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B105/B206

Improvement of the technology

Legend to Table 1: 1) Preparation method for zirconium products, 2) weight of unit volume of the blanks, g/cm^3; 3) burned products; 4) weight of unit volume, g/cm^3; 5) water absorption, %; 6) shrinkage, %; a) casting from stabilized ZrO_2 without previous grinding of the initial materials; b) casting from stabilized ZrO_2 (usual process)

Table

Метод изготовления циркониевых изделий 1	Объемный вес сырца, г/см³ 2	3 Обожженные изделия: Объемный вес, г/см³ 4	водопоглощение, % 5	усадка, % 6
a Литье из стабилизированной ZrO_2 без предварительного помола исходных материалов	3,1	5,3	0,3	16,0
в Литье из стабилизированной ZrO_2 (обычная технология)	2,8—3,1*	5,4	0,0	17—20

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VINOGRADOVA, L.V.; RUTMAN, D.S.; POLUBOYARINOV, D.N.; POPIL'SKIY, R.Ya.

Experimental products production of heat resistant mullite-corundum at the Podolsk Refractories Plant. Ogneupory 21 no.4:178-179 '56. (MLRA 9:8)

1. Podol'skiy zavod (for Vinogradova, Popil'skiy); 2. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva (for Poluboyarinov, Popil'skiy).

(Podolsk--Refractory materials)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

15(6) SOV/131-59-2-3/16

AUTHOR: Rutman, D. S.

TITLE: For a Completion of the Technology and the Production of Highly Stable Refractories (Sovershenstvovat' tekhnologiyu, dat' strane vysokostoykiye ogneupory)

PERIODICAL: Ogneupory, 1959, Nr 2, pp 55-57 (USSR)

ABSTRACT: This was achieved by the personnel of the Podol'sk Works: In the shop Nr 1 the establishment of a department for the production of carborundum and silit heating bodies for electric furnaces was completed in 1957. In 1958 the method of brick production was adjusted from the plastic to the half-dry pressing method. In shop Nr 2 of the works the production of heat-resistant highly aluminous products was introduced. The establishment of the department for the production of glass beams containing a high amount of fire-clay was completed. The cooperation with the kafedra keramiki i ogneuporov Khimiko-tekhnologicheskogo instituta im. Mendeleyeva (Chair of Ceramics and Refractories of the Chemico-Technological Institute imeni Mendeleyev) Vsesoyuznyy i Ukrainskiy nauchno-issledovatel'skiye instituty ogneuporov (All-Union and Ukrainian scientific research institutes of refractories) and other scientific

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For a Completion of the Technology and the Production of Highly Stable Refractories SOV/131-59-2-3/16

research organizations was very useful for the introduction of new products. In the course of the forthcoming 7-year plan the gross production of the works is to be increased by 60% which will be attained by a further completion and modernization of the works. The following measures are planned: development of half-dry pressing; mounting of heavy hydraulic presses; introduction of high baking temperatures; comprehensive automation of the processes of manufacture.

ASSOCIATION: Podol'skiy zavod ogneupornykh izdeliy (Podol'sk Works of Refractories)

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RUTMAN, D. S. Eng.

Refractory Materials

Problems of production technology of highly argillaceous refractories. Ogneupory 17 no. 8, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, D.S., inzh.; VINOGRADOVA, L.V.

Improving the quality of high-alumina refractories. Ogneupory 19 no. 3:105-113 '54. (MIRA 11:8)
(Refractory materials--Quality control)
(Alumina)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, D.S.

25(1) PHASE I BOOK EXPLOITATION SOV/1788

Ogneupory dlya chernoy metallurgii; sbornik statey (Refractories in Ferrous Metallurgy; Collection of Articles) Moscow, Metallurgizdat, 1958. Errata slip inserted. 4,000 copies printed.

Ed.: D. I. Gavrish, Engineer; Ed. of Publishing House: I. P. Kiranov; Tech. Ed.: S. I. Karasev.

PURPOSE: This book is intended for engineers and technicians working in ferrous metallurgy.

COVERAGE: The book consists of 20 articles on the development and use of refractories in the Soviet metallurgical industry. D. I. Gavrish, in the first paper, presents the prospects for development and research projects for the period 1959-1965. He emphasizes development of refractory plants in the eastern part of the USSR. In general the articles deal with recent developments in basic and acidic refractories for blast and open hearth furnaces, and for the lining of ladles and special equipment used in continuous casting and in vacuum treatment of steel. A. S. Berezhnoy discusses the technology of manufacturing magnesite and forsterite refractories which frequently replace Dinas brick and fire clay. Several authors state that good results were obtained with

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periclase-spinell brick and with bricks made of magnesium and chromite compounds. The application of new refractories, insulating materials, high-temperature mortars, binding media, and cements, combined with advanced techniques in lining furnaces, are said to have more than doubled the time intervals between relining and overhauling furnaces. O. M. Margulis and A. G. Karaulov discuss the use of "tagged atoms" to determine the degree of contamination of steel by refractory-lining particles. N. S. Lesnyak describes the production of refractories by the semidry pressing method employed at the Nizhne-Tagil' plant, and I. S. Maynarski and V. D. Tsigler cover the use of lightweight Dinas bricks in industrial furnaces. The last paper written by A. R. Makarychev compares and evaluates the physical properties and service life of fire-clay bricks, forsterite bricks, Dinas bricks and bricks with high alumina content. Graphs, diagrams, and photographs accompany the papers. For references, see Table of Contents.

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Shikhorevich, S.A., and I.A. Getman. Technology of Manufacturing High-density and Dimensionally Stable Alumino-Silicate Refractories for Blast Furnaces Linings.
[There are 13 references, 6 of which are Soviet, and 7 English] 142

Rukalev, G.V., and K.F. Vasil'yeva. Service Life of Ladle Liners for Pouring Steel [13 Soviet references] 162

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Lesnyak, N.F. Manufacture of Steel-pouring Devices by the Semidry Pressing Method in the Refractory Shop of the Nizhne-Tagil' Metallurgical Combine and the Results of Practical Application in Metallurgy 186

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, D.S.

25(1),25(5) SOV/72-58-12-21/23

AUTHOR: None Given

TITLE: Conference of Functionaries of the Glass Industry (Soveshchaniye rabotnikov stekol'noy promyshlennosti)

PERIODICAL: Steklo i keramika, 1958, Nr 12, pp 45-46 (USSR)

ABSTRACT: The conference of functionaries of the glass industry of the RSFSR was held in the town of Vladimir from October 21-23, 1958. The organizing bodies were: Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov RSFSR (Scientific-Technical State Committee of the Council of Ministers of the RSFSR), Gosplan RSFSR (State Office for Economic Planning of the RSFSR), Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleyeva (All-Union Chemical Society imeni D.I.Mendeleyev) and Vladimirskiy sovnarkhoz (Vladimir Council of National Economy). The topic of the conference was: Perfection of production processes, introduction of general mechanization and automatic control in the factories for building and technical glass, glass fiber, glass containers and vessels. A.S.Boldyrev, Deputy Chairman of the Scientific-Technical State Committee of the Council of Ministers of the RSFSR, in his opening speech termed the elaboration of measures for further development of the glass industry by introduction of the latest technical achievements as well as the experience of leading factories to be the most important task. He stressed that the achievements of Soviet and foreign science and engineering should be considered in planning new works. The following reports were given:

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M.G.Stepanenko, Professor, Director of the Laboratoriya Institute Stekla (Laboratory of the Glass Institute), reported on the introduction of electric and gas-electric furnaces.

I.D. Tykachinskiy, Director of the Laboratory of the Glass Institute, spoke on methods and experiments of intensifying the glass melting process by increasing the melting temperature and using chemical accelerators.

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N.V. Solomin, Professor, Director of the Laboratory of the Glass Institute, spoke on measures of supplying the glass industry with high-grade refractory products.

D.S. Rutman, Chief Engineer of the Podol'skiy Ogneupornyy Zavod (Podol'skiy Factory of Refractory Products) spoke on the manufacturing technology and the properties of refractory products of this factory.

A.G. Minakov, Deputy Chief Engineer of the Konstantinovskiy Zavod "Avtosteklo" (Konstantinovskiy Works "Avtosteklo") reported on experiments of extension of the furnace working period by artificial cooling of the furnace brick lining.

V.G. Gutep, Director of the Laboratory of the Glass Institute, reported on the development in automatic control of working conditions for glass melting furnaces.

V.V. Erlendts, Deputy Chief of the Otdel stroitel'nykh Materialov Gosstroya SSSR (Section for Building Materials of the Gosstroy USSR), spoke on the demands of building experts to the glass industry.

D.I.Klegg, Chief Engineer of the Gusevskoy stekol'nyy zavod imeni Dzerzhinskogo (Gusevskoy Glassworks imeni Dzerzhinskiy), reported on the operation of tank furnaces in this factory.

The work of the conference was done in 4 sections: Building and technical glass, vessels, glass containers, glass fiber and glass plastics.

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RUTMAN, D.S.; VINOGRADOVA, L.V.; KRASOTIN, K.A.; MIN'KOV, D.B.

Heat-resistant, high-alumina ladle brick and stopper tubes made of mullite-corundum. Ogneupory 22 no.12:546-549 '57. (MIRA 12:3)

1. Podol'skiy zavod ogneuporov.
(Refractory materials)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

15 (2)

AUTHOR: Rutman, D. S. SOV/131-59-5-2/12

TITLE: Once More on Refractories for the Refining Zone in Rotary Furnaces (Yeshche ob ogneuporakh dlya krichnoy zony vrashchayushchikhsya pechey)

PERIODICAL: Ogneupory, 1959, Nr 5, pp 198-200 (USSR)

ABSTRACT: By experiments of the Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (UNIIO) (Ukraine Scientific Research Institute of Refractories (UNIIO)) at the testing plant of the Sibirskiy metallurgicheskiy institut (Siberian Metallurgical Institute) it was found that clay refractories withstand only 7 days in the refining zone of the furnace. The stability of the furnace lining increases at an alumina content of more than 70 %. For the rotary furnaces of the Orsko-Khalilovskiy metallurgicheskiy kombinat (OKhMK) (Orsk-Khalilovo Metallurgical Kombinat (OKhMK)), the Gipromez developed a lining of the refining zone which consists of 22 brands of high-alumina bricks with a unit weight of 20-50 kg. The technology of high-alumina products for the refining zone was recommended by the UNIIO to the Podol'sk Works. A detailed description is given. The products

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were burnt in periodic furnaces at a gradual increase in temperature from 20 to 1540° and a general duration of 127 hours. The cooling time was 80 hours. Due to the considerable weight of bricks and their laying height of 2.1 m in the furnace, the dimensions of the bricks are inaccurate (Fig 1) which makes difficult their fitting into the furnaces and makes necessary the use of mortar. The properties of mortar were tested in the works laboratory.

The products bound by mortar were burnt at 1300-1500° during 18-23 hours. They proved to be bound so closely that the bricks crumbled in dismantling them (Fig 2). The Kombinat ordered from the Podol'sk Works a second lot of bricks of smaller dimensions and a simpler shape as can be seen in the papers by I. L. Lur'ye, V. F. Kozlov, A. V. Makurov (Ref 1). But these bricks had also to be fitted in with the use of mortar because their seams were too wide. They offered good working results. Conclusions: In making refractories for the refining zone of rotary furnaces, principal attention is to be paid to their physical-ceramic properties. If thin seams

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Once More on Refractories for the Refining Zone in Rotary Furnaces SOV/131-5[illegible]-5-2/1[illegible]

cannot be obtained, it is possible to use suitable mortars. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Podol'skiy zavod ogneupornykh izdeliy (Podol'sk Works of Refractories)

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MONASTYREV, A.V.; MAZUROV, D.Ya.; VOROB'YEV, Kh.S.; RUTMAN, D.S.

Burning clays in a turbulent layer. Ogneupory 30 no.1:9-13 '65. (MIRA 18:3)

1. Moskovskiy institut khimicheskogo mashinostroyeniya (for Monastyrev, Mazurov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut stroitel'nykh materialov i konstruktsiy Gosudarstvennogo komiteta po stroitel'nym materialam (for Vorob'yev). 3. Podol'skiy zavod ogneupornykh izdeliy (for Rutman).

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

IVANOV, B.V. [deceased]; RUTMAN, D.S.; VINOGRADOVA, L.V.

Role of quartz in kaolin refractory products. Trudy IGEM 42:51-57 '60. (MIRA 13:7)
(Quartz) (Kaolin) (Refractory materials)

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RUTMAN D. S.

R 44/49T45

USSR/Engineering
Refractory Materials
Glass Furnaces

May 49

"Production of Glass-Furnace Bricks Containing a High Percentage of Grog (Chamotte) at the Shcherbino Refractory Plant," D. S. Rutman, Engr, 4 pp

"Ogneupory" No 5

More than 100 glass-melting furnaces were constructed from bricks produced by the Shcherbino factory, 1945 to 1949. Tables detail chemical composition of bricks, physicoceramic indexes,

LC

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USSR/Engineering (Contd)

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etc. Experiments showed that joint grinding of grog and clay increases quality of bricks, but causes a number of production obstacles (increases content of binding clay, complicates drying, etc.).

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

LEVINTOVICH, E.V.; SHAKHTIN, D.M.; MALIKOVA, T.V.; RUTMAN, D.S.

Determining the apparent porosity of refractories by their volumetric weight. Ogneupory 29 no.1:21-24 '64. (MIRA 17:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Levintovich, Shakhtin). 2. Podol'skiy zavod ogneupornykh izdeliy (for Malikova, Rutman).

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

Refractory Materials

Production of Steel pouring equipment form a mixture of grogs - D. S. Rutman and others. Ogneypory 17 No. 1, 1952. Sherbinskiy Zavod Ogneuporov

SO: Monthly List of Russian Accessions, Library of Congress, _____ 1953, Uncl.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

Refractory Materials

Production of Steel pouring equipment from a mixture of grogs - I.S. Rutman and others. Ogneupory 17, No. 1, 1952.
Sherbinskiy Zavod Ogneuporov

SO: Monthly List of Russian Accessions, Library of Congress, May 1952 1953, Uncl.

15(2)

AUTHORS: Margulis, O. M., Romanchenko, K. G., Rutman, I. S., Vinogradova, L. B. SOV/131-59-4-4/16

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

TITLE: The Terminal Pieces of Immersion Thermocouples (Nakonechniki dlya termopar pogruzheniya)

PERIODICAL: Ogneupory, 1959, Nr 4, pp 157-161 (USSR)

ABSTRACT: Immersion thermocouples with terminal pieces of quartz can be used only one time up to a temperature of 1600°. The platinum - platinum-rhodium thermocouples are further rapidly worn out. In the Podol'sk plant of refractories experiments with terminal pieces of technical alumina are carried out, the technology devised by UNIIO serving as a basis (Fig 1). A set of 500 terminal pieces was tested in the works "Elektrostal'" by representatives of manufacturers and consumers, of the Ukrainian and All-Union Institutes of Refractories, and the Tsentral'naya laboratoriya avtomatiki Ministerstva stroitel'stva RSFSR (Central Laboratory of Automation of the Ministry of Building of the RSFSR). The laboratory of the Podol'sk works performed petrographical investigations in which N. V. Gul'ko assisted (Ref 1, Figs 2 and 3). The influence of burning and of an addition of 1% TiO_2 was investigated. The results are

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given in the table and the typical cuts in figure 4. Conclusions: The increased thermal stability of terminal pieces of technical alumina is guaranteed by the presence of two corundum crystal types: fine isometric and coarse prismatic.

Further the technology of production of this corundum crystallization is given and recommended to all works producing refractories in order to supply metallurgical plants with suitable terminal pieces for thermocouples. There are 4 figures, 1 table, and 5 references, 4 of which are Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories), Podol'skiy zavod ogneupornykh izdeliy (Podol'skiy Works for Refractories)

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POLUBOYARINOV, D.N.; RUTMAN, D.S.

Creative cooperation between workers in science and in production. Ogneupory 27 no.11:501-503 '62. (MIRA 15:11)

1. Khimiko-tekhnologicheskiy institut im. Mendeleyeva (for Poluboyarinov). 2. Podol'skiy zavod ogneupornykh izdeliy (for Rutman).

(Refractory materials—Research)

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BCS

Ceramic Products

Refractories

344. Production of highly aluminous bricks for O.-H. furnace ladles.—D. S. RAITMAN (*Ogneupory*, 16, 51, 1951). These refractories are made of Al_2O_3 (97·5%) and a refractory clay (SiO_2, 51·84%; $Al_2O_3+TiO_2$, 34·06%; Fe_2O_3, 1·11%; CaO, 0·80%). The dominant grain size of the Al_2O_3 is 60–70μ with a max. of 100–120μ; s.g. is 3·49–3·55. The Al_2O_3 is ground in a batch-type ball mill with a porcelain lining and porcelain balls 1·75–2 in. dia. Grinding is continued until <5% remains on a 10,000 mesh/cm.² sieve, i.e. for 22–24 hr. The clay is dried to 3·4% moisture and is ground so that 80% is <0·5 mm. The Al_2O_3 is mixed with 25% clay in a ball mill for 2 hr. The mixture is moistened to 28–30% and is pugged twice. The briquettes, each weighing 3–4 lb., are dried in a chamber dryer to a moisture content of 8–10% and then calcined in a periodic kiln at 600° C. for 4 hr. After calcination the briquettes are fired in an oil-fired rotary (1·6 r.p.m.) kiln (50 ft. long, with a 5·5 ft. long firing zone and an internal dia. c. 1 ft. except in the firing zone, where it was c. 1·5 ft.). The porosity of the crushed briquettes (grog) varies between 5 and 8% for a firing temp. of 1,680°–1,700° C. and an Al_2O_3 content of 80–81%. The grog is passed through a drum-type magnetic separator. The grog of 3–1·5 mm. grain size, is ground until only 5% remains on a 4,900 mesh/cm.² sieve. The charge for the combined grinding consists of 39–40% of grog <0·088 mm., 35–36% grog of 0·088–0·5 mm. and 25% clay. The combined grinding is done for 4 hr. to obtain (in the grog part) 67% <0·088 mm. The mix is prepared in light edge-runners. The charge consists of 20% grog of a 0·5–1·5 mm. fraction and 80% mixture of the com-

over

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

C

Firebrick for the arches of furnaces. D. S. RUTMAN. *Ogneupory*, 13 [2] 69-73 (1948); abstracted in *Chem. Zentr.*, 120 [2] 148 (1949).—Corrugated brick of 61.4 SiO_2, 34.0% Al_2O_3 + TiO_2, and 1.25% Fe_2O_3 are recommended for the arches of metallurgical furnaces. The brick is fired at 1300° and has a refractoriness of 1700°C., a porosity of 18%, and a mechanical strength of 252 kg/cm.^{2}.

M. HA

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

11-0-49

Manufacture of glass furnace multigrog blocks. D. S. Rutman. *Ogneupory*, 14 [5] 195-98 (1949).—The Shcherblink refractory works has been making glass furnace multigrog blocks by pneumatic ramming since 1944. Raw materials are (a) Chasov Yar clay of grade 1 (and 2), analyzing Al_2O_3 + TiO_2 34.80 (32.05), SiO_2 52.05 (53.47), Fe_2O_3 1.20 (1.25), and ignition loss 9.79 (9.12)%, and (b) Suvorov clay, analyzing Al_2O_3 + TiO_2 38.02, SiO_2 43.14, Fe_2O_3 2.00, and ignition loss 14.5%. The clay was dried to 3 to 3.5% moisture and ground to pass a 1-mm. sieve, with not <80% passing a 0.5-mm. sieve. Grog was made from lump clay or from briquettes fired at 1300° and 1350°C. Water absorption of the grog was not >5%; grain composition of ground grog was 5 to 2 mm. 40%, 2 to 0.54 mm. 25%, and <0.54 mm. 35%. The charge was to consist of 85 to 88% grog and 15 to 12% clay. The mix was prepared in three-stage additions: (1) coarse fraction of grog with ⅓ of slip, (2) fine fractions of grog with remainder of slip, and (3) dry clay. The slip was made from 25% binding clay, water, water glass, and 1.5% sulfite-cellulose liquor by weight of the charge. Moisture of the mix was 4.5 to 5%. Blocks were fired at 1320°. Characteristics of the blocks were as follows: Al_2O_3 + TiO_2 35.45%, SiO_2 61.35%, Fe_2O_3 1.50%, CaO 1.11%, refractoriness 1700°C., reheat shrinkage at 1400° 0.0 to 0.1%, bulk density 2.02 to 2.12 gm./cm.³, apparent porosity 13 to 18%, and compressive strength 200 to 330 kg./cm.². Rejects amounted to 2.2%, most of which were due to cracks caused by unsatisfactory ramming. The blocks gave satisfactory service (no data are given) in furnaces using soda and sulfate charges. To improve the quality of the blocks, the charge was fired at 25% clay and 75% grog, and both were ground together in a ball mill. The mix for ramming was prepared from clay-grog mixture and grog slip (25% of 0.5 to 1.5-mm. grog, water, and 1.5% sulfite cellulose liquor). Grain composition of grog in the mix was 0.5 to 1.5 mm. 25%, 0.5 to 0.088 mm. 37.5%, and <0.088 mm. 37.5%. Moisture in the mix was 6%. Two batches of blocks were made: (1) Blocks were dried in the plant for 3 weeks at 20° and fired at 1270°C. The blocks were free of all cracks, and the structure was extremely dense; bulk density was 2.10 to 2.21 gm./cm.³, open porosity was 12.2 to 12.9%, and the compression limit was 735 kg./cm.². (2) Green blocks, which were free of all cracks, were dried in the plant for 7 days under moist covers and then fired at 1280°. After firing, some of the blocks were found to have small and large cracks; structure was extremely dense, bulk density was 2.16 to 2.18 gm./cm.³, open porosity was 10.7 to 11.9%, and the compression limit was 850 kg./cm.².

B.Z.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

Refractories 1/1948

1615. A FIRECLAY BRICK FOR SUSPENDED FURNACE ROOFS.—D. S. Rutman (*Огнеупоры*, 13, 69, 1948). A description is given of a ribbed brick for use in suspended roofs. The ribs enable the bricks to be fitted tightly together so as to prevent hot gases escaping from the furnace, and also prevent the bricks from falling. (4 figs., 1 table.)

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Refractories 2/1

448. Manufacture of glass tank blocks with a high grog content at the Shtcherbinsky refractories works.—D. S. RUTMAN (*Огнеупоры*, 14, 195, 1949). The process of manufacture is described. The clays used were Chasov-yar ($Al_2O_3+TiO_2=32-35\%$) and Suvorovskay-Balevka ($Al_2O_3+TiO_2=36\%$); the bond was Chasov-yar clay of which at least 80% was passed through a 0·5-mm. sieve. The firing temperature for both the Chasov-yar clays was 1,300° C. and for the other clay 1,350° C. Grog grading: 5–2 mm., 40%; 2–0·54 mm., 25%; fines, 35%. The batch contents were 12–15% of clay and 85–88% of grog; 25% of the bond clay was added as a slip; 1·5% (of the batch weight) of sulphite lye was added in order to increase the binding quality of clay. An unfired block must weigh not less than 286 lb. The properties of the fired product were: refractoriness, 1,700° C.; after-contraction at 1,400° C., 0·1%; bulk density, 2·02–2·12 g/c.c.; apparent porosity, 13–18%; crushing strength, 3,650–4,625 lb/sq. in. Two batches, for which the clay and grog were ground together, and which were dried for three weeks and for seven days respectively, and fired at 1,270° and 1,280° C. respectively, gave the following improved properties: bulk density, 2·2 g/c.c. and 2·17 g/c.c.; apparent porosity, 12·5 and 11·6%; crushing strength, 10,300 and 11,700 lb/sq. in. It is suggested that the firing temperature should be raised to 1,500° C. and that grog and clay should be ground together. (4 tables.)

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Ya.A.

867. PRODUCTION OF HIGHLY ALUMINOUS REFRACTORIES FROM DIASPORE OR BOEHMITE. Orlovskii, Ya. A. and Kutran, D.S. (Ogneupory (Refractories), Oct. 1951, vol. 16, 435-439).

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

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B

Production of Glass Blocks With High Fireclay Content in the Shcherbinsk Refractories Plant. (In Russian.) D. S. Rutman. *Огнеупоры* (Refractories), v. 14, May 1949, p. 195-198.

Describes production of above containing 35.45% Al_2O_3 plus TiO_2, 61.35% SiO_2, 1.56% Fe_2O_3, and 1.11% CaO. They resist temperatures of 1700°C., and have a resistance to compression of 260-330 kg. per sq. cm. Average weight of the blocks is 143 kg.

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Gr. Abs.

BI-4, Glass, Ceramics

Fireclay brick for suspended furnace roofs. D. S. Rutman (*Ogneupory*, 1948, 13, 69; *Brit. Ceram. Abs.*, 1948, 26A).—A ribbed brick is described. The ribs enable the bricks to be fitted together tightly, thus preventing escape of hot gases from the furnace and falling of the bricks.

R. B. CLARKE.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

F

D

4553. FIRECLAY BRICK FOR SUSPENDED FURNACE ROOFS. Rutman, D. S. (Ogneupory, 1948, vol. 13, 69). A description is given of a ribbed brick for use in suspended roofs. The ribs enable the bricks to be fitted tightly together soas to prevent the gases escaping from the furnace, and also prevent the bricks from falling.

B.C.R.A.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

S

5

A FIRECLAY BRICK FOR SUSPENDED FURNACE ROOFS. D. S. Rutman. (Ogneupory, 1948, vol. 13, p. 69; British Ceramic Abstracts, 1948, Sept., p. 236A). A description is given of a ribbed brick for use in suspended roofs, the ribs enable the bricks to be fitted tightly together so as to prevent hot gases escaping from the furnace; they also prevent the bricks from falling.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KUTYAN, E.M.

Effect of some cholinolytic agents on the EEG in rabbits following their introduction into the cerebral ventricles. Biul. eksp. biol. i med. 57 no.4:61-65 Ap '64. (MIRA 18:3)

1. Laboratoriya neyro-gumoral'noy regulyatsii (zav. - chlen-korrespondent AN SSSR N.I. Grashchenkov; rukovoditel' problemy - prof. G.N. Kassil') AN SSSR, Moskva. Submitted February 20, 1963.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, E.M.

Effect of acetylcholine and carbocholine following their introduction into the cerebral ventricles. Biul. eksp. biol. i med. 57 no.1:7-11 Ja '64. (MIRA 17:10)

1. Laboratoriya neyro-gumoral'noy regulyatsii (zav. - chlen-korrespondent AN SSSR N.I. Grashchenkov) AN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR N.I. Grashchenkovym.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

BARENBOYM, A.M., kand. tekhn. nauk; GALIYEVA, T.M., inzh.; GINZBURG, D.B., prof.; GRISSIK, A.M., inzh.; ZIMIN, V.N., dots.; KUSYAK, V.A., kand. tekhn. nauk; RUTMAN, E.M., inzh.; KHODOROV, Ye.I., kand. tekhn. nauk; CHIZHSKIY, A.F., kand. tekhn. nauk

[Heat calculations for furnaces and dryers of the silicates industry] Teplovye raschety pechei i sushilok silikatnoi promyshlennosti. Izd.2., perer. i dop. Moskva, Stroiizdat, 1964. 495 p. (MIRA 17:12)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

U

KASSIL', G.N.; LATASH, L.P.; RUTMAN, E.M.

Mechanism of the action of cholinergic substances introduced into the brain ventricles. Dokl. AN SSSR 149 no.2:464-467 Mr '63. (MIRA 16:3)

1. Laboratoriya neyrogumoral'noy regulyatsii AN SSSR. Predstavleno akademikom V.N.Chernigovskim.
(PARASYMPATHOMIMETICS) (ELECTROENCEPHALOGRAPHY)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.A.

Proposals of efficiency promoters at the Zhitomir Furniture Combine. Bum. i der. prom. no.4:37-39 O-D '65. (MIRA 18:12)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.A.

Special chuck for fastening grooved drills. Bum. i der. prom. no.2:34 Ap-Je '65. (MIRA 18:6)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.A.; ANTONYUK, B.N.

Multipurpose machine for processing sides and partitions of wardrobes. Bum. i der. prom. no.3:40-43 Jl-S '63. (MIRA 17:2)

1. Zhitomirskiy mebel'nyy kombinat.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.A.

Semiautomatic machine for processing chair parts. Sum. i der. prom. no.1:11-12 Ja-Mr '64. (MIRA 17:6)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

POLUKHIN, P.I.; VORONTSOV, V.K.; RUTMAN, G.G.

Investigating strained and deformed conditions during rolling. Report no.1. Izv.vys.ucheb.zav.; chern.met. 6 no.1:58-66 '63. (MIRA 16:2)

1. Moskovskiy institut stali i splavov.
(Rolling (Metalwork)) (Deformations (Mechanics))

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

POLUKHIN, P.I.; VORONTSOV, V.K.; RUTMAN, G.G.

Investigating the stressed and deformed state during rolling. Report no. 2. Izv. vys. ucheb. zav.; chern. met. 6 no.3:85-91 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.
(Rolling (Metalwork)) (Strains and stresses)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

S/148/63/000/001/006/019
E193/E383

AUTHORS: Polukhin, P.I., Vorontsov, V.K. and Rutman, G.G.

TITLE: Investigation of the stress and strain state in rolling. Part I

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no. 1, 1963, 58 - 66

TEXT: The object of the present investigation was to study the distribution of strain and stress in the actual deflection region as a function of the geometric parameters of the rolling process. Strip specimens, 10-73 mm thick, were investigated on a laboratory, two-high stand with rolls 139 and 185 mm in diameter, the absolute reduction varying between 0.5 and 6.5 mm so that the ℓ_d/h_{sr} ratio covered ranged from 0.12 - 1.2 (ℓ_d is the length of the geometrical deformation zone, h_{sr} being the thickness of the strip). Stresses and strains were determined by using optically sensitive coatings and inserts, tensometric measurements and the coordinate-network method. The results were

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used to plot the isoclinic curves (θ = const, where θ is the angle of deflection and one of the principal strains) and curves representing $\varepsilon_1 - \varepsilon_2$ = const. The results of analysis of these curves can be summarized as follows: 1) rolling in the ℓ_d/h_{sr} range studied is characterized by nonuniform strain and stress distribution, this effect being particularly marked in the material entering the rolls; 2) as the ℓ_d/h_{sr} ratio increases, the degree of nonuniformity of strains normal to the direction of rolling in the metal leaving the rolls decreases and the character of flow of the metal entering the rolls changes; 3) three types of the stress-strain state can be distinguished, depending on the value of ℓ_d/h_{sr}: a) a most uniform distribution of stress and strain across the thickness of the strip in a large part of the geometrical deformation zone is attained at ℓ_d/h_{sr} = = 1.2, some degree of nonuniformity being observed in metal entering the rolls; the rolling process under these conditions is characterized by triaxial compression in the entire actual deformation zone with the exception of the region adjacent to the plane in the pre-deformation zone, which is not under external

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load; b) at $0.3 < \ell_d/h_{sr} < 0.8$ deformation becomes less uniform; the state of triaxial compression does not extend to the central layer of the strip in the geometrical deformation zone and large tensile stresses are set up in the pre-deformation zone which - in the case of metal with a low margin of plasticity - can lead to fracture; c) at $\ell_d/h_{sr} < 0.3$, the metal is compressed throughout its entire thickness but there is a great difference between the strength in the surface and central layers of the strip; the stress state is characterized by high tensile stresses along the axis of symmetry, both in the pre-deformation region and in the geometrical deformation zone; a limited increase in the degree of uniformity of deformation across the thickness of the strip can be brought about by further decrease in ℓ_d/h_{sr}; 4) the strain-stress state across the width of the strip is both nonuniform and heterogeneous; 5) the length ℓ_a of the actual deformation zone depends on the value of ℓ_d/h_{sr}, the ℓ_a/ℓ_d ratio increasing from 1.5-2 at $\ell_d/h_{sr} \approx 1$ to 3-3.5 at $\ell_d/h_{sr} < 0.3$.

There are 3 figures.

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Investigation of the stress S/148/63/000/001/006/019
E193/E383

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: August 2, 1962

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

GONSALES, A.A.; KURGANOV, V.M.; AGAFONOV, A.V.; ABAYEVA, B.T.; POLETAYEV, V.B.; VIV'YER, A.S.; RUDOVICH, M.A.; BELYAYEVA, Z.G.; RUTMAN, G.I.

Results of redesigning an industrial catalytic-cracking device. Nefteper. i neftekhim. no.9:6-10 '63. (MIRA 17:8)

1. Salavatskiy kombinat i Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

LIAKUMOVICH, A.G.; GUNBIN, N.S.; RUTMAN, G.I.; ZAYTSEVA, G.A.; PONOMAREVA, A.P.

Improved process of butylene dehydrogenation in the synthetic rubber plant in Sterlitamak. Khim.prom. 41 no.7:538-539 Jl '65. (MIRA 18:8)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, Grigoriy L'vovich, dots., kand. ekon. nauk; VLADIMIROV, G.A., red.

[Use of potentialities in industrial enterprises] Ispol'zovanie rezervov na promyshlennykh predpriiatiiakh. Khar'kov, Prapor, 1965. 166 p. (MIRA 18:8)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.L.

Prospects for developing and the hidden potentialities for increasing cement production. Trudy KhPI 22 no.2:83-98 '59. (MIRA 15:9)

(Cement industries)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, G.L.; PERMYAKOV, V.P., ekon., retsenzent; PETRUSHEV, I.M., inzh.-ekonom., red.; ANTIPOV, V.P., red. izd-va; UVAROVA, A.F., tekhn. red.

[Management of a machinery plant] Upravlenie mashinostroitel'nym zavodom. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 97 p. (MIRA 14:8)
(Machinery industry—Management)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, I.G.(Leningrad)

Figuring in one's head for five minutes and writing down the answers. Mat. v shkole no. 4:62-64 Jl-Ag '58. (MIRA 11:7)
(Mathematics--Study and teaching)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

NUTMIN, I. S., Engr.

"Refracory brick for the overhead crowns of furnaces,"

Ogneupory, No. 2, 1948

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29906
S/584/61/000/011/003/008
E194/E455

9,2150 (1159,1482)

AUTHORS: Rutman, L.A. and Shinka, Ya.K.

TITLE: Permissible values of direct current in germanium rectifier elements

SOURCE: Akademiya nauk Latviyskoy SSR. Institut energetiki i elektrotekhniki. Trudy. no.11. Riga, 1961. Poluprovodniki i ikh primeneniye v elektrotekhnike. no.1. 41-54

TEXT: The maximum permissible values of the forward current and the inverse-voltage are the most important characteristics of rectifiers. As rectifiers are often required to operate under service conditions different from those to which the nominal rating applies, it is of interest to know how the permissible values of current and voltage alter when the conditions change. This article is concerned with possible changes in the rated current under different conditions of cooling. The work was done on germanium rectifier elements type ВГ-10 (VG-10) manufactured by the Elektrovypryamitel' Works in 1958-1959 in the laboratories of the Institut energetiki i elektrotekhniki AN Latviyskoy SSR

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Permissible values of direct ...

(Institute of Power and Electrical Engineering AS Latvian SSR). The principal factor that limits the current density in the forward direction is heating of the junction, which in a germanium rectifier should not rise above a temperature of 60°C. Experimental work has shown that even within this limitation, it is possible to operate at current densities of 330 A/cm^2 but, in practice, difficulties of ensuring adequate heat-transfer limit the current density in currently manufactured germanium rectifiers to 50 A/cm^2. Evidently, this value could be increased and, accordingly, it is necessary to know the relationship between the permissible forward current density and the intensity of heat transfer. Although theoretical expressions are given for the forward current, the inverse-voltage and the total losses in a rectifier element, it is pointed out that the losses are most accurately determined by graphical integration of experimental voltage and current curves. The principal way of increasing rectifier rating is to improve the thermal conductivity of the elements, and for this a detailed investigation of the temperature distribution within the rectifier elements is required. Part of the resistance to heat transfer is termed the internal

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resistance of the element and includes the thermal resistance from the junction to the base of the rectifier element frame. The external resistance is that from the frame to the cooling medium. The internal resistance depends on the construction of the actual element and the method of manufacture. It can, in principle, be sub-divided into a number of temperature drops across the various parts of the device. The construction of a prototype cooler for germanium rectifier elements type VG-10 will be seen from Fig.4. The cooler was made of sheet aluminium 2.5 mm thick and had eight fins, each 45 mm long and 80 mm wide, the total cooling surface being 800 cm^2 and the weight 280 g. The rectifier and cooler, fitted with thermo-couples, was placed in a wind tunnel in which the speed could range from 0.4 to 30 m/sec. The unit was heated by the application of direct current passing in the forward direction until a steady temperature had been reached, when the appropriate measurements were made. The location of the thermo-couples is shown by the numbers in Fig.4, namely 1 - contact bolt; 2 - connection between flexible wire and contact bolt; 3 - flexible wire; 4 - indium; 5 - germanium; 6 - frame of rectifier element; 7 - base of cooler rib; 8 - tip of cooler rib.

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Permissible values of direct ...

The curves of Fig.4 show the temperature rise of a rectifier element type VG-10 relative to the surrounding air, the solid lines corresponding to a current of 64 A and the dotted lines to a current of 35.6 A; in each case the upper line corresponds to an air speed of 2.5 m/sec and the lower to an air speed of 30 m/sec. As the temperature is lower on the germanium side of the junction, it follows that most of the heat evolved at the junction passes towards the copper base. The linear temperature drop along the flexible wire indicates that the heating effect of the current in this wire does not cause additional heating of the junction. When the air speed is increased from 2.5 to 30 m/sec, with constant power loss, the internal temperature drop in the rectifier is practically unaltered. Hence, the internal resistance to heat transfer does not depend on the rate of external heat removal and can be assumed constant at 0.9°C/W under normal operating conditions. However, as the air speed rises there is a three-fold reduction in the temperature drop from the frame to the surrounding air, which means a great decrease in external resistance. It was found that increasing the air speed above 8 m/sec gives very small reduction of the total temperature drop,

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because even at this speed the cooler is not fully exploited, having a temperature drop of only 6 to 2° at the base. Fig.5 shows experimental curves of the maximum recorded temperature rise for various rates of air flow. The dotted curves correspond to standard rectifiers without cooling fins and the considerable reduction in resistance to heat transfer that results from their use will be noticed. The results of Fig.5 also confirm that little is gained by increasing the airspeed above 8 m/sec. The theoretical considerations given in the earlier part of the article lead to the following expression for the mean value of the forward current:

$$I_{cp} = -\frac{U_o}{2rk_f^2} + \sqrt{\frac{U_o}{4r^2k_f^4} + m(\vartheta_1 - \vartheta_2)} \qquad (10)$$

where U_o - the voltage on the junction; r - the ohmic resistance of the semiconductor and contact electrodes, ohms; k_f - the ratio of the effective value of the rectified current to the mean value of the rectified current; ϑ_1 - the temperature of

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the junction, °C; ϑ_2 - the ambient temperature °C;

$$m = \frac{\alpha F}{k_f{}^2 r} = \frac{1}{s k_f r}$$

where α is the total heat-transfer coefficient, W/cm^2 °C; F - the cooling surface in cm^2; 1/s - the thermal conductivity. If under given cooling conditions the temperature ϑ_1 is measured for given values of I_{cp} and ϑ_2 then Eq.(10) will indicate the unknown value of m. By using volt ampere characteristic and Eq.(10), a relationship may thus be constructed between the mean value of the rectified current and the temperature drop with various conditions of cooling. Curves of this kind have been constructed and are in good agreement with the experimental results. However, it is, in practice, more convenient to plot curves of the relationship between the permissible current value and the airspeed for a given temperature drop; such curves are shown in Fig.7. From these it follows that if the maximum permissible temperature of the junction is +60°C and the air temperature is 30°C, the permissible

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E194/E455

Permissible values of direct ...

temperature drop is 30°C. Thus, with the cooling air flow of 8 m/sec, a rectifier element VG-10 can carry a direct current of 40 A, which is about four times the normal rated value. The possibility of operating rectifier elements type VG-10 at loads of 32 to 35 A has been confirmed by life tests. There are 7 figures and 3 Soviet-bloc references.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KRAVCHUK, V.F., inzh.; KORCHAGINA, V.I., inzh.; GINZBURG, S.A., inzh.; LONGRE, G.A., inzh.; RUTMAN, L.I., inzh.; FIN'KO, A.A., inzh.; DAVYDOV, I.V., inzh.; LAVRINOVICH, D.A., inzh.

Express method for determining water content in highly viscous mazuts using their dielectric constant. Elek. sta. 35 no.9:22-26 S '64. (MIRA 18:1)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KORCHAGINA, V.I.; RUTMAN, L.I.; SHNOL', F.M.

Change in the quality of road bitumen in asphaltic concrete. Nefteper. i neftekhim. no.5:21-24 '65. (MIRA 18:7)

1. Odesskiy neftepererabatyvayushchiy zavod i Odesskiy politekhnicheskiy institut.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KORCHAGINA, V.I.; RUTMAN, L.I.; SHNOL', F.M.

Evaluating methods for determining the group composition of bitumens. Nefteper. i neftekhim. no.2:18-21 '64. (MIRA 17:8)

1. Odesskiy neftepererabatyvayushchiy zavod.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KORCHAGINA, V.I.; GINZBURG, S.A.; FIN'KO, A.A.; RUTMAN, L.I.; DAVYDOV, I.V.; LAVRINOVICH, D.A.

Electric method for measuring the water content in crude oil. Neft. i gaz. prom. no.2:51-56 Ap-Je '62. (MIRA 15:6)

1. Odesskiy neftepererabatyvayushchiy zavod.
(Petroleum--Refining)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, L. I.

5(3); 11(4) PHASE I BOOK EXPLOITATION SOV/2221

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR. Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958. 395 p. Errata slip inserted. 1,700 copies printed.

Ed.: S. R. Sergiyenko, Professor; Ed. of Publishing House: K. G. Mityesarov; Tech. Ed.: V. V. Golubeva.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies on the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the associates of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degrees presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

E. Kh. Iskhakova, F. V. Korenevskaya, I. A. Musayev, and V. V. Shchekin. Change in the Activity of Silica Gel in the Chromatographic Separation of Hydrocarbons 35

Gel'pern, G. D., M. M. Rusakov, Ye. S. Pokrovskaya, and N. A. Shimanko. Study of the Absorption Spectra of Some Cyclohexyl and Cyclopentyl Benzene Derivatives in the Near Ultraviolet Region 38

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Sergiyenko, S. R., R. Ya. Semyachko, and B. E. Davydov. Investigation of the Composition and Properties of High-Molecular Weight Hydrocarbons and Tars of Gyurgyan Petroleum 65

Sergiyenko, S. R., B. E. Davydov, A. D. Litmanovich, and V. A. Shakhray. Some Physicochemical Properties of Petroleum Asphaltene and Tar Solutions. Part 14. 76

Sergiyenko, S. R., and Tu. T. Gordash. Composition and Properties of the Tar Fraction of Radchenkovo Petroleum. Part 15 83

Sergiyenko, S. R., and Tu. T. Gordash. Low-Temperature Transformations of High-Molecular Weight Aromatic Hydrocarbons of Radchenkovo Petroleum. Part 16 88

Sergiyenko, S. R., Ye. V. Lebedev. Chemical Nature of Saturated High-Molecular Weight Hydrocarbons of Romashkino (Devonian) Petroleum. Part 17 102

Sergiyenko, S. R., and Ye. V. Lebedev. Chemical Nature of Saturated High-Molecular Weight Hydrocarbons of Romashkino (Devonian) Petroleum. Part 18 117

Sergiyenko, S. R., and A. A. Mikhnovskaya. The Chemical Nature of High-Molecular Weight Monocyclic Aromatic Hydrocarbons of Romashkino (Devonian) Petroleum. Part 19 136

Sergiyenko, S. R., I. A. Nozhkina, and Ye. V. Nozdrina. Investigation of the Chemical Nature of High-Molecular Weight Condensed Dicyclic Aromatic Compounds of Romashkino Petroleum by the Catalytic Hydrogenation Method in the Presence of Raney Ni. Part 20 147

Sergiyenko, S. R., Ye. V. Nozdrina, and I. A. Nozhkina. Hydrogenation of High-Molecular Weight Condensed Dicyclic Aromatic Compounds of Romashkino Petroleum in the Presence of a WS_2 - NiS - Al_2O_3 Catalyst under Mild Conditions. Paper 21 156

Sergiyenko, S. R., I. A. NOzhkina, and Ye. V. Nozdrina. Hydrogenation of Tars Isolated from Romashkinskaya Petroleum. Paper 22 168

Sergiyenko, S. R. V. I. Korchagina, P. N. Galich, L. I. Rutman, B. E. Davydov, and M. I. Krasavchenko. Effect of the Depth of Selective Cracking on the Composition and Properties of Heavy Residual Petroleum Fraction. Part 23 175

Sergiyenko, S. R., V. I. Korchagina, P. N. Galich, L. I. Rutman, B. E. Davydov, and M. I. Krasavchenko. Effect of the Nature of the Raw Material and Oxidation Time on the Composition and Properties of Oxidized Bitumens. Article 24 184

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APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KORCHAGINA, V.I.; RUTMAN, L.I.; FIN'KO, A.A.; SHMOL', F.M.; CHMIR', L.M.; AMBROKH, R.V.; VULIKH, Yu.L.

Plant use of a cracking residue in the production of bitumens. Neftepер. i neftekhim. no.6:25-28 '64. (MIRA 17:9)

1. Odesskiy neftepererabatyvayushchiy zavod i Odesskiy politekhnicheskiy institut.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

SERGIYENKO, S.R.; KORCHAGINA, V.I.; GALICH,P.N.; RUTMAN, L.I.; DAVYDOV, B.B.; KRASAVCHENKO, M.I.

Effect of the depth of sampling on the composition and properties of heavy residual stock. Article No.23. Trudy Inst.nefti 12:175-186 ' 58. (MIRA 12:3)

(Petroleum products--Analysis)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

BUKI, Yu.M.; RUTMAN, L.M.

Determining the ultimate tensile strength of ceramic materials. Zav. lab. 31 no.1:113-114 '65. (MIRA 18:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

SERGIYENKO, S.R.; KORCHAGINA, V.I.; GALICH, P.N.; RUTMAN, L.I.; DAVYDOV, B.E.; KRASAVCHENKO, M.I.

Effect of the nature of feed stock and the duration of oxidation on the composition and properties of oxidized bitumens. Article No.24. Trudy Inst.nefti 12:187-199 '58. (MIRA 12:3)
(Bitumen) (Petroleum--Refining)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

S/165/60/000/002/001/008
A104/A129

AUTHORS: Sergiyenko, S.R., Krasavchenko, M.I., Delone, I.O., and Rutman, L.I.

TITLE: The effect of the separation depth of distillate fractions on the composition and properties of hydrocarbons of heavy residues

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no.2, 1960, 13-20

TEXT: This article is a continuation of two articles published in the periodical Trudy Instituta nefti, 1958, vol. 12, no. 175 and 187 (Refs. 1 and 2) and describes investigations into changes of the composition of oil products at varying processing stages. Products were studied which were derived from heavy and light Il'skiy petroleum; their composition and properties were described in Refs. 1 and 2. The hydrocarbon portion of the products was separated by adsorption (Ref. 3, Sergiyenko, S.R., etc: Trudy Instituta nefti, 1954, IV, 103). The chemical nature of the separated

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

S/165/60/000/002/001/008
A104/A129

The effect of the separation depth ...

hydrocarbons and the effect of the separation depth of distillate fractions, cracking degree and degree of oxidation on them was determined by chromatographic analysis. (Refs. 4 and 5, Sergiyenko, S.R., DAN SSR, 1953, no. 1, and Trudy Instituta nefti, 1954, IV, 103). The analysis was carried out in an adsorption 40x17 cm column filled with 200 ml of activated porous silica gel; 150 ml of the hexane fraction containing no benzene passed through the column at 60-80°C followed by 10 g of test fraction diluted with the same solvent in the ratio of 1:3. Desorption of hydrocarbons is carried out with the help of the solvent in the following order: 200 ml hexane fraction, 100 ml benzene, 100 ml dehydrated alcohol-benzene mixture and 100 ml of the same mixture with non-dehydrated alcohol. The solvent is distilled on a water bath in nitrogen current; filled tubes were brought to constant weight and the refractive index of the residues was determined. Refractive index limits of different groups were based on information of Ref. 6, Clerc, R.J. and Kincannon, C.V., Analytical chemistry, and T.P.Wier, Jr., 1950, vol. 22,no. 7. With the raise of cracking depth and the parallel reduction of hydrocarbons in the cracking residues the amount of asphaltenes, carbones and carboids increased. The transformation process of the hydrocarbon portion in-

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to asphaltene substance is assumed to be as follows: monocyclic aromatic hydrocarbons - condensed aromatic hydrocarbons - tar-asphaltene substances. The heavy Il'skiy petroleum contains 18.5% of hydrocarbons of which 50% are paraffinic cycloparaffinic hydrocarbons. There are 8 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii Nauk SSSR (Institute of Geology and Processing of Combustible Minerals of the Academy of Sciences of the USSR) and Odesskiy neftopererabatyvayushchiy zavod (Odessa Oil Refinery)

SUBMITTED: September 29, 1959

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

MUTMAN, Lev Markovich, inzh.; BEZSONNIKOVA, L.D., retsenzent

[Pocket multiplication and division tables] Kyshen'kovi tablytsi mnozhennia i dilennia. Kyiv, Tekhnika, 1965. 157 p. (MIRA 18:6)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 22195-65 EPF(n)-2/EPA(s)-2/EPA(w)-2/EWT(m)/EWP(b)EWB(e) Pt-10/Pu-4 WH

ACCESSION NR: AP5002181 S/0032/65/031/001/0113/0114

AUTHORS: Buki, Yu. M.; Rutman, L. M.

TITLE: Determination of the limits of tensile strength for ceramic materials

SOURCE: Zavodskaya laboratoriya, v. 31, no. 1, 1965, 113-114

TOPIC TAGS: ceramic material, tensile strength

ABSTRACT: The method and apparatus are described by which the tensile strength of ceramic and other brittle materials can be measured. The samples are made in the form of thin-walled cylinders into which is introduced high-pressure liquid. From the basic laws of hydrostatics the pressure of the liquid is uniform at the boundary surface and is normal to it. Thus, uniform tangential tensile stresses are created in the wall of the cylinder. For thin-walled cylinders the tensile strength is given by

$$\sigma_p = \frac{pr}{t},$$

where p is the hydrostatic pressure at the moment of rupture of the sample, r is the radius of the cylinder, and t is the wall thickness. The mean square error in measurements using this method does not exceed 2.3%. Orig. art. has:

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 22195-65
ACCESSION NR: AP5002181

2 equations and 1 diagram.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractory Materials)

SUBMITTED: 00 ENCL: 00

SUB CODE: MT NO REF SOV: 001 OTHER: 002

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

S/103/62/023/005/011/011
D407/D302

AUTHOR: Rutman, R.S. (Moscow)

TITLE: Adaptive systems with dynamic-characteristics adjustment (Review)

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 5, 1962, 662 - 684

TEXT: Adaptive control systems are classified by the author. Books and periodicals, as well as conference material concerning one such class of systems (namely those which adjust according to their dynamical characteristics) are reviewed. The basic design principles of such systems are analyzed. The works under consideration are reviewed from 2 major point of views: The self-adaptation algorithm and the method of determination of characteristics. The adaptive systems are classified into two general groups: Direct adjustment and indirect adjustment. The present review is devoted to the second class of systems only. The great majority of works quoted, is by Western authors. The design of the system, i.e. the choice of the adaptation algorithm, may have one of the following objects:

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1) Minimization of the mean-square error or of the control time; 2) Best approximation at each moment; 3) To sustain a certain transfer function or the constancy of a performance criterion; 4) Synthesis of a special system by means of a model. Each of these algorithms is considered in more detail. Further, the methods of determination of the dynamical characteristics of the object (process, plant) are analyzed under the following headings: 1) Common features and peculiarities of the various methods (such as measurements intervals, weighting of data, noises, nonlinearities, the method of least squares, redundancy of information, etc.); 2) Types of measured characteristic (time characteristics, transfer functions, frequency characteristics and statistical characteristics). Further, the dynamics of the adaptation circuit are considered. There are 19 figures, 1 table and 42 references: 8 Soviet-bloc and 34 non-Soviet-bloc (including 2 translations).

SUBMITTED: October 23, 1961

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R.J. (Moskva)

Self-adoptive systems with adjustment according to the dynamic characteristics. Avtom. i telem. 23 no.5:661-684 My '62. (MIRA 15:5)

(Automatic control)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

16800

S/103/62/023/009/004/007
D201/D308

AUTHOR: Rutman, R. S. (Moscow)

TITLE: Quick-response sampled-data system with switching within the sampling period

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 9, 1962, 1224-1236

TEXT: The author considers sampled-data systems in which changes in the control pulse polarity are time dependent and occur within the sampling period. The design principles and basic characteristics of such systems are given. The design of an optimally fast system is discussed. Conclusions: 1) By proper choice of switching, a system containing any number of integrating or inertia circuits may be made to operate as a polynomial extrapolator. 2) The process during sampling instants is independent of the form and sequence of the process outside it. In particular the transient due to a step-input may be terminated during one sampling period. 3) If the control is applied to any point of the system it is referred

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to the system input. A polynomial signal referred to the input may become either a zero-order or a higher-order polynomial. In this case the transient either does not disappear in a finite time interval or there is a consistent error in the system. 4) Further possibilities of the system consist in that either a greater than minimum number of switchings (this number is equal to the order of the system) is available or that the stability factor need not be infinitely large. If the parameters of the continuous part of the system vary with time in an arbitrary manner, self-correction can be applied. 5) For a high-order system the realization of a large number of switchings is difficult for small T. In this case the method suggested (with small number of switchings) may be combined with the usual methods of correction. There are 9 figures and 1 table.

SUBMITTED: April 10, 1962

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R. S.

Seminar on the theory and application of discrete automatic systems. Avtom. i telem. 23 no.9:1268-1269 S '62. (MIRA 15:10)

(Automatic control—Congresses)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R. S. (Moskva)

High-speed sampled-data systems with switching between sampling instants. Avtom. i telem. 23 no.9:1224-1236 S '62.
(MIRA 15:10)

(Automatic control)
(Pulse techniques(Electronics))

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R.S. (Moskva)

Use of a polynomial equations method for determining the characteristics of an object in self-adjusting systems. Avtom. i telem. 24 no.9: 1289-1291 S '63. (MIRA 16:9)

(Automatic control)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

FEL'DBAUM, Aleksandr Aronovich; NOVOSEL'TSEV, V.N., red.; RUTMAN, R.Sh., red.; MURASHOVA, N.Ya., tekhn. red.

[Principles of the theory of optimal control systems] Osnovy teorii optimal'nykh avtomaticheskikh sistem. Moskva, Fizmatgiz, 1963. 552 p. (MIRA 17:3)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

TSYPKIN, Yakov Zalmanovich; KOROLEV, A.N., red.; RUTMAN, R.S., red.; KRYUCHKOVA, V.N., tekhn. red.

[Theory of linear pulse systems] Teoriia lineinykh impul'snykh sistem. Moskva, Fizmatgiz, 1963. 968 p. (MIRA 16:7)
(Pulse techniques (Electronics))

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

HUTMAN, R.S. (Moskva)

Use of pulse-shape correction for improving the performance indices of sampled-data systems. Avtom. i telem. 25 no.3:330-338 Mr '64. (MIRA 17:6)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

ACCESSION NR: AP4033356 S/0103/64/025/003/0330/0338

AUTHOR: Rutman, R. S. (Moscow)

TITLE: Using pulse-shape correction for raising the optimality of sampled-data systems

SOURCE: Avtomatika i telemekhanika, v. 25, no. 3, 1964, 330-338

TOPIC TAGS: automatic control, sampled data automatic control, automatic control optimality

ABSTRACT: A method of reducing the quadratic error or the number of cycles covering the transient process by using special pulse shapers rather than a clamper is set forth. The loop, consisting of a sampler, a shaper, and a plant, is called the "principal part" of the sampled-data system. The transfer function of the principal part is given by: $W^*(q,0) = P^*(q,0)/Q^*(q)$. By using a suitable shaper, the distribution of zeros in this function can be so modified that the system's

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R.S.; EPEL'MAN, M.S.

Parametric invariance of linear dynamic systems. Dokl. AN SSSR 159 no.4:764-766 D '64 (MIRA 18:1)

1. Institut avtomatiki i telemekhaniki AN SSSR.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 63256-65 EWT(d)/EPF(n)-2/EWP(v)/EWP(k)/EWP(h)/EWP(1) Pq-4/Pq-4/Pf-4/Pg-4/Pae-2/
Pu-4/Pk-4/Pl-4 IJP(c) WW/BC

ACCESSION NR: AP5012884 UR/0280/65/000/002/0138/0145

69
68
B

AUTHOR: Rutman, R. S. (Moscow)

TITLE: Statistical synthesis of control systems optimal with respect to their insensitivity to parameter variation

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1965, 138-145

TOPIC TAGS: automatic control, automatic control design, automatic control system, automatic control theory, optimal control

ABSTRACT: In the "method of variated link" used in the investigation of the sensitivity of linear automatic systems, a "link" or unit is singled out which varies its characteristics; no knowledge of the structure of the rest of the system is assumed. The article suggests a direct analytical method for synthesizing the systems optimal with respect to the "additional motion" (movement due to the variation of parameters), with specified characteristics of the fundamental

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L 63256-65
ACCESSION NR: AP5012884

motion. Two degrees of freedom permit satisfying the requirements of two functionals which characterize the fundamental and additional motions, respectively. The latter is represented structurally in the examined case of a sampled-data system. Formulas (1.3 and 1.6) are derived which permit computation of the additional motion from the input-output characteristics of the variated link and the entire system. "The examples were calculated by E. D. Aved'yan." Orig. art. has: 4 figures and 41 formulas.

ASSOCIATION: none

SUBMITTED: 15Jun64 ENCL: 00 SUB CODE: DP, IE

NO REF SOV: 011 OTHER: 007

Card 2/2

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

KOKOTOVICH, P.V. (Belgrad); RUTMAN, R.S. (Moskva)

Sensitivity of automatic control systems. Avtom. i telem. 26 no.4:730-745 Ap '65. (MIRA 18:6)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R.S. (Moskva)

Statistical synthesis of control systems optimum in respect to insensitivity to the change of parameters. Izv. AN SSSR. Tekh. kib. no.2:138-145 Mr-Ap '65. (MIRA 18:7)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 48962-65 EWT(d)/EWP(k)/EWP(h)/EWP(v)/EWP(1) Po-4/Pq-4/Pf-4/Pg-4/Pk-4/Pl-4
IJP(c) BC

ACCESSION NR: AP5011914 UR/0103/65/026/004/0730/0750 50 B

AUTHOR: Kokotovich, P. V. (Belgrade); Rutman, R. S. (Moscow)

TITLE: Sensitivity of automatic control systems

SOURCE: Avtomatika i telemekhanika, v. 26, no. 4, 1965, 730-750

TOPIC TAGS: automatic control system, automatic control

ABSTRACT: This article is an extensive and systematic survey of studies dealing with the sensitivity of automatic control systems to variation of parameters and with the application of sensitivity theory to the synthesis of control systems. A bibliography of 157 articles published from 1937 to 1964 is given. Attention is concentrated on the presentation of systematization of methods of sensitivity theory and also on the exposition of basic concepts and trends of this theory. The main problem of sensitivity theory is considered to be the study of the supplementary motion of the control system (difference between the basic motion and the motion stipulated by the variation of parameters).

Card 1/3

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L 48962-65

ACCESSION NR: AP5011914

The articles surveyed can be subdivided into three basic groups (sections): a) analysis of supplementary motion; b) synthesis of control systems, taking account of certain constraints upon the supplementary motion; and c) development of methods for the active control of parameters with the aim of improving the performance of the system. The first section surveys those articles which deal with sensitivity equations and the structural methods for their solution. It deals also with methods for determining indirect quantitative sensitivity estimates (frequency characteristics of the supplementary motion) and with study of the relation between sensitivity theory and the theory of the stability of motion in the sense of Lyapunov. The second section deals with a survey and systematization of articles concerning the synthesis of control systems which satisfy the conditions of parametric invariance, systems whose amplification coefficient is infinitely large systems with bounded sensitivity, and systems which are optimal with respect to nonsensitivity. The third section deals with articles whose characteristic feature is the use of a sensitivity function for determining components of the gradient of a functional whose extremal values are connected with the performance of the system.

Card 2/3

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 48962-65

ACCESSION NR: AP5011914

The articles surveyed can be subdivided into two groups. The first group includes those articles on studies of the simplest processes in which calculation of gradient components and adjustments of parameters are not done simultaneously and in which iterative methods are employed to realize the optimization process. The second group of articles deals with complex processes in which the gradient components and the adjustment of parameters are simultaneous. Articles concerning determination of dynamic characteristics of a control system, using a parameter tracking servo (self-adjusting model), and articles on the problem of self-adjustment in the primary control circuit are also surveyed. Orig. art. has 7 figures, and 46 formulas.

ASSOCIATION: none

SUBMITTED: 17Jul64 ENCL: 00 SUB CODE: IE

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3245-F

Cdrd 3/3

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 41137-66 EWT(d)/EWP(k)/EWP(h)/EWP(v)/EWP(1) IJP(c) BC

ACC NR: AP6021397 SOURCE CODE: UR/0103/66/000/006/0149/0163

AUTHOR: Kokotovich, P. V. -- Kokotovic, P. V. (Belgrade); Rutman, R. S. (Moscow)

ORG: none

74/B

TITLE: The sensitivity matrix and its simulation

SOURCE: Avtomatika i telemekhanika, no. 6, 1966, 149-163

TOPIC TAGS: self adaptive control, mathematic matrix, nonlinear automatic control system, mathematic model, simulation

ABSTRACT: The paper contains an exposition of methods for the construction of a single-parameter sensitivity model, the coordinates of which are the components of single-parameter sensitivity, and of a gradient sensitivity model, the coordinates of which are functions of the sensitivity of relatively different parameters. It is possible to solve the first problem for the general case of a nonlinear nonstationary system. A limitation to linear stationary systems is necessary in the solution of the second problem. The exposition in the paper is closely linked with the graphic representation of the system and makes use of the Mason graph technique. In the system graph branches are broken out, on which are concentrated all variable parameters.

UDC: 62-501.1

Card 1/2

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 41137-66
ACC NR: AP6021397

In the simplest case, such a variable branch will simply correspond to a parameter, whereas in a more complex instance the branch will correspond to a certain operator which in turn is a function of the variable parameters. Inasmuch as the graph can be regarded as a simulation algorithm, no clear line of distinction is drawn between the concepts "graph" and "model." In this way, the sensitivity matrix is defined as the matrix of partial derivative coordinates of a system according to its parameters. Orig. art. has: 29 formulas and 10 figures.

SUB CODE: 09,12/ SUBM DATE: 19Nov65/ ORIG REF: 007/ OTH REF: 006

Card 2/2 hs

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

L 20365-65 EWT(d)/EPF(n)-2/EWP(1) Po-4/Pq-4/Pg-4/Pae-2/Pu-4/Pk-4/
P1-4 IJP(c)/AEDC(a)/SSD/ASD(a)-5/ASD(s)/AFMDC/AFETR/AFTC(p)/RAEM(a)/
RAEM(d)/ESD(dp) WW/BC

ACCESSION NR: AP5000907 S/0020/64/159/004/0764/0766

AUTHOR: Rutman, R. S.; Epel'man, M. S.

B

TITLE: Parametric invariance of linear dynamic systems

SOURCE: AN SSSR. Doklady, v. 159, no. 4, 1964, 764-766

TOPIC TAGS: automatic control, automatic control design, automatic control system, automatic control theory

ABSTRACT: The problem of the insensitivity of an automatic-control system to variations of its parameters is briefly considered. On the basis of fundamental differential equations, parametric-invariance conditions are formulated and presented in a matrix form. The problem of stationary and nonstationary variations B of the matrix A has a solution given by a set of vector equalities (7) or (7'). A procedure for solving them with respect to B is indicated. Orig. art. has: IV formulas.

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L 20365-65

ACCESSION NR: AP5000907

ASSOCIATION: Institut avtomatiki i telemekhaniki AN SSSR (Institute of Automation and Telemechanics, AN SSSR)

SUBMITTED: 16Apr64 ENCL: 00

SUB CODE: IE NO REF SOV: 005 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, Shaya Peretsovich (1904-1957)*

RUTMAN, Sh.P. [deceased]; SHMEL'KOVA, O.P.; VINOKUROVA, Ye.A.

Investigating the flotation of "T" coal fines. Soob.DVFAN SSSR no.9:29-33 '58. (MIRA 12:4)

1. Dal'nevostochnyy filial im. V.L.Komarova AN SSSR.
(Coal preparation) (Flotation)

* Soob. DVFAN SSSR No. 9 p 151 1957

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, Sh.P. [deceased]; VINOKUROVA, Ye.A. [deceased]

Studying the ability of Urgal coals to undergo treatment by means of flotation. Trudy DVFAN SSSR. Ser. khim. no.6:97-101 '62. (MIRA 17:8)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446210010-2

RUTMAN, R.S. (Moskva)

Sythesis of amplitude-type sampled-data systems by means of pulse shape correlation. Avtom.i telem. 24 no.2:151-163 F '63. (MIRA 16:1)

(Automatic control)

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