moskva, Gos. izd-vo mestnoi promyshl. RSFSR, 1951. 113 p. (55-20751)

HF5653.Z6

ZOLOTUKHIN, P.F.

Relation between practical science instruction and socially useful work. Geog. v shkole 20 no.3:41-42 My-Je '57. (MLRA 10:6)

1. Shkola stanitsy Sovetskoy Stavropol'skogo kraya.
(Geography, Economic--Study and teaching)
(Agriculture--Study and teaching)

IVANOV, K.M., kand. sel'skokhoz. nauk; ZOLOTUKHIN, P.M.

Preliminary results of using hybrid bulls from the "Gorki Leninskiye" Farm in Leningrad Province. Agrobiologiia no.3:383-388 My-Je '65. (MIRA 18:11)

1. Severo-Zapadnyy nauchno-issledovatel'skiy institut sel'skogo khozyaystva, Leningradskaya oblast'.
2. Glavnyy zootekhnik opornogo punkta Respublikanskoy laboratorii po povysheniyu zhirnomolochnosti korov, Leningradskaya oblast' (for Zolotukhin).

SHEYKO, Sergey Sergeyevich; YANKELEVICH, Mikhail Nikolayevich; ANAN'YEV, A.I., retsenzent; ZOLOTUKHIN, P.Ya., retsenzent; ILINICH, B.K., red.; TRUSOV, N.S., tekhn. red.

[Accounting and calculation of production costs in a clothing factory]Uchet i kal'kulirovanie sebestoimosti produktsii shveinoi fabriki. Leningrad, Gosmestpromizdat, 1962. 195 p. (MIRA 16:4)

(Clothing industry--Accounting)
(Costs, Industrial)

ZOLOTUKHIN, R. YA. , LEVOCHKIN, F.K.

"Method for Determining Radium Aerosols in Air", p. 106

Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii
(Voprosy Gigiyeny i Dozimetrii) Medgiz, 1957, Moscow Russian, DK.

Proceedings of the All-Union Conference on Medical Radiology
(Hygienic and Dosimetric Problems.)

YERMAKOV, V., master-povar; STERLIKOV, A., master-povar (g.Alma-Ata); TUL'CHINSKIY, N., master-povar (g.Kiyev); KULINKOVICH, Yu., master-povar (g.Minsk); KOZYREV, N., master-povar (Moskva) AVDUSHEV, M., master-povar(g.Riga); ZOLOTUKHIN, S., master-povar (g.Tashkent); MEZHGAYLIS, M. [Mezgailis, M.], master-povar (g.Riga); TURSUNOV, A., master-povar (g.Tashkent); MARTOS, N., master-povar (g.Nuril'sk)

Show the example, share the experience. Obshchestv. pit. no.8:37-40 Ag '61. (MIRA 14:10)
(Cookery)

ZOLOTUKHIN, S. I.

ZOLOTUKHIN, S. I. - "Effect of Narcotics on the Metabolism of Sulfur-Containing Amino Acids in Animal Proteins." Sub 5 Jan 53, First Moscow Order of Lenin Medical Inst. (Dissertation for the Degree of Candidate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

Country : USSR V
Category: Pharmacology. Toxicology. Tranquilizers.

Abs Jour: RZhBiol., No 6, 1959, No 27687

Author : Nikolayeva, M.M.; Zolotukhin, S.I.
Inst : Moscow Pharmaceutical Institute
Title : Relation Between Chemical Structure of Phenothiazine Derivatives and Their Influence on Blood Coagulation.

Orig Pub: Sb. nauchn. rabot Mosk. farmatsevt. in-t, 1957, 1, 313-317

Abstract: Blood-coagulation and prothrombin time was determined in rabbits ½ - 1 - 2 hours after introduction of phenothiazine derivatives: melazine (I), aminazine (II), diparcole (III), T-020 (IV), G-015 (V) and ethizine (VI) in a dose of 10 mg/kg. Experiments demonstrated that I, II and VI prolong the time of blood

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ZOLOTUKHIN, S.I.

Medical history in Lithuania. Farm. i toks. 20 no.3:93 My-Je '57.
(MIRA 10:10)

(HISTORY, MEDICAL
in Lithuania (Rus))

ZOLOTOKHIN, S. I.

"The Effect of Antibiotics of the Tetracycline Group on Blood Coagulability."

report presented at the 148th meeting of the Pharmacology and Toxicology Section of the Moscow Society of Physiologists, Biochemists and Pharmacologists, 24 Jun. 1958.

Moscow Pharmaceutical Institute

(Farmakologiia i Toksikologiia, 21, no 6, Nov-Dec 58, p. 619)

ZOLOTUKHIN, S.I.

Penicillin and blood coagulation; review of the literature.
Farm. i toks. 20 no.6:80-86 N-D '58 (MIRA 11:6)

1. Kafedra farmakologii (zav. - prof. M.M. Nikolayeva) Moskovskogo farmatsevticheskogo instituta.
(PENICILLIN, effects,
on blood coagulation, review (Rus))
(BLOOD COAGULATION, effect of drugs on,
penicillin, review (Rus))

ZOLUTUKHIN, S.I.

Effect of chlortetracycline on blood coagulation. Farm. i tok#. 21 no.5:72-76 S-O '58 (MIRA 11:11)

1. Kafedra farmakologii (zav. - prof. M.M. Nikolayeva) Moskovskogo farmatsevticheskogo instituta Ministerstva zdravookhraneniya RSFSR.
(AUREOMYCIN)
(BLOOD--COAGULATION)

ZOLOTUKHIN, S.I.

Effect of antibiotics of the tetracycline group on blood coagulation. Antibiotiki 4 no.3:70-73 My-Je '59.
(MIRA 12:9)

1. Kafedra farmakologii (zav. - prof.M.M.Nikolayeva) Moskovskogo farmatsevticheskogo instituta.

(BLOOD COAGULATION, effect of drugs on, tetracyclines (Rus))
(TETRACYCLINE, eff. on blood coagulation (Rus))

ZOLOTUKHIN, S.I.

Effect of antibiotics on blood coagulation; review. Farm. i toks. 22 no.2:182-188 Mr-Ap '59. (MIRA 12:6)

1. Kafedra farmakologii (nav. - prof.M.M.Nikolayeva) Moskovskogo farmatsevticheskogo instituta Ministerstva zdravookhraneniya RSFSR.

(BLOOD COAGULATION, effect of drugs on, antibiotics, review (Rus))
(ANTIBIOTICS, effects, on blood coagulation, review (Rus))

ZOLOTUKHIN, S.I.

Mechanism of the action of morphine on blood coagulation. Farm. i tokс. 22 no.4:332-336 Jl-Ag '59. (MIRA 13:1)

1. Kafedra farmakologii (zav. - prof. M.M. Nikolayeva) Moskovskogo farmatsevticheskogo instituta Ministerstva zdravookhraneniya RSFSR.
(MORPHINE pharmacil.)
(BLOOD COAGULATION pharmacol.)

ZOLOTUKHIN, S.I.

Antiheparin activity of polymyxin M. Antibiotiki 5 no.6:13-17 N-D '60. (MIRA 14:3)

1. Kafedra farmakologii (zav. - prof. M.M.Nikolayeva) farmatsevticheskogo fakul'teta I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(HEPARIN) (POLYMYXIN)

KUDRIN, Aleksandr Nikolayevich; ZAYDLER, Yakov Izrailevich; ZOLOTUKHIN, Stepan Ivanovich; CHISTYAKOVA, N.F., red.; MATVEYEVA, M.M., tekhn. red.

[Manual on practical work in pharmacology] Rukovodstvo k prakticheskim zaniatiiam po farmakologii. Moskva, Izd-vo "Meditsina," 1964. 210 p. (MIRA 17:3)

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ZOLOTUKHIN, V., kand. tekhn. nauk; GRISHKO, N., inzh.; KURSHPEL', V., inzh.

Erecting a building of gas-ash-lime-concrete panels with frame reinforcement. Zhil. stroi. no.10:23-26 '64. (MIRA 18:4)

ZOLOTUKHIN, V.

Useful initiative. Pozh.delo 7 no.5:10 My '61. (MIRA 14:5)
(Ivanovo Province—Farm buildings---Fires and fire prevention)

ZOLOTUKHIN, V.; YEFANOVA, G.

They go on trial... Pozh.delo 9 no.5:11 My '63. (MIRA 16:5)
(Factories—Fires and fire prevention)

ZOLOTUKHIN, V.

In ancient Galich. Pozh.delo 7 no.8:19 Ag '61. (MIRA 14:8)
(Galich--Firemen)

ZOLOTUKHIN, V.

"Communist Youth Leaguer, take to the airplanes!" Kryl. rod. 9 no.9:8-9 S '58. (MIRA 11:10)
(Communist Youth League) (Aeronautics)

MOROZOV, N., kand.tekhn.nauk; NESTEROV, A., inzh.; ANAN'INA, N., inzh.; ZOLOTUKHIN, V., starshiy proizvoditel' rabot.

The first five-story house built of vibrated brick panels. Stroitel' no.6:3-5 Je '59. (MIRA 12:9)
(Building blocks)
(Moscow--Apartment houses)

ZOLOTUKHIN, V.

Beginning of a great program. Pozh.delo 8 no.2:9 F '62.(MIRA 15:2)
(Penza Province—Fires and fire prevention)

ZOLOTUKHIN, V.

Everything found in good order in one respect, but what about the rest? Pozh.delo 9 no.1:8-9 Ja '63. (MIRA 16:1)
(Volgograd Province--Fire prevention--Inspection)

ZOLOTUKHIN, V.A.

ROYTMAN, Ye.A., kand.med.; AMIRKHANOV, Ye.L.; ZOLOTUKHIN, V.A.

Apparatus for moist disinfection with compressed air and its advantages [with summary in English]. Gig. i san. 22 no.5:50-55 My '57. (MIRA 10:10)

1. Iz dorozhnoy sanitarno-epidemiologicheskoy stantsii Stalinskoy zheleznoy dorogi.
(ANTISEPSIS AND ASEPSIS, apparatus and instruments, moist disinfect. with compressed air (Rus))

ZOLOTUKHIN, V.F.; SHCHERPILOV, P.S.; SOBOLEV, G.P.

Fixed vibration screen with annular motion. Trudy KhPI 31 no.1:85-90 '59. (MIRA 13:10)

(Vibrators)

RIVLIN, I.I.; ZOLOTUKHIN, V.F.

Making foamed silicate and concrete with barkhana. Trudy KhPI 31 no.1:113-124 '59. (MIRA 13:10)
(Building materials) (Lightweight concrete)

15(6) SOV/115-59-9-8/37

AUTHOR: Zhodzishskiy, I.L., and Zolotukhin, V.G.

TITLE: The Determination of Bends in Construction Elements During Field and Factory Testing

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 9, pp 19-20 (USSR)

ABSTRACT: The authors of this article designed a device for measuring vertical displacements for factory and field tests of prefabricated concrete parts. The instrument, shown in Fig 1, is based on a micrometer of conventional design, which was converted for this purpose. Measuring pins are installed in the concrete part as shown in Fig 1. There are 2 diagrams.

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S/052/60/005/004/007/007
C 111/ C 335

16.6500

AUTHORS: Yermakov, S. M., Zolotukhin, V. G.

TITLE: Polynomial Approximations and the Monte-Carlo-Method

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1960, Vol. 5, No. 4, pp. 473-476

TEXT: The authors propose an improved Monte-Carlo method for calculating multiple integrals. The improvement is carried out by reducing the dispersion, whereby the mean quadratic error is reduced for its part.

Let D be the domain of the k-dimensional Euclidean space;
$f(Q) \in L_D^2$; $\varphi_0(Q)$, $\varphi_1(Q)$, ..., $\varphi_n(Q) \in L_D^2$, where

$$(1) \quad \int_D \varphi_i(Q)\,\varphi_j(Q)\,dQ = \begin{cases} 0 \text{ for } i \neq j & i = 0,1,2,\ldots,n \\ 1 \text{ for } i = j & j = 0,1,2,\ldots,n \end{cases}.$$

The linear combinations of the $\varphi_i(Q)$ form the subspace $L^2_{D,n+1} \subset L_D^2$. If the determinant $W_{n+1}(Q_0, Q_1, \ldots Q_n) =$

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Polynomial Approximations and the Monte-Carlo Method

$= \det \| \varphi_o(Q_i), \varphi_1(Q_i), \ldots, \varphi_n(Q_i) \|_o^n$ is different from 0, then it holds the approximation formula

$$(2) \quad \int_d f(Q)\, \varphi_o(Q)\, dQ \approx \frac{\det \| f(Q), \varphi_1(Q_i), \ldots, \varphi_n(Q_i) \|_o^n}{W_{n+1}(Q_o, Q_1, \ldots, Q_n)} .$$

If $f(Q) \in L^2_{D,\, n+1}$, then the remaining term is equal to zero.

Theorem 1: If $Q_o, Q_1, \ldots, Q_n$ are random points of the k-dimensional Euclidean space, the probability density of which $F(Q_o, Q_1, \ldots, Q_n)$ is equal to $\frac{1}{(n+1)!} W^2_{n+1}(Q_o, Q_1, \ldots, Q_n)$, then the mathematical expectation of the random variables

$$\theta(Q_o, Q_1, \ldots, Q_n) = \frac{\det \| f(Q_i), \varphi_1(Q_i), \ldots, \varphi_n(Q_i) \|_o^n}{W_{n+1}(Q_o, \ldots, Q_n)}$$

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Polynomial Approximations and the Monte-Carlo Method

is equal to $\int_D f(Q)\ \varphi_0(Q)\ dQ$.

Theorem 2: The dispersion of the random magnitude $\theta(Q_0, Q_1, \ldots, Q_n)$ is $D^2\ \theta(Q_0, \ldots, Q_n) = \int_D f^2(Q)dQ - \sum_{i=0}^{n} \alpha_i^2$, where

$$\alpha_i = \int_D f(Q)\ \varphi_i(Q)\ dQ\ ,\ i = 0, 1, 2, \ldots, n\ .$$

The application of the improved method based on these theorems is especially favorable, if the Fourier series of f(Q) with respect to the system $\{\varphi_i\}$ converges quickly to f(Q) in the mean.

The authors thank G. J. Marchuk and J. M. Sobol'.

There are 3 references: 1 Soviet, 1 English and 1 American.

SUBMITTED: July 14, 1959

Card 3/3

ZHODZISHSKIY, I.L., kand.tekhn.nauk; ZOLOTUKHIN, V.G., inzh.

Flexures of foamed reinforced concrete slabs and ways to lessen them. Trudy SII prom. zdan. i soor. no.3:81-105 '60. (MIRA 15:1)

(Lightweight concrete)

22609
S/089/61/010/004/012/027
B102/B212

21.1700

AUTHORS: Mogil'ner, A. I., Zolotukhin, V. G.

TITLE: Measuring the kinetic characteristics of a reactor by the statistical P-method

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 377-379

TEXT: In tests conducted with a thermal subcritical arrangement having U^{235} enriched to 75% and a moderator of hydrogen, the mean lifetime of prompt neutrons has been measured, and also the constant has been determined, which establishes the relation between the neutron-counting rate of the detector and k_{eff}, and also the absolute level of the steady output. The measurements were based on the P_0-method described by the authors in Ref. 1 (Atomnaya energiya, 10, vyp. 4, 279 (1961)) where all quantities used here are defined, and on the relations

$$\psi(\alpha t) = Z\varphi(\alpha t);\quad Z = \frac{\varepsilon\nu(\nu-1)K_p^2}{(1-K_p)^2\nu^2};\qquad (A).$$

$$\varphi(\alpha t) = 1 - \frac{1-e^{-\alpha t}}{\alpha t}.$$

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In the core of the reactor, a neutron proportional counter of type CHM-5 (SNM-5) with a preamplifier having four silicon triodes of type П103 (P103) was located. The pulses from the output emitting repeater of the pre-amplifier (R_{II} = 560 ohms) were fed to a three-stage amplifier with silicon triodes. The total signal amplification was 10^4. Then, the signal reached a scaler of type [illegible]-64 (PS-64) and the probability P-element via a standard discriminator. Two different signals control the probability P-element, i.e., signals from the pulse detector and those from the timer. The timer consisted of a simple quartz generator (60 kc) with a 6Ж4 (6Zh4) tube. The probability P-element illustrated in Fig. 1 consists of a trigger having two stable states, and is controlled by pulses of negative polarity. After the signal of the timer is sent, the right triode will be blocked and the left one will be open. The pulses from the detector, which are fed to input no. 1 (A), changes the state of the triodes only one time during one interval, and send one pulse to the P-channel of the scaler. The initial or final pulse of an interval re-establishes the initial state of the triodes in the r-element and prepares it for the "reception" of the detector pulse in the next interval. Therefore, the number of counts in the channel is equal to the number of intervals where at least one pulse has been received from the detector. The total number of intervals is determined by

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Measuring the ...

the timing, and the length of the interval by calibration. For each of the four interval lengths t (4.65, 11.0, 21.0, and 61.0 μsec) the value of Ψ can be determined from $\bar{n}$ and P_0. In order to determine α and Z, four values of Ψ are treated by the method of least squares. For $(1-k_{eff})/\beta_{eff}$ c/m, $\alpha_o = \beta_{eff}/l$ one obtains $\alpha = \alpha_o(1 + c/m)$, where m denotes the counting rate; m is given by $m = F\varepsilon$, where F denotes the fission rate, and ε the efficiency of the detector; the latter is determined from the relation

$r = z(\alpha/\alpha_o)^2 = \frac{\varepsilon\nu(\nu - 1)}{\bar{\nu}^2\beta_{eff}^2}$; $\varepsilon = 0.616 \cdot 10^{-4} r$. Fig. 3 shows $\alpha = f(1/m)$ for three test series ($\beta_{eff} = 0.007$, $l = (0.82 \pm 0.025) \cdot 10^{-4}$ sec (mean lifetime of prompt neutrons in the reactor)). The result agrees well with that obtained from the two-group approximation. The authors thank A. I. Leypunskiy, V. V. Orlov, G. I. Marchuk, and V. A. Kuznetsov for their interest and discussions, and V. V. Sapozhnikov and A. P. Tarasov for assistance in experiments. There are 3 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 3: C. E. Cohn. Nucl. Sci. and Engng., 5, 331 (1959).

Card 3/5

26.2263
26.2244

S/089/61/010/004/013/027
B102/B205

AUTHORS: Zolotukhin, V. G., Mogil'ner, A. I.

TITLE: Distribution of the number of counts of a neutron detector placed in a reactor

PERIODICAL: Atomnaya energiya, v. 10, no. 4, 1961, 379-381

TEXT: The distribution of the number of counts of a neutron detector placed in a stationary sub-critical reactor deviates from Poisson's law on account of the occurrence of reaction chains. In each interval of time, the mean number of counts depends on that of the preceding interval and is unevenly distributed. It may be assumed in this case that the actual distribution of the number of records can be described by a negative binomial distribution whose generating function is given by

$$(z) = p_0 + p_1 z + p_2 z^2 + \ldots = \left[1 - \psi(z-1)\right]^{-\bar{n}/\psi} \quad (1),$$

where $p_k = \frac{1}{k!} \frac{d^k \Pi(z)}{dz^k}\Big|_{z=0}$ is the probability of k counts in a given interval,

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Distribution of...

and $\bar{n}$ the mean number of counts in the interval. ψ and the dispersion of the number of records are interrelated by $\overline{n^2} - \bar{n}^2 = \bar{n}(1+\psi)$. Thus, Poisson's law is a limit for $\psi \to 0$. In order to verify (1) experimentally, the pulses of an CHM-5 (SNM-5) proportional counter placed in a reactor were recorded on the film of a loop oscilloscope together with time markings and subsequently counted visually. The χ^2 criterion was applied to the results of two experiments and two selections each. For three selections, the agreement between the experimental results and the distribution law (1) was found to be good, whereas a deviation occurred in 2σ (cf. Table), which is related to the small number of intervals with three counts. The "composed selection" of all 1672 intervals has also shown goodaagreement with (1). The dispersion of the number of counts for a stationary, sub-critical reactor can also be expressed by

$$\overline{n^2} - \bar{n}^2 = \bar{n}(1+\psi), \quad \psi = \frac{\overline{\varepsilon\nu(\nu-1)}K_p^2}{(1-K_p)^2\bar{\nu}^2}\left(1 - \frac{1-e^{-\alpha t}}{\alpha t}\right),$$

where K_p is the prompt-neutron multiplication factor; $\alpha = (1-K_p)/l$; l is

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Distribution of...

the mean lifetime of prompt neutrons, t the length of one interval, and ε the efficiency of the detector. The mean lifetime l and the absolute reactor power are obtained by measuring ψ. According to the Feynman-Alpha method which is analogous to that of V. Gol'danskiy and M. Podgoretskiy, $\bar{n}$ and $\overline{n^2}$ are measured directly. According to the Feynman-Alpha method, the statistical error of the parameter α is found to be

$$N\overline{\left(\frac{\delta\psi}{\psi}\right)^2} = \frac{(1+\psi)\left[1+2(1+\psi)(\bar{n}+\psi)\right]}{\bar{n}\psi^2},$$

and according to the p_0 method, it is

$$N\overline{\left(\frac{\delta\psi}{\psi}\right)^2} = \frac{1}{(1-1/\Theta)^2}\,\frac{\Theta+\frac{e^x-1}{x}-2}{x},$$

where $x = \bar{n}Q$; $\Theta = Q(\psi)(1+\psi)$; N is the total number of time intervals, p_0 the probability of zero counts per interval; $Q = \frac{1}{\bar{n}}\ln\frac{1}{p_0} = \frac{\ln(1+\psi)}{\psi}$. The results obtained by application of the χ^2 criterion to the negative binomial distribution are given in Table 1, and the parameters obtained

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from an evaluation of Table 1 are contained in Table 2. There are 2 tables and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: J. Orndorf. Nucl. Sci. and Engng, 2, 450 (1957); J. Bengston et al. Vortrag No. 1783 (USA) auf der Zweiten Genfer Atomkonferenz (1958).

SUBMITTED: August 25, 1960

Legend to Tables 1 and 2: 1) Experiment 1; 2) experiment 2; 3) selection a; 4) selection b; p_i - probability of i counts per interval (i = 1..6), p_7 - probability of seven or more counts; ν_i - actually observed number of intervals. The following relations hold for $\bar{n}$ and ψ:

$$\frac{\partial\chi^2}{\partial\bar{n}} = \frac{\partial\chi^2}{\partial\psi} = 0;\ \chi^2 = \sum_0^7 \frac{(\nu_i - Np_i)^2}{Np_i};\ P = P(\chi^2 > \chi^2_{min})$$ is the probability that $\chi^2 > \chi^2_{min}$ ($\chi^2_{min} = \chi^2_{мин}$).

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SUNGATULLIN, Ya.G., inzh.; ZOLOTUKHIN, V.G., inzh.; DOLINSKIY, N.V., inzh.

Flat slabs for floors and attic roofs made of lightweight concrete. Bet. i zhel.-bet. no.11:504-507 N '61. (MIRA 16:8)

(Concrete slabs)

ZOLOTUKHIN, V.G.

PHYSICS

[redacted]

INTERNATIONAL ATOMIC ENERGY AGENCY, (IAEA)
Symposium on Neutron Detection, Dosimetry and Standardization - Harwell, England, 10-14 December 1962

DOROSHENKO, G. G., GLAGOLEV, V. I., BARABANOV, I. R., and FILEDYUSHKIN, I. V. - "A new method for studying continuous fast neutron spectra - the counting efficacies method" (Section I.1.(4))

DOROSHENKO, G. G., and Ye. L. STOLYAROVA [STOLYAROVA in 1960 was a member of the Moscow Engineering Physics Institute] - "A new method for separating pulses from fast neutrons and γ quanta" (Section III)

IVANOV, V. I. - "A modified procedure for using the Hurst type proportional counter for dosimetry of mixed γ-neutron radiation" (Section III)

MASHKOVICH, Vadim Pavlovich - "The spectrometric method and the attenuation-curve analysis method for determining the activity of threshold indicators" (Section I.3.(2))

STOLYAROVAYA, Ye. L. [In 1960 was a member of the Moscow Engineering Physics Institute] - "Methods of fast-neutron spectrometry and the opportunities for their use in neutron dosimetry" (Section II.4)

ZIELEZYNSKI, M. [ZIELEZYNSKI is listed in the program as a USSR author; he may, however, be Mieczyslaw ZIELZYNSKI who in 1958 was at Warsaw University, Poland] - "Recombination method of linear energy transfer (LET) determination of mixed radiation" (Section V)

ZOLOTUKHIN, V. G., DOROSHENKO, G. G., and YEFIMENKO, B. A. - "Calculation of pulse-height distributions and counting efficiencies of a fast-neutron scintillation detector" (Section I.2)

(5/)

S/089/62/012/006/002/019
B102/B104

AUTHOR: Zolotukhin, V. G.

TITLE: Statistical errors in the parameters of neutron resonance levels in the low-energy range

PERIODICAL: Atomnaya energiya, v. 12, no. 6, 1962, 467-471

TEXT: Neutron spectroscopy requires very exact neutron resonance parameters. The errors of such parameters were estimated by conventional methods of mathematical statistics on the following assumptions: (a) the quantities X_i ($i = 1,2 .. m$), which are used to determine the unknown parameters α and β, are independent random quantities following a well-known dispersion law with the mean values $X_i(\alpha,\beta)$; (b) the relative errors of α and β are small. The errors of the neutron resonance parameters in the total cross section, determined from experimental data on the passage of neutrons, are analyzed. The parameters obtained with instruments of high resolution are analyzed by the method of least squares, while the method of areas is used for those obtained with poorly resolving instruments (cf. D. Hughes, J. Nucl. Energy, 1, 418, 1955). In the former case, the

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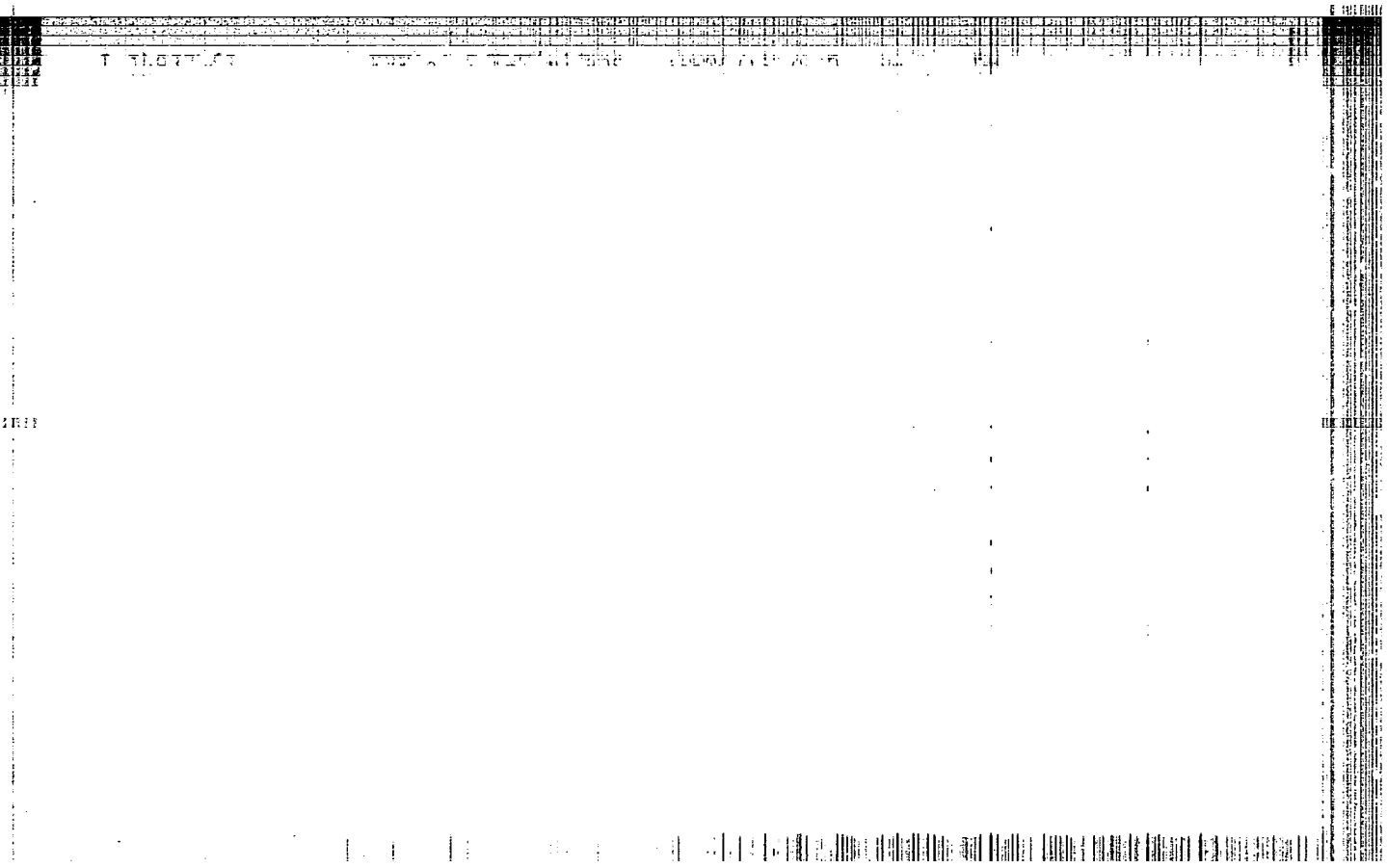
optimum thickness was determined for the samples on which the passage of neutrons was measured, and formulas were derived for calculating the errors of the parameters which allow for the background and other sources of error. Numerical results of the area method are tabulated. It is found that accuracy will deteriorate considerably if the two samples differ only slightly in thickness. There are 1 figure and 2 tables.

SUBMITTED: April 17, 1961



APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065420001-1"

ACCESSION NR: AT4021264 S/2892/63/000/002/0146/0151

AUTHOR: Zolotukhin, V. G., Doroshenko, G. G., Yefimenko, B. A.

TITLE: The registration efficiency of a neutron scintillation detector

SOURCE: Voprosy* dozimetrii i zashchity* ot izluchenіy, no. 2, 1963, 146-151

TOPIC TAGS: scintillation detector, neutron detector, neutron absorption, Monte Carlo method, scintillation, carbon, Taylor series, hydrogen

ABSTRACT: Accurate data on detector characteristics, such as the shape of the spectral line and the registration efficiency of scintillation detectors with organic crystals is not as yet available. Only a number of approximate formulas for the calculation of registration efficiency of counters is available. These formulas take into consideration: 1) the single stage scattering in hydrogen, 2) the single stage scattering in hydrogen and carbon, and 3) the single stage scattering in carbon and the single and double stage scattering in hydrogen. The authors [Neutron Dosimetry (Proceedings of a Symposium on neutron detection, dosimetry and standardization, Harwell, 10-14 December, 1962), v. 1, 597, International Atomic Energy Agency, Vienna, 1963] have developed a semi-analytic Monte-Carlo method for calculating the amplitude distribution of pulses and the counter

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