

15(2)

AUTHORS: Vasilevskiy, P. A., Nesterov, V. I., SOV/131-58-12-3/10  
Kuznetsov, Yu. A.

TITLE: Investigation of the Operation of a Rotary Furnace With Heat Exchangers (Issledovaniye raboty vrashchayushcheyaya pechy s vnutrennimi teploobmennymi ustroystvami)

PERIODICAL: Ogneupory, 1958, Nr 12, pp 539 - 544(USSR)

ABSTRACT: A furnace provided with internal heat exchangers of the Ditts system was investigated at the "Magnezit" plant. The furnace had a length of 90 m and a diameter of 3.5 m. A conical part was fixed to the cold furnace end, and a segment diaphragm was fixed to the gate. The number of rotations of the furnace was 0.59 - 1.18 per minute, when the main drive was switched on, and 1 per hour, when the accessory drive was switched on. Figure 1 shows that a metallic and ceramic heat exchanger were installed in the furnace. The metallic equipment consists of 20 sections and has a length of 16 m and a weight of 30 tons approximately (Fig 2). The ceramic equipment has a total length of 19 m and consists of aluminous shapes, which are also

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Investigation of the Operation of a Rotary Furnace With SOV/131-58-12-3/10  
Heat Exchangers

rich in chamotte (Fig 3). The furnace operation was investigated under different burning conditions (Table 1). The operation of this furnace was compared with that of another furnace without heat exchanger (Table 2). It was found that both furnaces differ much in their operation. The quantities of dust separation during the experiments are given in the tables 3 and 4. The characteristics of the magnesite and the temperature within the furnace provided with heat exchangers are given in table 5. Conclusions: The specific fuel consumption is decreased by from 15 up to 19% by the installation of internal heat exchangers; the furnace output is 17% lower than that of a furnace without heat exchanger. The use of heat exchangers of the Ditts system is, due to the considerable dust separation, unsuited for burning magnesite. The length of the ceramic heat exchanger must be reduced down to 15 m and can be built completely with stones rich in chamotte, since the gases do not exceed a temperature of 1300° in this zone. Heat-resisting steel should be used for the manufacture of the metallic heat exchangers. The

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Heat Exchangers

furnace lining before and behind the heat exchanger should be constructed with refractories of high impact- and friction resistance. There are 3 figures and 5 tables.

ASSOCIATION: Institut ogneporov, g. Satka (Institute of Refractories, Town of Satka) Zavod "Magnezit" ("Magnezit" Plant)

Card 3/3

BRON, V. A.; UZBERG, A. I.; DİYACHKOV, P. N.; KUZNETSOV, Yu. A.

Use of caustic magnesite dust for the production of metallurgical powder. Trudy Vost. inst. ogneup. no.2:6-25 '60.  
(MIRA 16:1)

(Refractory materials) (Fly ash)

1/ Burning of Satkinsk magnesite with iron mineralizer  
A. A. Pirogov and Yu. A. Kuznetsov (Refractories Inst.  
Khar'kov). *Ogneupory* 20, 3 (1955). Burning of coarse  
ground Satkinsk magnesite in tube furnace with the addition  
of 2-2.5% iron dross improves refractory properties con-  
siderably and increases sintering. It also prevents iron  
CaO adulteration and gives a stable powder.

(1)

100-63 ENT(1)/BDS AFPTG/ASD/ESD-3  
ACCESSION NR: AP3004372

S. O. P. 61 008/008/1385/1388

AUTHOR: Kuznetsov, Yu. A.

52

TITLE: Diffraction of a plane electromagnetic wave by an impedance step

SOURCE: Radiotekhnika i elektronika, v. 8, no. 8, 1963, 1385-1388

TOPIC TAGS: electromagnetic wave diffraction

ABSTRACT: The total field is represented by a sum of three components: incident (E-polarized) wave, reflected wave, and integral of planar waves. Two integral equations describe the diffraction problem. Solution of these equations yields formulas for the dispersion wave, reflected wave, and the surface waves propagating to the right and left from the impedance step. Orig. art. has: 1 figure and 31 formulas.

ASSOCIATION: none

SSUBMITTED: 04Jul62

DATE ACQ: 20Aug63

ENCL: 00

SUB CODE: PH

NO REF SOV: 003

OTHER: 000

Card 1/1

KUZNETSOV, Yu.A.

Increase in the correctional reliability in teletype apparatus.  
Elektrosvyaz' 18 no.5:35-39 My '64 (MIRA 17:8)

KUZNETSOV, Yu.B.; LAVRENOV, B.K.; CHASOVSKIKH, G.G.; SHABANOV, A.M.;  
SHIL'NIKOV, L.I.

Local use of tripaflavin in alveolar echinococcosis of the liver.  
Med.paraz.i paraz.bol. 29 №4:421-426 JI-Ag '60.

(MIRA 13:11)

1. Iz kafedr gospiṭal'noy khirurgii (zav. - prof. I.L. Bregadze)  
i patologicheskoy anatomii (zav. - prof. V.M. Konstantinov) Novo-  
sibirskogo meditsinskogo instituta (dir. - prof. G.D. Zaleskiy)  
(LIVER)—HYDATIDS (ANTISEPTICS)



KUZNETSOV, YU. E.

LOPATENKO, Yu.K., gornyy insh.; KUZNETSOV, Yu.F., gornyy insh.

Operations of the flexible KSTI-20A conveyer combined in  
one unit with the wide-range "Gorniak" cutter-loader.

Ugol' Ukr. 4 no.5:27-28 My '60. (MIRA 13:8)

(Coal mining machinery)

(Conveying machinery)

KUZNETSOV, Yu.I.; KUDRYASHOV, V.K.

Pneumatic and hydraulic devices used in the machine-tool industry.  
Stan.i instr. 29 no.6:7-12 Je '58. (MIRA 11:7)  
(Oil hydraulic machinery)

KUZNETSOV, Yu.I., inzh.

Elements of automatic control used in machine-tool attachments.  
Mashinostroitel' no.1:16-20 Ja '59. (MIRA 12:2)  
(Automatic control) (Machine tools)

AUTHORS: Kudryashov, V.K., Engineer and Kuznetsov, Yu.I. Engineer  
SOV/122-59-2-22/34  
TITLE: Replacement of Accessories for Machines (Obnovleniye  
stanochnykh prisposobleniy)  
PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 2, pp 60-61 (USSR)

ABSTRACT: Illustrations are given of a hydraulically operated holding fixture to replace the bolted clamps normally used in milling and boring machines. The fixture is operated by an individual hydraulic pump which charges a spring loaded accumulator through a pressure relay. The pump runs only while the clamping fixture is being closed. The fixture can also be operated by a pneumatic-hydraulic system. The clamping piston and cylinder is double acting in that the cylinder is floating and bears against one side of the clamp through spherical washers while the piston exerts pressure on the opposite clamp through a tie rod (Fig 3). Four sizes of this fixture will be produced by "Orgstankinprom" with pressure cylinder diameters from 60 to 90 mm giving clamping pressures from 1225 to 3250 kg. There are 3 figures.

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SOV/117-59-5-17/30

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AUTHOR:

Kuznetsov, Yu.I., Engineer

TITLE:

Fast-Operating Multi-Position and Multi-Place Machine Tool Attachments. (Experience of the Institute "Orgstankinprom")

PERIODICAL:

Mashinostroitel', 1959, Nr 5, pp 28-31 (USSR)

ABSTRACT:

General design and operational information is given on existing multi-position and multi-place machine tool attachments, i.e. attachments in which the work pieces are attached in several rows, or the ready work (machine part) is obtained in a single pass. The advantages of such attachments are briefly mentioned and several designs are described and illustrated: A 4-position pneumo-hydraulic milling attachment for milling flat faces on shafts (Figure 1); a pneumo-hydraulic multi-place attachment (Figure 2) for milling the upper contour of posts; a 20-place pneumo-hydraulic device for milling the butt ends and a groove (Figure 3); a 12-place attachment with mechanical clamping, for milling flats on flanges (Figure 4); a 4-position attachment (of the author's design) for milling four sides of lathe plates in one pass,

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Fast-Operating Multi-Position and Multi-Place Machine Tool Attachments.  
(Experience of the Institute "Orgstankinprom")

with the use of one-sided floating hydraulic cylinders controlled through an amplifier and permitting the clamping of four work pieces. It is mentioned that hydroplastics ("gid-roplastmassa") are extensively used in the attachment of the described type, for they transmit evenly the clamping effort to all workpieces on the attachment regardless of their dimensions. Figure 6 shows a 12-place hydraulic attachment with hydroplastic, designed for milling grooves in shaft butt ends. There are 6 sets of diagrams.

Card 2/2

KUDRYASHOV, V.K., inzh.; KUZNETSOV, Yu.I., inzh.

Recconditioning machine-tool attachments. Vest. mash. 39 no.2:60-61  
F '59. (MIRA 12:3)

(Machine tools--Attachments--Maintenance and repair)



KUZNETSOV, Yu.I., inzh.

High-speed universally readjusted attachments. Mashinostroitel'  
no.3:19-22 Nr '60. (MIRA 13:6)  
(Machine tools--Attachments)

KUZNETSOV, Yu. I.

Mechanized attachments for clamping parts machined on universal  
machine tools in Czechoslovakia. *Blul.tekh.-ekon.inform. no.4;*  
78-82 '60. *(MIRA 13:11)*  
(Czechoslovakia--Machine tools--Attachments)

KUZNETSOV, Yuriy Ivanovich; KOSTROMIN, F.P., kand. tekhn. nauk,  
retsenzent; MOROZOVA, M.N., inzh., red.; SMIRNOVA, G.V.,  
tekhn. red.

[Machine-tool attachments with high-speed manual clamps]  
Stanochnye prispobleniia s bystrodeistvuiushchimi ruchnymi  
zazhimami. Moskva, Mashgiz, 1961. 47 p. (MIRA 15:1)  
(Machine tools--Attachments)

TSIPORIN, Yuriy Aleksandrovich, inzh.; KUZNETSOV, Yuriy Innokent'yevich, inzh.; MALOV, A.N., kand. tekhn. nauk, retsenzent; LESNICHENKO, I.I., red. izd-va; MODEL', B.I., tekhn. red.; SMIRNOVA, G.V., tekhn. red.

[Fundamentals for designing pneumatic and hydraulic attachments]  
Osnovy konstruirovaniia pnevmaticheskikh i gidravlicheskh pri-  
sposoblenii. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-  
ry, 1961. 358 p. (MIRA 14:8)

(Machine tools—Attachments)

S/121/61/000/001/003/009  
D040/D113

AUTHORS: Kuznetsov, Yu. I., and Kudryashov, V.K.

TITLE: New hydraulic machine tool fixtures

PERIODICAL: Stanki i instrument, no. 1, 1961, 8-11

TEXT: Detailed illustrated description of new hydraulic fixtures developed by the institut "Orgstankinprom" ("Orgstankinprom" Institute) is given. All machine tool fixtures designed by the Institute are divided into two groups: (1) hydraulic fixtures with an electric pump and a hydraulic accumulator, and (2) air-hydraulic fixtures. The hydraulic group has three different design principles: (1) with built-in cylinders, i.e. with cylinders placed in the casing of the fixture itself; (2) with universal hydraulic lever drives that are placed on the machine tool table and are connected by the levers to the mechanical elements; (3) with cylinders that are screwed on the clamping pins like nuts. Description and illustrations are given of the following units: (1) УП-26 (UP-26) hydraulic system with electric pump and hydraulic accumulator, powering the hydraulic systems of a machine tool

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New hydraulic machine tool fixtures

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D040/D113

group (from 1 to 5 machines). The UP-26 system is illustrated by a schematic diagram, and its electric pump by a photo. (2) A pressure transformer (similar in principle to one designed by the zavod "Krasnyy proletariy" /"Krasnyy proletariy" Plant/), consisting of one air cylinder and two hydraulic cylinders of low and high pressure which raise oil pressure 17.4 times compared with atmospheric pressure. It requires a dehydrating and filtering device in the air system. (3) An eight-position fixture with built-in cylinders, designed for milling flats on flanges (in horizontal milling machines). (4) A universal УП-132 (UP-132) hydraulic-lever drive for milling attachments. (5) A fixture for milling splines, with a UP-132 drive for clamping. (6) A fixture for milling flats on 12 ring-shaped parts at a time and one for milling flats on small-size shafts. (7) A hydraulic (GZ) clamping screw-on cylinder. Four screw-on cylinders of this type, (GZ-1 to GZ-4), with diameters of 40, 50, 60 and 70 mm, can produce a clamping effort of 640, 1000, 1440 and 1960 kg/cm<sup>2</sup> respectively at 50 kg-f/cm<sup>2</sup> oil pressure in the system. Hydraulic clamping fixtures are suitable for modernization of existing clamping devices with manually actuated clamping

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New hydraulic machine tool fixtures

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nuts. The "Orgstankinprom" Institute has modernized and designed about 50 fixtures which have been in use since 1958 at the Gor'kovskiy zavod frezer-nykh stankov (Gor'kiy Milling Machine Plant). There are 10 figures.

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KUZNETSOV, Yu. I.

Mechanization of technological processes in small-lot production  
in plants of Czechoslovakia. *Bul.tekh.-ekon. inform. no.3:92-*  
96 '61. *(MIRA 14:3)*

(Czechoslovakia—Machinery industry)



KUZNETSOV, Yu.I.

Spring clamping devices. Mashinostroitel' no.10:28-29 0 '61.  
(MIRA 14:9)

(Fastenings)

KUZNETSOV, Yu.I.

Draw-in chuck with a spring clamp. Mashinostroitel' no.11:15  
N '61. (MIRA 14:11)

(Chucks)

KUZNETSOV, Yu. I.

Union Conference on Chemical Reactors. Kin. i kat. 6 no.4:769-  
773 JI-Ag '65. (MIRA 18:9)

KUZNETSOV, Yu.I.

Mechanization and automation of machine-tool attachments in the  
machinery industry. Stan.i instr. 32 no.10:14-19 0 '61.  
(MIRA 14:9)

(Automation) (Machine tools--Attachments)

KUZNETSOV, Yu.I.

A PT-40 three-level plow. Trakt. i sel'khoz mash. 31 [1.e.32] no.11:  
35-36 N '62. (MIRA 15:12)

1. Povolzhskaya mashinodspytatel'naya stantsiya.  
(Plows)

KUZNETSOV, Yu.I.

Sonic logging as a possible method of the study of fracturing in  
rocks. Trudy VNIGRI no.193:169-177 '62. (MIRA 15:12)  
(Oil well logging) (Gas well logging)

KUZNETSOV, Yu.I., inzh.

Pneumatic and hydraulic drives for machine-tool attachments.  
Mashinostroenie no.5:114-117 S-0 '63. (MIRA 16:12)

KUZNETSOV, Yu.I.

Mechanized part fastening during machining. Biul.tekh.-ekon.-  
inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform. 16 no.4:83-85  
'63. (MIRA 16:8)

(Metal-cutting tools)



KUZNETSOV, Yu.I.

Attachments with a hydraulic fastening drive. Mashinostroitel'  
no.7:20-22 J1 '63. (MIRA 16:9)  
(Machine tools--Attachments) (Oil-hydraulic machinery)

KUZNETSOV, Yu.I.

Pneumatic and hydraulic machine-tool attachments. Mashinostroitel'  
no.8:27-29 Ag '64. (MIRA 17:10)

KUZNETSOV, Yu.I.

Modern methods for mechanical fastening of parts in machining.  
Bibl. tekhn.-ekon. inform. Gos. nauch.-issl. nauch. i tekhn. in-  
form. 17 no.9:91-93 S 164 (MIRA 18:1)

NEMIROVSKIY, I.A.; NEYSHTADT, D.M.; SEDOKOV, L.M., kand. tekhn.  
nauk; IL'IN, Yu.M.; ZHDANOVICH, V.F., inzh., retsenzent;  
KUZNETSOV, Yu.I., inzh., retsenzent; KOSILOVA, A.G.,  
kand. tekhn. nauk, red.

[Increasing the productivity of heavy-duty machine tools]  
Povyshenie proizvoditel'nosti krupnykh metallorezhushchikh  
stankov. [By] I.A.Nemirovskii i dr. Moskva, Mashino-  
stroenie, 1965. 201 p. (MIRA 18:5)

KUZNETSOV, Yu.I.

Middle Carboniferous Lingula of Tatarstan. Trudy VNIGI no.16:  
125-131 '60. (MIRA 13:6)  
(Aktash region (Tatar A.S.S.R.)--Brachiopoda, Fossil)  
(Minnibayev's region--Brachiopoda, Fossil)

KUZNETSOV, Yu.I.

Stratigraphy of the Bashkir stage in the southwestern part of the Tatar A.S.S.R. (northern part of the Melekess Depression). Dokl. AN SSSR 135 no.3:690-693 N '60. (MIRA 13:12)

1. Tsentral'naya nauchno-issledovatel'skaya laboratoriya tresta "Tatneftegazrazvedka". Predstavleno akad. D.V. Malivkinym. (Melekess region—Geology, Stratigraphic)

KUZNETSOV, Yu. I.

Cand Geol-Min Sci - (diss) "Brachiopodes of the Middle Carboniferous of Tataria and their stratigraphic significance." Kazan', 1961. 20 pp; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, Khar'kov Order of Labor Red Banner State Univ imeni A. M. Gor'kiy); 120 copies; price not given; (KL, 7-61 sup, 225)

KUZNETSOV, Yu.I.

New data on the stratigraphy of the Lower Carboniferous of the Tatar A.S.S.R. obtained by deep drilling during 1959 to 1961. Dokl. AN SSSR 147 no.2:438-441 N '62.

(MIRA 15:11)

1. Kazanskaya geologicheskaya ekspeditsiya Gosudarstvennogo geologo-razvedochnogo tresta neftyanoy i gazovoy promyshlennosti Tatarskoy ASSR.  
(Tatar A.S.S.R.—Geology, Stratigraphic)



SMEKHOV, Ye.M., prof., doktor geol.-mineral. nauk; BULACH, M.Kh.;  
ROMM, Ye.S.; POZINENKO, B.V.; GORYUNOV, I.I.; KNORING, L.D.;  
GMID, L.P.; GROMOV, V.K.; KUZNETSOV, Yu.I.; DOROFYEVA, T.V.;  
KALACHEVA, V.N.; KLEYNOSOV, Iu.P.; TATARINOV, I.V.;  
IONINA, I.N., vedushchiy red.; YASHCHURZHINSKAYA, A.B.,  
tekh. red.

[Combined investigations of fractured reservoirs and  
experience in estimating the petroleum reserves contained  
therein.] Kompleksnye issledovaniia treschinnykh kollektorov  
i opyt podscheta v nikh zapasov nefli. Leningrad, Gostop-  
tekhnizdat, 1963. 198 p. (Leningrad. Vsesoiuznyi neftianoi  
nauchno-issledovatel'skii geologorazvedochnyi institut.  
Trudy, no.214) (MIRA 17:1)

KUZNETSOV, Yu.I.; TRUYEVTSEV, N.I.

Small spinning unit. Izv. vys. ucheb. zav.; tekhn. tekst.  
prom. no.1:46-52 '64. (MIRA 17:5)

1. Leningradskiy institut tekstil'noy i legkoy promyshlennosti  
imeni Kirova.

KUZNETSOV, Yu.I.; TRUYEVTSSEV, N.I.

Effect of the cut length of nitron fibers on yarn properties.  
Izv. vys. ucheb. zav.; tekhn. tekst. prom. no.2:20-22 '65.  
(MIRA 18:5)

1. Leningradskiy institut tekstil'noy i legkoy promyshlennosti.

KHOROSHAYA, Ye.S.; KOVRIGINA, G.I.; SMETKIN, Yu.A.; KUZNETSOV, Yu.I.

Rapid electrometric method of determining potassium chloride content  
in artificial leather. Leg.prom. 16 no.9:30-32 S '56. (MLRA 9:11)  
(Leather, Artificial--Testing)  
(Potassium chloride)  
(Electrochemical analysis)

KHOROSHAYA, Ye.S.; KOROL'KOVA, K.D.; KUZNETSOV, Yu.I.; ROYTMAN, Ye.A.

Infrared moisture meter. Zav.lab. 29 no.2:239 '63.  
(MIRA 16:5)

1. Vsesoyuzniy nauchno-issledovatel'skiy institut plenochnykh materialov i iskusstvennoy kozhi.  
(Moisture--Measurement)

BESKOV, V.S.; KERNERMAN, V.Sh.; KUZNETSOV, Yu.I.

First All-Union Conference on Modeling and Optimization of Catalytic Processes. *Kin.i kat.* 4 no.5:795-798 S-0 '63. (MIRA 16:12)

SLIN'KO, M.G.; TYURYAYEV, I.Ya.; KUZNETSOV, Yu.I.

Optimum operating conditions for hydrocarbon dehydrogenation  
columns. Khim.prom. no.4:253-259 Ap '62. (MIRA 15:5)  
(Hydrocarbons) (Dehydrogenation) (Catalysis)

KUZNETSOV, Yu.Y.; POZINER, B.V.

Distribution rate of elastic oscillations in fractured isotropic  
and porous media. Trudy VNIISI no.228:190-196 '64 (MIRA 17:8)



KUZNETSOV, Yu.K., ordinator; SHCHUKOTINSKIY, S.A., ordinator.

Properties of phosphate cements. Stomatologiya 37 no.2:61-62 Mr-Ap  
'58. (MIRA 11:5)

1. Iz kafedry ortopedicheskoy stomatologii (zav.-prof. V.Yu.  
Kurlyandskiy) Moskovskogo meditsinskogo stomatologicheskogo instituta  
(dir.-dotsent G.N. Beletskiy)  
(DENTAL MATERIAL)

KUZNETSOV, Yu.K.

Condition of the edge of a carious cavity following preparation  
by various instruments. Stomatologia 38 no.3:18-19 My-Je  
'59. (MIRA 12:8)

1. Iz kafedry ortopedicheskoy stomatologii (sav. - prof.V.Yu.  
Kurlyandskiy) Moskovskogo meditsinskogo stomatologicheskogo  
instituta (dir. - dotsent G.N.Beletskiy).  
(TEETH--DISEASES)  
(DENTAL INSTRUMENTS AND APPARATUS)

KUZNETSOV, Yu.K.

Method for obtaining identical X-ray pictures of the upper and lower teeth. Stomatologiya 39 no.1:21-24, Ja-F '60. (MIRA 14:11)

1. Iz kafedry ortopedicheskoy stomatologii (zav. - prof. V.Yu. Kurlyandskiy) Moskovskogo meditsinskogo stomatologicheskogo instituta (dir. - dotsent G.N.Beletskiy).  
(TEETH—RADIOGRAPHY)

KUZNETSOV, Yu.K.

Sterilization of some instruments in Departments of Orthopedic  
Stomatology. Stomatologiya 40 no.2:96-98 Mr-Apr '61. (MIRA 14:5)

1. Iz Moskovskoy oblastnoy stomatologicheskoy polikliniki.  
(DENTAL INSTRUMENTS AND APPARATUS—STERILIZATION)

KUZNETSOV, Yu.K.

Standard types, sizes and form for film for roentgenography of the teeth and periodontal tissues. Stomatologiya 41 no.4:32-36 J1-Ag '62. (MIRA 15:9)

1. Iz Moskovskoy stomatologicheskoy polikliniki No.5 (glavnyy vrach Yu.K.Kuznetsov).

(TEETH--RADIOGRAPHY)

ACCESSION NR: AP4028930

S/0280/64/000/012/0095/0101

AUTHOR: Kuznetsov, Yu. M. (Leningrad); Sen'chenko, R. P. (Leningrad);  
Chernetskii, V. I. (Leningrad)

TITLE: Algorithm of the problem of determining optimum control-system  
parameters by the gradient method

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1964, 93-101

TOPIC TAGS: automatic control, nonlinear automatic control, gradient numerical  
method, automatic control algorithm, numerical method

ABSTRACT: The problem considered is that, with a specified control-system struc-  
ture and specified differential equations describing the motions of the controlled  
plant, such  $k_1, k_2, \dots, k_n$ , parameters of the controller be determined which would  
ensure a minimum mean-square error. As a rule, the controller-plant system is  
nonlinear. A numerical "gradient" method is suggested as having the advantage  
of simplicity over variational methods in solving this problem. Recommendations

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are given on evaluating the step and selecting the method of integrating the initial set of equations; various methods of evaluating and averaging the basic functional (the control-quality criterion) are examined. The finding of parameters which correspond to the functional extremum is performed by the gradient method. A detailed logical scheme for compiling the numerical-problem algorithm is presented. Orig. art. has: 1 figure and 33 formulas.

ASSOCIATION: none

SUBMITTED: 15Dec62

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: IE

NO REF SOV: 005

OTHER: 002

Card 2/2

L 2492-66 EWT(1)/ETC/EPF(n)-2/EPA(w)-2/EWG(m) LJP(c) AT  
 UR/0057/65/035/008/1394/1400  
 ACCESSION NR: AP 5020724  
 AUTHOR: Pavilchenko, O. S.; Dushin, L. A.; Kuznetsov, Yu. K.; Adamov, I. Yu.

TITLE: Instability of a plasma discharge with oscillating electrons. 1. Micro-wave radiation  
 21,44,55

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1394-1400

TOPIC TAGS: plasma instability, plasma oscillation, hydrogen, helium, electric discharge, electron oscillation, electron reflection, electron temperature, Larmor frequency, nonlinear effect, plasma magnetic field

ABSTRACT: The authors have investigated the microwave radiation from a high voltage PIC reflex discharge plasma in order to obtain more information concerning the oscillations discovered by G.Landauer (J. Nucl. Energy, Pt. C, 4, 395, 1962) at harmonics of the Larmor frequency. The discharge took place in hydrogen or helium in the presence of a uniform longitudinal magnetic field up to 2500 Oe between two 3.5 cm diameter cold aluminum cathodes 80 cm apart and the copper wall of the 10 cm diameter, 100 cm long discharge chamber. The cathodes were located within short porcelain tubes, and a potential difference up to 2 kV was maintained between them and the chamber wall. Microwaves of 3.4 cm wavelength were

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ACCESSION NR: AP 5020724

UR/0057/65/035/008/1394/1400

received from the interior with a horn antenna and were recorded with a superheterodyne radiometer having a 4 Mc/sec passband. The plasma density was measured with an 0.8 cm wavelength interferometer, the electron temperature was determined from the triplet to singlet intensity ratio in the helium spectrum, and the ion temperature was determined from the Doppler broadening of spectrum lines. In the experiments the plasma densities ranged from  $10^{12}$  to  $3 \times 10^{12}$   $\text{cm}^{-3}$ , the electron temperatures from 20 to 50 eV, and the ion temperatures from 0.1 to 0.3 eV. The magnetic field dependence of the noise temperature at 3.4 cm was different in different regions of magnetic field strength. At low field strengths (region I) there was a single maximum at which the noise temperature reached hundreds of electron volts. At magnetic field strengths between about 200 and 1500 Oe (region II) there were many maxima whose heights did not exceed 50 eV. The heights of the region II maxima varied with the pressure and discharge current, but their positions did not; the maxima occurred at those field strengths for which an integral or half odd integral multiple of the Larmor frequency was equal to the radiometer frequency. At a magnetic field strength of perhaps 1500 Oe (depending on pressure and discharge current) there occurred a sudden decrease of the plasma density and a simultaneous increase of the noise temperature (transition to region III). In region III the noise temperature increased smoothly with increasing magnetic field, and reached

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values as high as 1 keV. These phenomena and their variation with pressure and discharge current are discussed at some length and are compared with relevant observations of many other investigators. It is suggested that nonlinear effects are involved, as well as an anomalous diffusion that the authors discuss in the following paper (ZhTF, 35, 1401, 1965; see abstract AP5020725). "In conclusion, the authors express their gratitude to V.N. Orayevskiy, K.N. Stepanov, and I.F. Kharchenko for discussing the results, and to V.I. Kononenko and M.Ye. Mazhichenko for assisting with the work." Orig. art. has: 7 formulas and 7 figures.

ASSOCIATION: Fiziko-tehnicheskii institut AN UkrSSR, Khar'kov (Physico-technical Institute, AN UkrSSR)

SUBMITTED: 16Nov64

ENCL: 00

SUB CODE: ME

NR REF SOV: 005

OTHER: 009

44,55

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L 2493-66 EWT(1)/ETC/EPF(n)-2/ENG(m)/EPA(w)-2 IJP(c) AT  
ACCESSION NR: AP5020725 UR/0057/65/035/008/1401/1404

AUTHOR: Pavlichenko, O. S.; Dushin, L. A.; Kuznetsov, Yu. K.; Nikol'skiy, I.K.; Adamov, I. Yu. 44.55 44.55 44.55 68 59 44.55

TITLE: Instability of a plasma discharge with oscillating electrons. 2. Anomalous diffusion of plasma 44.55

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1401-1404

TOPIC TAGS: plasma instability, plasma oscillation, helium plasma, electric discharge, electron oscillation, electron reflection, plasma diffusion, plasma magnetic field

ABSTRACT: The authors have investigated the stability and anomalous diffusion of the plasma of a high voltage PIG reflex discharge with the apparatus described in the preceding paper (ZhTF, 35, 1394, 1965; see abstract AP5020724). In addition to the measurements described in the preceding paper, measurements were made of the charged particle flux to the wall of the chamber, using a double probe, and the plasma column was observed with a rotating mirror. The charged particle flux at first decreased with increasing magnetic field, but at a certain critical field strength the flux began to increase with increasing field strength. The critical

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ACCESSION NUR: AP 5020725

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field was that for transition from region II to region III discussed in the preceding paper. When the magnetic field increased through the critical value the plasma density suddenly decreased, the microwave noise suddenly increased, and oscillations of the plasma column were observed with the rotating mirror. The critical magnetic field strength in helium plasmas increased with rising gas pressure from 1000 Oe at  $10^{-4}$  mm Hg to about 1600 Oe at  $2 \times 10^{-3}$  mm Hg. There was no anomaly in the electron temperature at the critical field. These results are compared with the theory of F.Hoh (Phys. Fluids, 6, 1184, 1963), and it is shown that the magnetic field strength at onset of anomalous diffusion is an order of magnitude less than the theory predicts. It is suggested that a turbulent state with a broad spectrum of low-frequency oscillations may arise from the interaction between the plasma and the oscillating electron beam. The authors hope further to pursue their studies of these phenomena. "In conclusion, the authors express their gratitude to K.D.Sinelnikov for discussing the results and to B.I.Koironenko and M.Ye.Maznichenko for assisting with the work." Orig. art. has: 3 formulas and 4 figures.

ASSOCIATION: none

Card 2/3

L 2493-66

ACCESSION NR: AP5020725

SUBMITTED: 16Nov64

ENCL: 00

SUB CODE: ME

NR REF SOV: 003

OTHER: 005

0

*beh*  
Card 3/3

KUZNETSOV, Yu. M.

AUTHOR: None Given SOV/ 6-58-6-21/21

TITLE: Chronicle (Khronika)

PERIODICAL: Geodeziya i kartografiya, 1958, Nr 6, pp. 79-80 (USSR)

ABSTRACT: From April 24 - 26, 1958 a Technical Scientific Conference took place at the Moscow Institute of Surveying-, Aerial Photography- and Cartography Engineers (Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii).

In the section of aerial-surveying the following lectures were held: N. Ya. Bobir, Docent, - "On the Problem of the Determination of Elements of the Internal Orientation of Aerial Cameras With Wide and Superwide Angles". Ye. P. Arzhanov, Assistant, - "Investigation of the Apparatus for the Straightening of the Film by Means of Waves". (Compressed Airmechanical Method by Docent A. I. Shershen'). V. Ya. Mikhaylov, Docent, - "On the Change of the Scale of Aerial Photographs in the Course of Enlarging". L. N. Vasil'yev, Aspirant, - "Stereocompensator With Electric Corrections". P. V. Zakharov, Teacher, - "On the Fineness of Grain of Black and White as Well as Color Negatives of Aerial Photographs". Yu. M.

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Chronicle

SOV/ 6-58-6-21/21

Kuznetsov, Aspirant, - "Elements of the Theory of the New Rapid Shutter".

In the section for surveying and photogrammetric apparatus the following lectures were held: I. G. Sarkin, Professor, - "Physical and Mathematical Theses of the Theorem on the Accuracy of the Apparatus as a Means of Measurements". S. M. Golovin, Docent, - "Accelerating the Production Preparations of New Products and Reducing Their Costs". L. A. Malkin, Docent, - "Apparatus for the Exact Recording of Distances". V. S. Mikheyev, Assistant, - "Field Tests With the Light Range Finder CBB-1" (In Moscow in August 1957). V. S. Ussov, Assistant, - "On the Investigation of the Errors of the Focusing Devices of Telescopes".

In the section of cartography the following lectures were held: N. M. Volkov, Professor, - "On the Engraving in the Production of the Original Publication Editions". A. V. Naumov, Docent, - "Some Problems of the Household of Cartographic Production". G. A. Ginzburg, Docent, - "On the Interrelation of the Distortions in Cartographic Projections". L. A. Bogomolov, Docent, - "The Topographic Evaluation of Aerial Photographs Taken From Airplanes and Helicopters in

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Chronicle

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the Cartographing of Areas Difficlyt of Access". A. S. Tolstoukhov, Assistant, - "On the Representation of Reliefs of Plane Areas on Topographic Maps".

1. Cartography
2. Aerial photography
3. Scientific reports

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26447  
S/021/60/000/004/003/010  
D232/D305

24.4200

AUTHOR: Kuznetsov, Yu.M.

TITLE: Tensile and compressive bending of struts of minimum weight under discharged eccentric loading

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 4, 1960, 436 - 440

TEXT: The author begins by referring to the works of Ye.L. Nikolay I.M. Rabinovych, A.P. Syrnov, O.I. Vynohradov, Yu.A. Radtsig, etc. on the problem of designing struts and beams of minimal weight, and states that the solution of the problem of tensile and compressive bending in such struts is possible owing to the work of M.V. Kornoukhov. In the case of struts of variable cross-section, one possible method of facilitating construction is to reduce the load acting on it. One may also use the method of optimal, or, as it is called in this article, "discharged" eccentricity, which was first used, the author claims in A.R. Rzhanitsyn (Ref. 4: Ustoychivost' 4

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Tensile and compressive bending ...

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S/021/60/000/004/003/010  
D232/D305

ravnesiya uprugikh sistem (The Stability of Equilibrium of Elastic Systems) GITTL, 1955). This method depends on the fact that the longitudinal forces acting on a strut which also has a transverse load creates a structural eccentricity. The strut of minimum weight will be the strut of equal support. Three classifications of cross-section are considered. 1) Constant height and variable breadth,  $h = \text{const}$ ,  $b = b(x)$ ; 2) Constant breadth and variable height  $b = \text{const}$ ,  $h = h(x)$ ; 3) Proportional cross-section  $h(x) = cb(x)$ . A method is considered for determining the laws for the variation of the cross-section of these types, and the reduction in weight. In each case it is necessary to know the optimum value of the discharged eccentricity. The maximum stress in some cross-sections is constant and equals  $\sigma_0$  (day). With discharged eccentricity, the equilibrium condition  $\sigma_0$  for the strut is

$$\sigma_0 = \frac{j(M_x - Ne)}{W_x} + \frac{N}{F_x}, \quad (1)$$

where  $M_x$  is the bending moment under the transverse stress,  $Ne$  is

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Tensile and compressive bending ... <sup>26147</sup>  
 S/021/60/000/004/003/010  
 D232/D305

the bending moment under longitudinal stress which "discharges" the pure  $M_x$ , and  $j = \frac{M_x - Ne}{M_x - Ne}$ . In the case  $h = \text{const}$ ,  $b = b(x)$ , the volume of the strut is given by

$$V = \int_0^l F_x dx = \frac{1}{\sigma_0 t_1} \sum_{i=1}^n \int_0^{a_i} j(M_x - Ne) dx + \frac{Nl}{\sigma_0} \quad (2)$$

where the support moment  $W_x = t_1 F_x$ , where  $t_1$  is a coefficient depending on the form of the cross-section. If the strut bears a uniformly distributed load of intensity  $q$ , then (2) becomes

$$V = \frac{q}{12 \sigma_0 t_1} \left[ -16 a_1^3 + 18 l a_1^2 - 6 l^2 a_1 + l^3 \right] \quad (4)$$

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S/O21/60/000/004/003/010  
D232/D305

Tensile and compressive bending ...

( $a_{i-1}$ ,  $a_i$  are points of variable sign of the  $i$ -th strip of the total epure of the bending moment). The extrema of volume are given by  $dV/da_1 = 0$ , i.e. they occur at  $(a_1)_1 = 1/2$ ,  $(a_1)_2 = 1/4$ . [Abstractor's note:  $l$  not defined]. It is found that the first of these values gives minimum volume, and from this the value of the discharged eccentricity is found. It is observed that the condition for minimum weight is that the area of the total epure of the bending moments should be a minimum. The following results are obtained by graphical methods: 1) The use of discharged eccentricities makes it possible to reduce the weight of structures in individual cases to 75 % for struts of constant cross-section and to 50 % for "usual" equal supports struts, 2) Reduction of weight depends on the scheme of transverse loading and the parameter  $m$  (ratio of longitudinal and transverse load). In the case of a strut of constant breadth and variable height, the maximum stress is given by



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Tensile and compressive bending ...

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$$\sigma_0 = \frac{j(M_x - Ne)}{t_2 F_x^2} + \frac{N}{F_x}, \quad (5)$$

where  $t_2$  is found from  $W_x = t_2 F_x^2$ . The volume is

$$V = \int_0^l F_x dx = \frac{1}{t_2} \sum_{i=1}^n \int_{x_{i-1}}^{x_i} \sqrt{\frac{N^2 t_2}{4z_0} + j(M_x - Ne)} dx + \frac{Nl}{2z_0} \quad (6)$$

and the minimum volume is found in the usual way. In the case  $h_x = cb_x$  [Abstractor's note: N.B. change of notation], the maximum stress is

$$\sigma_0 = \frac{j(M_x - Ne)}{t_3 F_x^{\frac{3}{2}}} + \frac{N}{F_x} \quad (8)$$

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S/021/60/000/004/003/010  
D232/D305

Tensile and compressive bending ...

where  $t_3$  is found from  $W_x = t_3 F_x^{3/2}$ . There are 3 figures and 7 Soviet-bloc references.

PRESENTED: by Academician AS UkrSSR, F.P. Byelyankin

SUBMITTED: May 12, 1959

Card 6/6

KUZNETSOV, Yu. N. Cand Tech Sci -- (diss) "Bar of Equal Resistance to Longitudinal-Transverse Bending." Kiev, 1957. 13 pp 20 cm. (Academy of Sciences ~~MEM~~ Ukrainian SSR, Inst of Construction Mechanics), 100 copies (KL, 25-57, 113)

<sup>4</sup>  
- 6X -

AUTHOR:

Kuznetsov, Yu.N.

SOV/21-58-11-3/28

TITLE:

On the Effect of Shear Deformations on the Magnitude of Stresses from Bending in Continuous Beams (O vliyaniy deformatsiy sdviga na velichinu napryazheniy ot izgiba v nezreznykh balkakh)

PERIODICAL:

Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 11, pp 1162 - 1166 (USSR)

ABSTRACT:

The calculation of statically indeterminate systems is based on the use of Moor's formula, which consists of two terms. In engineering practice, however, the second term is usually neglected insofar as it is assumed that shear deformations are negligibly small in comparison with the shifts caused by the bending. Professor S.A. Bernsteyn [Ref 1] investigated the effect of the second term for the case of a continuous beam with rectangular cross section. Kuznetsov has extended that investigation for any arbitrary shape of the beam cross section. He shows that the second term considerably increases if, within a number of spans, the flexibility of a continuous beam is small, and in particular for cross sections with a high coefficient of utilization. He analyzes the three-moment equation, the coefficients of which take into account the influence of shear deformations. He

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On the Effect of Shear Deformations on the Magnitude of Stresses from Bending in Continuous Beams

SOV/21-58-11-3/28

constructs the diagrams showing the error arising due to using the three-moment equation in ordinary form for continuous beams with an arbitrary shape of cross section. It turned out that the values of the moments at the supports may be not only smaller but also higher than those calculated without considering the shear deformation effect. There are 3 graphs and 1 Soviet reference.

PRESENTED: By Member of the AS UkrSSR, F.P. Belyankin

SUBMITTED: August 4, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

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16(1)

SOV/21-59-4-7/27

AUTHOR: Kuznetsov, Yu.N.

TITLE: Rods of Minimum Weight Subjected to Stretching,  
Bending and Compressing Forces

PERIODICAL: Dopovidi Akademii nauk Ukrain's'koi RSR, 1959, Nr 4,  
pp 372-378 (USSR)

ABSTRACT: This article deals with the law of varying of the  
profile of various structural members along their  
lengths, when such structural members, for reduction  
of their own weight, are made of varying profile,  
either with constant height ( $h = \text{const.}$ ) and vari-  
able width ( $b = b(x)$ ), or with constant width ( $b = \text{const.}$ )  
and variable height ( $h = h(x)$ ). The determination of the  
profile outline, in order to have it as close to  
"ideal" as possible, is reduced to the solution of a

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Rods of Minimum Weight Subjected to Stretching, Bending and  
Compressing Forces SOV/21-59-4-7/27

$$\text{differential equation } \left( \frac{d^2 z}{dx^2} - \frac{d^2 M^0}{dx^2 x} \right) z^k = \alpha ,$$

where  $k = 0$  for the category of structural members with  $h = \text{const.}$ ,  $b = b(x)$ ;  $k = 1/2$  for the category of structural members with  $b = \text{const.}$ ,  $h = h(x)$  and  $k = 1/3$  for the category of structural members with similar cross sections  $h(x) = Cb(x)$ . A method of successive approximations in the design of structural members of minimum weight is discussed and data presented on the degree of possible economy in weight, obtained by replacement of structural members of constant profile by the members of minimum weight and varying profile. There are 3 diagrams, 1 graph and

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Rods of Minimum Weight Subjected to Stretching, Bending and  
Compressing Forces SOV/21-59-4-7/27

6 Soviet references.

PRESENTED: By Belyankin F.P., Academician, AS UkrSSR.

SUBMITTED: January 10, 1959

Card 3/3

KUZHETSOV, Yu.N. [Kuznetsov, I.U.M.]

Incorporating optimal eccentric factors in designing minimum weight rods subject to tension-bending and compression-bending combinations. Dop.AN URSSR no.4:436-440 '60. (MIRA 13:7)

1. Predstavleno akademikom AN USSR F.P. Belyankinym [F.P. Belyankinym].  
(Elastic rods and wires)

KUZNETSOV, Yu.N.

The TP-2 device for determining the hardness of metals. Biul.  
tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform.  
no.12:56-58 '63. (MIRA 17:3)

L 1472-66 EPA(s)-2/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5022168

UR/0032/65/031/009/1085/1087 25  
543.42 JB

AUTHOR: Kuznetsov, Yu. N.; Chabovskiy, L. P.

TITLE: Automated method of rapid determination of mercury in powder samples

SOURCE: Zavodskaya laboratoriya, v. 31 no. 9, 1965, 1085-1087

TOPIC TAGS: mercury,<sup>27</sup> resonance line, quantitative analysis

ABSTRACT: A method based on a combination of two processes (reduction of mercury present in the powder sample in a stream of air, followed by determination of mercury vapor content in the gas phase) is proposed for the rapid determination of mercury in ores and calcines. Atomic absorption involving the use of the 253.7 mμ resonance line of mercury is employed. A diagram of the apparatus used, designed by the TsNIIOlovo Institute, is given. The analysis lasts 3 min, and the root-mean-square error is 5-7%. A study of the effect of particle size on the analysis shows that the error increases sharply when the particle size exceeds 1 mm. The effect of various impurities on the results is also determined. One of the advantages of the method is that even substantial amounts of organic impurities do not alter the results because these compounds are completely burned out at the high temperature and abundant air supply prevailing during the

Card 1/2

L 11:72-66

ACCESSION NR: AP5022168

analysis. Orig. art. has: 3 figures, 2 tables, and 2 formulas.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut olovyannoy promyshlennosti (Central Scientific Research Institute of the Tin Industry)

SUBMITTED: 00

ENCL: 00

SUB CODE: IC, MM

NO REF SOV: 003

OTHER: 002

Card 2/2



ACC NR: AT6001374

SOURCE CODE: UR/0000/65/000/000/0306/0314

AUTHOR: Kochenov, I. S.; Kuznetsov, Yu. N.

ORG: None

TITLE: Unsteady-state flow in tubes

SOURCE: Teplo- i massopereenos. t. 1: Konvektivnyy teploobmen v odnorodnoy srede (Heat and mass transfer. v. 1: Convective heat exchange in an homogeneous medium). Minsk, Nauka i tekhnika, 1965, 306-314

TOPIC TAGS: hydrodynamics, fluid flow, unsteady flow, hydraulic resistance

ABSTRACT: The article starts with a theoretical discussion of the subject and a review of previous work in the field. Experimental determination of the coefficient of unsteady state friction resistance is difficult since the measuring apparatus and the equipment must be practically without inertia. The experiments in this case were carried out in two different experimental units with water and oil as the working substances. Pressure gradients were measured in three successive sections of a round tube with a diameter of 0.007 meters in the stabilized flow region. The measurements were made with an induction sensing device,

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L 11835-66

ACC NR: AT6001374

type DIF 1-M; and, a pressure drop of 20,000 newtons/meter<sup>2</sup> could be measured with an accuracy up to 0.5%. The experiments were carried out in a range of Reynolds numbers from  $10^4$  to  $10^5$ . In the experiments, great divergences from unity were observed in the value of the resistance coefficient, including negative values. In addition to the tests described above for determination of the unsteady state friction resistance, experiments were made to study local resistances in unsteady state flows; here also there were obtained divergences from unity of the coefficient of unsteady state local resistance. Thus, both theoretical and experimental investigations show that the coefficient of hydraulic resistance under strongly unsteady state conditions differs from its quasi steady state value, and that this fact must be taken into account in the calculation of processes which change rapidly with time. Orig. art. has: 21 formulas and 1 figure.

SUB CODE: 20/ SUBM DATE: 31Aug65/ ORIG REF: 006/ OTH REF: 002

HW

Card 2/2

KUZNETSOV, Yu.N.,

Determining the light diffusion in aerial photographic cameras. Trudy  
MIIGAIK no.21:49-54 '55. (MIRA 10:1)

1. Moskovskiy institut inzhenerov geodezii, Kafedra aerofotos"emki.  
(Light--Scattering) (Cameras)

KUZNETSOV, Y. N.

Effect of light filters on the development of details in shades  
on aerial photography. Geod. i kart. no.3:40-46 Mr '57.  
(Aerial photogrammetry) (Light filters) (MIRA 10:8)

KUZNETSOV, Yu.

Attachment to the range finder for the photography of small objects  
at a near distance. Sov.foto 17 no.8:55-57 Ag '57. (MLRA 10:9)  
(Photography)



3(4)

AUTHOR:

Kuznetsov, Yu. N.

SOV/6-59-2-9/22

TITLE:

Elements of the Theory of the New High-speed Shutter of Air Cameras (Elementy teorii novogo skorostnogo zatvora aerofotoapparata)

PERIODICAL:

Geodeziya i karto grafiya, 1959, Nr 2, pp 43 - 48 (USSR)

ABSTRACT:

A new type of a central interlenticular high-speed shutter was designed by the Chair of Aerial Photography at the MIIGAIK according to an idea of A. I. Shershen'. In the present paper the scheme of this shutter is described. The lens mounting contains a ring K. 4 small shutter flaps with rotation axes in the points  $O_1, O_2, O_3$  and  $O_4$  are mounted on K. The center of gravity  $C_1$  of the flap does not coincide with that of its rotation axis and is distant from it by distance  $l$ . On rotation of the whole system round point D at constant angle velocity  $\omega$  the flaps share the complex rotation -round O and D. Thus a force is produced which tends to rotate the flaps into the stable equilibrium position while the center of gravity is shifted toward the

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Elements of the Theory of the New High-speed Shutter of Air Cameras SOV/6-59-2-9/22

elongation of the radius  $DO$ . At the beginning of rotation the flaps are immobile with respect to the ring  $K$ . A special device is available for this purpose. In the required moment the flaps are released and rotate under the influence of the above mentioned force. They open and shut the aperture herein. A special device prevents further opening. The author deduces formula (11) for time  $t$  which is necessary for the opening of the lens aperture. The influence exercised by gravity and friction in the axes of the system is not considered in this connection. Formula (11) shows that  $t$  can be calculated if the angle velocity of ring  $K$ , the radius  $R$  of the supporting ring, the inertia radius  $\rho$  of the flap, the distance  $l$  to the center of gravity and the angle  $\gamma$  of the sector (according to which the boundaries  $U_1$  and  $U_2$  can be determined for the rotation of the flap) are known. It results from the table given here that the calculated time agrees with experimental data (according to the results of a high-speed film-shooting) with an accuracy that is sufficient for

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Elements of the Theory of the New High-speed Shutter of Air Cameras SOV/6-59-2-9/22

practical purposes. The first experiments with the device model permit the conclusion that the new high-speed shutter for modern topographical air cameras can be based on the above mentioned principle. There are 4 figures, 1 table and 1 Soviet reference.

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NSA 3(4)

SECRET

TITLE:

How Given

SOV/6-9-6-41/22

Character (Details)

ABSTRACT:

Geodesy & Cartography, 1959, No. 6, pp 74-75 (USSR)

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At the Moscow Institute of Geodesy, Cartography and Aeronautical Engineering (Moscow Institute of Geodesy, Aerial Survey and Cartography Engineers), the Ordinary Scientific Conference took place on April 22-24, A. I. Ivanov, Doctor, Candidate of Philosophical Sciences, spoke on "The Outstanding Work of the Soviet Geodesy". A. E. Baranov, Chief of the Geodesy Department of Topography-Geodesy and Cartography Institute, spoke on "The Development of Topography-Geodesy and Cartography". The following reports were delivered in the scientific section:

A. E. Baranov, Chief of the Geodesy Department of Topography-Geodesy and Cartography Institute, spoke on "The Development of Topography-Geodesy and Cartography".

G. V. Koshchuk, Doctor, Assistant in the Institute of Inverse Geodesic Computations by the Geodesy and Cartography Institute, spoke on "The Development of Inverse Geodesic Computations".

V. I. Kuznetsov, Doctor, Assistant in the Institute of Inverse Geodesic Computations by the Geodesy and Cartography Institute, spoke on "The Development of Inverse Geodesic Computations".

V. I. Kuznetsov, Doctor, Assistant in the Institute of Inverse Geodesic Computations by the Geodesy and Cartography Institute, spoke on "The Development of Inverse Geodesic Computations".

Pre-graduate student, spoke on the use of rapid film recording for the study of high-speed phenomena. A. I. Gribanov, Doctor of the Penzhentobinsk Gosplan KPIK, spoke on "Some Results and Tasks in the Direction of Large-scale Photogrammetric Survey".

The following reports were delivered in the cartographic section: Professor V. I. Sobher spoke on the content of the new map on a scale of 1:2,500,000. Professor A. I. Koshchuk spoke on "Research on the Accuracy of the USSR and USSR Representatives on Research Maps". B. S. Malinina, Assistant, reported on the method of geodetic field research during the preparation of special maps.

V. I. Koshchuk, Assistant, reported on the representation of relief representation of wooded flat country on topographic maps on a scale of 1:2,500,000.

V. I. Koshchuk, Assistant, reported on the method of building an atlas of the USSR in the section of building an atlas of the USSR.

V. I. Koshchuk, Assistant, reported on the method of building an atlas of the USSR in the section of building an atlas of the USSR.

V. I. Koshchuk, Assistant, reported on the method of building an atlas of the USSR in the section of building an atlas of the USSR.

V. I. Koshchuk, Assistant, reported on the method of building an atlas of the USSR in the section of building an atlas of the USSR.

V. I. Koshchuk, Assistant, reported on the method of building an atlas of the USSR in the section of building an atlas of the USSR.

S/154/60/000/02/12/018  
B012/B123AUTHOR: Kuznetsov, Yu. N., Post-graduate StudentTITLE: Introduction of Rapid Film Shooting Into the Investigation  
of Aerial Camera Shutters <sup>20</sup>PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i  
aerofotos"yemka, 1960, No. 2, pp 105-109

TEXT: At the kafedra aeros"yemki (Chair of Aerophotography) of the author's institute, the method of rapid film shooting for determining the basic parameters of aerial camera shutters was tested. A camera of the type CKC-1 (SKS-1) was used, which can perform up to 4,000 single shots per second. Fig. 1 gives a scheme of the camera. The exposed film passes a time-indicator, for which an MH-7 (MN-7) neon tube is used. The movie camera (1, according to Fig. 2) was set up at some distance from the camera (2). For AFA (AFA) cameras with great focal length, as for instance AFA-33/50 (AFA-33/50), a distance of 1 m was chosen. For scale enlargement, while shooting the shutters of wide-angle objectives of the type "Pyccap 29,33" (Russar 29,33), ancillary lenses were used.

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In this case, the camera was placed at a distance of 10-15 cm from the object. A simple apparatus according to Fig. 3 was used for synchronization. At the first exposure, a time mark was recorded on one side  $r$  (Fig. 4) of the film strip. After that, the once exposed film was turned by  $180^\circ$ , and its left side  $l$  was exposed, whereby some film material could be saved. The film was developed for 4-6 minutes in a Chibisov developer. The optical efficiency of the shutter is computed from formula (2):

$$\eta = \frac{S'}{S}, \text{ where } S' \text{ denotes the area of all images on the photograph, } \checkmark$$

and  $S$  the area of those pictures which would have been obtained by ideal performance of the shutter.  $S$  was measured planimetrically. A panchromatic film of the type 10 was used. The aerial cameras  $A\Phi A-T\Xi-100$  ( $AFA-TE-100$ )<sup>28</sup> with shutters of the types  $3B-1$  ( $ZV-1$ )<sup>29</sup>,  $A\Phi A-33/50$  ( $AFA-33/50$ ) with a blind shutter, and  $PMK-C-5a$  ( $RMK-S-5a$ )<sup>28</sup> with a central semispherical Zeiss shutter as well as with a central rapid shutter of the type  $4C-1$  ( $TsS-1$ ) were tested by the above-described method and by means of the movie camera  $SKS-1$  (Table 1). If the shutter mechanism is filmed in

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reflected light, a series of cinematic parameters can be determined. Thus, the speed of the central shutter TsS-1 was tested according to a suggestion of A. I. Shershen'. The testing method described is absolutely sufficient for the precision necessary in practice. Its principal advantage lies in the simple testing apparatus which needs no preparatory work. There are 5 figures and 1 table. ✓

ASSOCIATION: Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii  
(Moscow Institute of Geodetic, Aerial Survey, and Cartographic Engineers)

SUBMITTED: March 16, 1959

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AUTHOR: Kuznetsov, Yu. N., Aspirant

TITLE: Method of Determining the Aircraft Tilt in Testing the Precision of Navigational and Pilotage Instruments

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1960, No. 5, pp. 119 - 123

TEXT: As compared with the conventional methods of determining the absolute aircraft tilt, the method given here is simpler, more economical, and more precise (Authors' Certificate No. 121 569). The aerial camera is mounted on the aircraft in a way as to allow its optical axis  $OO'$  to occupy a fixed position with respect to the coordinate axes  $X, Y, Z$  of the aircraft (Fig.1). A strong light source  $S$  is inserted under the fuselage. In night flights over a water line (a water basin and calm air) a virtual image  $S'$  of the light source is observed. This image is located at a distance  $2H$  below the aircraft on a straight line  $SS'$  normal to the water surface. The virtual image  $S'$  is photographed with the aerial camera. The longitudinal and transverse tilt of the aerial camera and, hence, also of

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Method of Determining the Aircraft Tilt in  
Testing the Precision of Navigational and  
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the aircraft can be determined from the following two formulas (Fig.2):

$\alpha'_x = \arctan \frac{r_x}{f}$  and  $\alpha'_y = \arctan \frac{r_y}{f}$ . To obtain the absolute tilt, corrections must be allowed for in these formulas (as S is at a distance D from the optical aerial camera axis) (Figs.1 and 3). For a perpendicular position of the optical axis of the aerial camera the respective formulas are to be set up on the basis of Fig.4. Considerations are made to estimate the accuracy of the method. The method described here has been applied at one of the scientific research institutes of the USSR to examine the precision of the operation of a gyrostabilizing system. The tests were carried out by Engineer V. Ye. Aleksandrov. The results confirm the usability of the method under discussion. There are 6 figures, 1 table, and 1 Soviet reference.

ASSOCIATION: Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii (Moscow Institute of Engineers of Geodesy, Aerial Photography, and Cartography)

SUBMITTED: April 11, 1960  
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