

E. 30996-66

ACC NR: AP6007774

facts are correlated with the reaction mechanism of thermal decomposition. It is shown that if the rate of the process is determined by the electronic step, this rate can be changed by shifting the Fermi level in the crystals of the substance undergoing decomposition. The data indicate that by obtaining information on the rate-determining step of thermal decomposition and by measuring the electronic work function for the substance under consideration, one can alter the rate of decomposition of solid ionic compounds in the desired direction with the aid of mechanical impurities of known work functions. Orig. art. has: 3 figures, 1 table, and 2 formulas. [14]

SUB CODE: 07/ SUBM DATE: 28Jan64/ ORIG REF: 013/ OTH REF: 016
ATD PRESS: 4215

Card 2/2 IC

ACC NR: ARG034746 (A) SOURCE CODE: UR/0276/66/000/007/B084/B084

AUTHOR: Dorofeyev, V. M.; Zakharov, Yu. A.

TITLE: Unit for testing manual pneumatic tools

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 7B511

REF SOURCE: Tr. Kuybyshevsk. aviats. in-t, vyp. 22, 1965, 27-29

TOPIC TAGS: pneumatic tool, air operated brake, test facility

ABSTRACT: A unit with a magnetic-air operated brake is described for testing a high-revolution (up to 100,000-rpm), low-power (up to 4-hp) manual pneumatic tool. For convenience in testing different pneumatic tools, the brackets for fastening the tool are made to move in grooves, and the tool is braced with flap clamps. The unit is used for measuring the torque of the tool ignoring the torque of the pneumatic tool's motor. The rpm of the pneumatic tool's shaft is measured with the aid of an electromagnetic transducer connected to an ICh-7 frequency meter, which is connected to the 220-v arc circuit. Orig. art. has: 1 figure. [Translation of abstract] [NT]

SUB CODE: 13/

Card 1/1

UDC: 621.9-182.4-85:621.885(088.8)

CHOCHIA, N.G.; GALERKINA, S.G.; DROZNES, M.A.; ZAKHAROV, Yu.F.; KROKHIN,
I.P.; KUZIN, I.L.; LAZUKOV, G.I.

Geology of the Muzhi Urals. Trudy VNIGRI . no.186:152-175 '61.
(MIRA 15:3)

(Ural Mountains--Geology)

ZAKHAROV, YU. G., and E. M. MINSKIL

Issledovanie turbulentnosti s pomoshch'iu termoanemometra. (TSAGI.
Tekhnicheskie zametki, 1938, no. 172, p. 1-46, illus., table, diags.,
bibliography)

Title tr.: Investigation of turbulent flow by means of a thermo-anemometer.

TL570.M6 no. 172

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
Congress, 1955.

ZAKHAROV, YU. G.

Issledovanie turbulentnosti elektrokondensatornym metodom. (TSAGI. Tekhnicheskie zametki, 1938, no. 172, p. 47-54, diags.)

Title tr.: Investigation of turbulent flow by means of a condenser microphone connected with an electric measuring device.

TL570.M6 no. 172

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

ZAKHAROV, YU.G., E.M. MINSKII and M.S. FILIPPOV

K metodike izmereniia turbulentnosti termoanemometrom. Moskva, 1939. 20 p.
illus., diags. (TSAGI. Trudy, no. 402.)

Title tr.: Method of turbulence measurement with a thermo-anemometer.

QA911.M65 no. 402

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
Congress, 1955

124-57-1-810

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 107 (USSR)

AUTHORS: Gari, K. A., Zakharov, Yu. G.

TITLE: A Hot-wire Microanemometer for Small Airflow Velocities
(Mikrotermoanemometr dlya malykh skorostey dvizheniya
vozdukh)

PERIODICAL: Sb. rabot Nauch. in-ta po udobr. i insektofungisidam, 1955,
Nr 156, pp 210-214

ABSTRACT: The instrument is intended for the measurement of flow velocities in the 0-2 m/sec range in wind tunnels. It consists of a bridge fed by a direct current obtained from an alternating current via a rectifier. The design parameters of the gage and the bridge are not adduced. In order to improve the accuracy of the reading in the narrow velocity interval, a null method is used in conjunction with a galvanometer shunt for sensitivity control. The hot-wire microanemometer can be employed not only for visual observations, but likewise for recorded measurements by means of a mirror galvanometer and a recording drum.

Card 1/1 1. Hot wire anemometer--Applications 2. Air S.I. Krechmer
 --Velocity--Measurement 3. Wind tunnels--Equipment

ZAKHAROV, Yu. G.

BEYLINA, TS.O., inzhener; BLAGONADEZHDIN, V.Ye., inzhener; BOGUSLAVSKIY, P.Ye., kandidat tekhnicheskikh nauk; VORONKOV, I.M., professor, GITINA, L.Ya., inzhener; GROMAN, M.B., inzhener; GOROKHOV, N.V., doktor tekhnicheskikh nauk [deceased]; DENISTUK, I.N., kandidat tekhnicheskikh nauk; DOVZHIX, S.A., kandidat tekhnicheskikh nauk; DUKEL'SKIY, M.P., professor, doktor khimicheskikh nauk [deceased]; DYKHOVICHNYI, A.I., professor; ZHITKOV, D.G., professor, doktor tekhnicheskikh nauk; KOZLOVSKIY, N.S., inzhener; LAKHTIN, Yu.M., doktor tekhnicheskikh nauk; LEVENSON, L.B., professor, doktor tekhnicheskikh nauk [deceased]; LEVIN, B.Z., inzhener; LIPKAN, V.F., inzhener; MARTYNOV, M.V., kandidat tekhnicheskikh nauk; MOLEVA, T.I., inzhener; NOVIKOV, F.S., kandidat tekhnicheskikh nauk; OSETSKIY, V.M., kandidat tekhnicheskikh nauk; OSTROUMOV, G.A.; PONOMARENKO, Yu.F., kandidat tekhnicheskikh nauk; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk; REGIRER, Z.L., inzhener; SOKOLOV, A.N., inzhener; SOSUNOV, G.I., kandidat tekhnicheskikh nauk; STEPANOV, V.N., professor; SHEMAKHANOV, M.M., kandidat tekhnicheskikh nauk; EL'KIND, I.A., inzhener; YANUSHEVICH, L.V., kandidat tekhnicheskikh nauk; BOKSHITSKIY, Ya.M., inzhener, redaktor; BULATOV, S.B., inzhener, redaktor; GASHINSKIY, A.G., inzhener, redaktor; GRIGRO'YEV, V.S., inzhener, redaktor; YEGURNOV, G.P., kandidat tekhnicheskikh nauk, redaktor; ZHARKOV, D.V., dotsent, redaktor; ~~ZAKHAROV, Yu.G.~~, kandidat tekhnicheskikh nauk, redaktor; KAMINSKIY, V.S., kandidat tekhnicheskikh nauk, redaktor; KOMARKOV, Ye.F., professor, redaktor; KOSTYLEV, B.N., inzhener, redaktor; POVAROV, L.S., kandidat tekhnicheskikh nauk, redaktor; ULINICH, F.R., redaktor; KLORIK'YAN, S.Kh., otvetstvennyy redaktor; GLADILIN, L.V., redaktor;

(Continued on next card)

BEYLINA, TS.O. --- (continued) Card 2.

RUPPENeyT, K.V., redaktor; TERPIGOREV, A.M., glavnyy redaktor;
BARABANOV, F.A., redaktor; BARANOV, A.I., redaktor; BUCHNEV, V.K.,
redaktor; GRAFOV, L.Ye., redaktor; DOKUKIN, A.V., redaktor; ZADEMID-
KO, A.N., redaktor; ZASYAD'KO, A.F., redaktor; KRASHNIKOVSKIY, G.V.
redaktor; LETOV, N.A., redaktor; DISHIN, G.L., redaktor; MAN'KOV-
SKIY, G.I., redaktor; MEL'NIKOV, N.V., redaktor; ONIKA, D.G.,
redaktor; OSTROVSKIY, S.B., redaktor; POKROVSKIY, N.M., redaktor;
POLSTYANOV, G.N., redaktor; SKOCHINSKIY, A.A., redaktor; SONIN,
S.D., redaktor; SPIVAKOVSKIY, A.O., redaktor; STANCHENKO, I.K.,
redaktor; SUDOPLATOV, A.P., redaktor; TOPCHIYEV, A.V., redaktor;
TROYANSKIY, S.V., redaktor; SHEVYAKOV, L.D., redaktor; BYKHOV-
SKAYA, S.N., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhniches-
skiy redaktor; PROZOROVSKAYA, V.L., tekhnicheskii redaktor.

[Mining; an encyclopedic handbook] Gornoe delo; entsiklopedicheski
spravochnik. Glav.red. A.M. Terpigorev. Chleny glav.red. F.A. Bara-
banov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po ugol'noi
promysh]. Vol.1. [General engineering] Obshchie inzhenernye
svedeniia. Redkollegiia toma S.Kh.Klorik'ian i dr. 1957. 760 p.
(Mining engineering) (MLRA 10:10)

ZAKHAROV, Yu. G.

SOLODKIN, Yefim Yefremovich; GINEVSKIY, Aron Semenovich; ZAKHAROV, Yu.G.,
kand. tekhn. nauk, red.; FUKHLIKOVA, N.A., tekhn. rad.

Turbulent flow of viscous fluids in the inlet sections of axisym-
metrical and flat-bottomed channels. Trudy TSAGI no.701:3-56 '57.
(Fluid dynamics) (Turbulence) (MIRA 10:12)

ZAKHAROV, Yu.G.; MEL'TSER, L.V.

Aerodynamic investigation of the method for measuring gas flow
speeds based on the utilization of modulated radioactive radiation.
From aerodin. no. 10:149-158 '58. (MIRA 11:8)
(Radioisotopes--Industrial applications) (Gas flow--Measurement)

IDEL'CHIK, Isaak Yevseyevich; YUDIN, Yo.Ya., doktor tekhn. nauk,
retsensent; ZAKHAROV, Yu.G., red.

[Aerodynamics of industrial devices; supply, offtake and
even distribution of the stream] Aerodinamika promyshlennykh
apparatov; podvod, otvod i ravnomernaiia razdacha potoka.
Moskva, Energiia, 1964. 286 p. (MIRA 17:19)

DOBRONRAVOV, V.V., doktor fiz.-mat. nauk, prof., red.; ZAKHAROV,
Yu.G., kand. tekhn. nauk, red.; KURBAKOVA, I.P., red.
Izd-va; KARPOV, I.I., tekhn. red.

[Problems in analytic and applied mechanics] Voprosy anali-
ticheskoi i prikladnoi mekhaniki; sbornik statei. Moskva,
Oborongiz, 1963. 175 p. (MIRA 16:4)
(Mechanics, Analytic) (Mechanics, Applied)

PODURAYEV, V.N.; ZAKHAROV, Yu.G.

Causes of excitation and damping methods of natural vibrations
caused by metal cutting. Nauch.dokl.vys.shkoly; mash. i prib.
no.1:200-209 '59. (MIRA 12:8)

1. Stat'ya predstavlena Moskovskim vysshim tekhnicheskim
uchilishchem in. Bauma. (Metal cutting--Vibration)

SOV/124-58-10-10987

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 41 (USSR)

AUTHORS: Blyumina, L. Kh., Zakharov, Yu. G.

TITLE: Oscillations of Cylindrical Bodies in an Air Flow (Kolebaniya tsilindricheskikh tel v vozdushnom potoke)

PERIODICAL: V sb.: Issled. po dinamike sooruzheniy. Moscow, Gos. izd-vo lit. po str-vu i arkhitekt., 1957, pp 44-60

ABSTRACT: An investigation was performed in a wind tunnel ($D = 3m$) on the oscillatory characteristics of cylindrical bodies in a flow of air directed perpendicularly to the generatrix of the cylinder. Tests were made under various flow conditions corresponding to impinging airspeeds from 20 to 60 m/sec with the cylinder supported by an elastic mounting. The magnitude of the pressure on the cylinder was registered by means of low-inertia membrane-type transducers connected to static-pressure orifices, the velocity pulsation in the stream was measured by a hot-wire anemometer, and the oscillations of the cylinder were measured by a strain gage mounted on the cylinder; in addition, the oscillations of the cylinder were registered by mechanical means. It was determined that in all cases

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SOV/124-58-10-10987

Oscillations of Cylindrical Bodies in an Air Flow

the oscillations of the cylinder occur at its natural frequency (dependent on the degree of elasticity of the mounting) in a plane perpendicular to that of the impinging air flow. This deduction is confirmed by previous observations on the oscillations of smokestacks conducted by the TsNIPS (Central Scientific Research Institute of Industrial Structures) and also coincides with the deductions of S. P. Strelkov (Zh. tekhn. fiz., 1939, Vol 9, Nr 19) regarding the self-excited oscillatory character of such a phenomenon. The authors note the inconsistency of the explanation of the origin of the oscillations of a cylinder in an air flow by the periodical detachment of Bénard-Kármán vortices. The case of wind resonance is examined, i. e., when the frequency of the detachment of the Bénard-Kármán vortices coincides with the natural frequency of the oscillations of the cylinder. The paper presents oscillograms of the oscillations of a cylinder at various air speeds, the magnitude of the drag of the cylinder in relation to the R number, the relationship between the amplitude of the oscillations of the cylinder and the R number, and oscillograms of the airspeed pulsations downstream of the cylinder. Strain-gage recordings, together with recordings of the detachment of the vortices with the cylinder in its extreme positions, are presented. The frequency of the vortex detachments coincides with the oscillatory frequency of the cylinder. On the basis of the values obtained, the relationship of the normal-force

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SOV/124-58-10-10987

Oscillations of Cylindrical Bodies in an Air Flow

coefficient C_z against the R number is given. The maximum C_z corresponds to the wind-resonance condition and equals 0.12. The results obtained in the paper may be used in the design of tower-type structures.

V. M. Shalov

Card 3/3

BORISOV, Konstantin Nikolayevich; POPOV, Yu.A., prof., red.;
ZAKHAROV, Yu.G., kand. tekhn.nauk, red.; Primala ucha-
stiye POLYAKOVA, G.Ya., kand. tekhn. nauk; KURBAKOVA, I.P.,
red. izd-va; GARNUKHINA, L.A., tekhn. red.

[Fundamentals of aircraft electric driving]Osnovy aviatsion-
nogo elektroprivoda. Moskva, Oborongiz. Pt.1. [Noncontrol-
led drive]Nereguliruemiy privod. Pod red. IU.A.Popova. 1962.
203 p. (MIRA 15:10)

(Airplanes--Electric driving)

BIRGER, Isaak Aronovich; ZAKHAROV, Yu.G., kand. tekhn. nauk, red.;
AGEYCHEVA, N.A., red. izd-va; NOVIK, A.Ya., tekhn. red.

[Circular plates and shells of revolution] Kruglye plastinki i
obolochki vrashcheniia. Moskva, Gos. nauchno-tekhn. izd-vo
Oborongiz, 1961. 367 p. (MIRA 15:3)
(Elastic plates and shells)

S/632/60/000/019/002/009
D053/D113

AUTHOR: Zakharov, Yu.G.

TITLE: Measurement of fluctuating pressures with the use of diaphragm-type transducers

SOURCE: Moscow. Tsentral'nyy aero-gidrodinamicheskii institut. Promyshlennaya aerodinamika, no. 19, 1960. Izmereniye vozdukhnykh potokov, 9-20.

TEXT: The author analyzes the operation of a diaphragm-type pressure transducer for measuring fluctuation pressure on a model to which the transducer is connected by a feedpipe. The purpose of this work was to experimentally derive the correction factors for amplitude and phase measurements by considering the transducer and its feed duct as a single vibrating system. Numerous experiments were carried out with transducers having diaphragms of different size and rigidity and with interconnecting feedpipes of different diameters. Transducers used were of the strain-gage type designed by engineer M.N. Vinogradov who also assisted in conducting the experiments. The results obtained are compiled in 9 graphs

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Measurement of fluctuating...

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and 2 tables. They indicate that the formulas given by I.A. Charnyy (Ref. 1: Vliyaniye podvodyashchey trubki na tochnost' pokazaniy manometra dlya registratsii pul'satsiy davleniya /Effect of the feedpipe upon the indicating accuracy of the manometer for recording pressure fluctuations/, Izv. AN SSSR, OTN, vyp. 3, p 355, 1946) for calculating the amplitude change and the phase shift between the true and measured pressure are incorrect due to the use of the feedpipe. The correct formulas are given. There are 11 figures, 2 tables, and 3 Soviet-bloc references. ✓

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33255
S/632/60/000/019/005/009
D053/D113

10.1500

26.2190

26.4100

AUTHORS: Zakharov, Yu.G., and Vinogradov, M.N.

TITLE: A hot-wire anemometer with thermistor

SOURCE: Moscow. Tsentral'nyy aero-gidrodinamicheskiy institut. Promyshlennaya aerodinamika, no. 19, 1960. Izmereniye vozdushnykh potokov, 58-61

TEXT: Design of a hot-wire anemometer using a thermistor as sensing element instead of a wire filament is given. The electric anemometer circuit (Fig. 1) is a bridge circuit composed of resistors a, b, and r in the three arms and a TC_{-8} (TS-8) bead thermistor R_{therm} in the fourth arm. The TS-8 thermistor is shaped like a sphere, 0.2 mm in diameter. Its temperature response is closely approximated by the exponential curve:

$$R = Ae^{B/T},$$

where R is the thermistor resistance, T is the absolute temperature, and A and B are constants. The A constant varies for different thermistors while

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X

A hot-wire anemometer with thermistor

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D053/D113

the B constant is practically the same and for the TS-8 thermistor equals about 3,000° abs. The temperature coefficient of the thermistor resistance is given by

$$\alpha = \frac{1}{R} \frac{\delta R}{\delta T} = - \frac{B}{T^2},$$

that is, the resistance decreases as the temperature increases. For the TS-8 thermistor, at $T \approx 300^\circ$ abs, the temperature coefficient (α) is equal to about 0.04. The disadvantage of these thermistors is their limited temperature range, about 100°C, and their susceptibility to ambient temperature changes. These temperature changes can be automatically compensated by inserting additional elements into the bridge circuit, as illustrated in Fig. 2. The values of the metallic resistor R_m and the manganin shunt resistor R_{sh} should be individually calculated for each operating temperature range of the bead thermistor R_{therm} . The described anemometer circuit can be used measuring moderate and slowly varying flow velocities. It is not suitable for measuring flow velocity fluctuations because of the circuit high time constant. There are 4 figures and 2 Soviet-bloc references. ✓

Card 2/2

ZAKHAROV, Yu.G.; VINOGRADOV, M.N.

Thermoanemometer with semiconductor thermoresistance. Prom.
aerodin. no.19:58-61 '60. (MIRA 14:6)
(Anemometer)

S/124/61/000/011/044/046
D237/D305

AUTHOR: Zakharov, Yu.G.

TITLE: Measuring pressure oscillations by means of diaphragm type meters

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1961, 142, abstract 11B939 (Prom. aerodinamika no. 19, M., Oborongiz, 1960, 9 - 20)

TEXT: The influence of dimensions of the tube connecting the recorder with the point of air-stream under investigation on the results obtained is considered here. Correction factors for the measured amplitude and phase of oscillatory pressure were obtained experimentally. Recorder with a tube is considered as single oscillating system with one degree of freedom. Experimental methods of determining recorder parameters are described, utilizing the oscillogram of diminishing oscillations of the instrument and the relation of the phase shift between true and measured pressures to the frequency of oscillations. Experiments were performed with connecting

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Measuring pressure oscillations ...

S/124/61/000/011/044/046
D237/D305

tubes of various lengths and diameters and using various membrane tensions. The experimental set-up is described and results are presented, differing from those calculated from the formulae of I. A. Charnyy (Izv. AN SSSR. Otd. tekhn., 1946, no. 3, 355). 3 references. [Abstractor's note: Complete translation]. ✓

Card 2/2

TSANDER, Fridrich Arturovich, inzh. [1887-1933]; POBEDONOSTSEV, Yu.A.,
doktor tekhn. nauk, prof., retsenzent; KORNEYEV, L.K., red.; ZA-
KHAROV, Yu.G., kand. tekhn. nauk, red.; ANIKINA, M.S., red. izd-
va; ROZHIN, V.P., tekhn. red.

[Flying in a rocket-propelled vehicle; interplanetary flights] Pro-
blema poleta pri pomoshchi reaktivnykh apparatov; mezhplanetnye po-
lety. Sbornik statei. Pod red. L.K.Korneeva. 2. dop. izd. Moskva,
Gos. nauchno-tekhn. izd-vo, 1961. 459 p. (MIRA 14:11)
(Space flight) (TSander, Fridrikh Arturovich, 1887-1933)

ZAKHAROV, Yu.K.: YERLYKIN, L.A., red.; MEDNIKOVA, A.N., tekhn.
red.

[Transistorized voltage converters] Preobrazovateli na-
priazhenia na poluprovodnikovyykh triodakh. Moskva, Voen-
izdat, 1964. 101 p. (MIRA 17:3)

SEMENOV, V.M., kand.tekhn.nauk; CHESNOKOV, M.M., kand.tekhn.nauk; ZAKHAROV,
Yu.N., inzh.

Crushing oversized rocks by high-frequency current. Stroi.mat. 10
no.12:9-11 D '64. (MIRA 18:1)

²⁷⁹⁹⁷
S/194/61/000/004/040/052
D201/D302

9.4310

AUTHOR:

Zakharov, Yu.K.

TITLE:

Applying transistors to D.C. conversion

PERIODICAL:

Referativnyy zhurnal. Avtomatika i radioelektronika, no. 4, 1961, 24, abstract 4 D159 (V sb. Poluprovodnik pribory i ikh primeneniye, no. 4, M., Sov. radio, 1960, 298-307)

TEXT: Results are given of experiments with junction transistors, operating in various circuits of d.c. converters in the temperature range 20 to 90°C. Criteria are given for the choice of circuit transistor operation and frequency of conversion. The following problems are discussed: The choice of material for the transformer core; noise introduced by the converter and methods for suppressing it. It is shown that it would be useful to make the classification of power transistors to be used in push-pull converters, according to the slope of the transfer collector current-input voltage characteristic. 3 references. [Abstracter's note: Complete translation]

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L 17676-63 BDS MLK(a)

ACCESSION NR: AP3G04640

s/0286/63/000/006/0022/0022

AUTHOR: Gutenmakher, L. I.; Bardizh, V. V.; Zakharov, Yu. K.

51

TITLE: Contactless time relay, Class 21, No. 153515

SOURCE: Byul. izobret. i tovarny*kh znakov, no. 6, 1963, 22

TOPIC TAGS: contactless time relay, time relay, relay

ABSTRACT: This patent introduces a contactless time relay (see Fig. 1 of Enclosure) using a magnetic amplifier with time-delay control based on variation in the feedback coefficient. In order to simplify time control over a wide range, use is made of bias winding, and the control winding is designed without capacitance and self-inductance. As a result, time control takes place during the transient time between closed and open conditions. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 27Apr50

DATE ACQ: 27Aug63

ENCL: 01

SUB CODE: SD

NO REF SOV: 000

OTHER: 000

Card 1/21

ZAKHAROV, Yu.K., kand.tekhn.nauk; LOKTEV, P.I., inzh.

Direct-current voltage converters equipped with semiconductor
triodes. Vest.sviazi 18 no.12:5-7 D '58. (MIRA 11:12)
(Electric current converters) (Transistors)

SOV/111-58-12-10/38

AUTHORS: Zakharov, Yu.K., Candidate of Technical Sciences, Loktev, P.I.,
~~Engineer~~

TITLE: Transistorized D-C Converters ^{with Semiconductor Triodes} (Preobrazovateli postoyannogo
napryazheniya na poluprovodnikovyykh triodakh)

PERIODICAL: Vestnik svyazi, 1958, Nr 12, pp 5-7 (USSR)

ABSTRACT: The article contains constructional data of four types of transistorized dc power converters for use in communication installations. The principal electrical data of one such converter is given in a table and is compared with a vibration converter. The first has a power output of 100 watts and a service life of more than 10,000 hours, while the latter has only 50 watts output and a service life of 250 hours. The circuit diagram of this converter is shown by Figure 2. Transistors type P4 are used. Two other converter types are based on the same circuit arrangement as shown by Figure 2. Figure 5 shows the circuit diagram for a converter using

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Transistorized D-C Converters with Semiconductor
Triodes

SOV/111-58-12-10/38

two P4P transistors. The rectifiers contain DGTs-27 or DGTs-24 diodes. These converters are used to step up low dc voltage (for example, from 12 volts to 220 or 750 volts). There are 2 circuit diagrams, 2 graphs, 1 photo and 1 table.

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S/194/61/000/006/061/077
D201/D302

AUTHOR: Zakharov, Yu.K.

TITLE: Single-cycle transistorized d.c. converters

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1961, 27, abstract 6 E189 (V sb. Poluprovodnik. pribory i ikh primeneniye, no. 5, M., Sov. radio, 1960, 206-232)

TEXT: It is shown by theoretical analysis that single-cycle semiconductor voltage converters are better than the push-pull converters in cases when a comparatively high voltage is to be obtained from a 2.4 - 4.8 volt source. The theory of converters is considered with forward and backward connected diodes. In converters with forward connected diodes the limit output power exceeds twice that of converters with backward diode connections. With low voltage source supplies (2.4 - 4.8 v) it is better, from energy considerations, to have the transistors in common collector connection, while

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Single-cycle transistorized...

S/194/61/000/006/061/077
D201/D302

in converting higher voltages the common emitter connection is more
advantageous. [Abstracter's note: Complete translation]

Card 2/2

ZAKHAROV, Yu.M., inzh.

Principal problems concerning the design of electric power supply
systems of large industrial enterprises. Prom.energ. 17 no.4:
30-33 Ap '62. (MIRA 15:4)
(Electric power distribution)

ZAKHAROV, Yu.M.

Use of mechanical and semiconductor power rectifiers in electrical systems. Prom.energ. 17 no.7:41-46 J1 '62. (MIRA 15:7)
(Electric current rectifiers)

SOV/112-57-9-18668

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr 9, p 82 (USSR)

AUTHOR: Zakharov, Yu. M.

TITLE: **Telemechanics in Dispatcher's Control of Electrical Supply at Metal Plants**
(Telemekhanizatsiya dispetcherskogo upravleniya sistemy elektrosnabzheniya metallurgicheskikh zavodov)

PERIODICAL: **V sb. Tr. nauch. tekhn. soveshchaniya po elektrosnab. prom. predpriyatiy, M.-L., Gosenergoizdat, 1956, pp 200-219**

ABSTRACT: A telemechanized control system has a number of advantages: objective monitoring, positive orientation, rapid operation, and substantial reduction of personnel. Telemechanics at a substation should be accompanied by a large-scale automation. Type VRT-53 few-channel supervisory control is considered in detail. Few-channel remote-control systems are recommended for industrial electrical supply. Amount of telemechanical devices for a 110/6-10 kv or 154/6-10 kv substation as determined by operating conditions is recommended. Estimates carried out for a few actual projects show that costs of telemechanical devices are paid in 1-2 years by the savings on the eliminated personnel.

V.V.M.

Card 1/1

ZAKHAROV, Yu.M., inzh.

Designing automatic and remote control for electric equipment
of industrial enterprises. Prom. energ. 14 no.1:42-46 Ja '59.
(MIRA 12:1)

1.Gosudarstvennyy proyektnyy institut "Tyazhpromelektroproyekt."
(Electric machinery) (Automatic control)
(Remote control)

AUTHOR: Zakharov, Yu.M. (Engineer) S9V/91-58-9-11/30

TITLE: Economic methods of electricity supply in modern metallurgical works.
(Ekonomicheskiye resheniya v elektrosnabzhenii sovremennykh metallurgicheskikh zavodov.)

PERIODICAL: Promyshlennaya Energetika, 1958, No.9. pp. 24-26 (USSR)

ABSTRACT: Modern metallurgical works are being designed for outputs of 4 million tons of steel and 3 million tons of rolled steel per annum. The power consumption of works of this kind can be up to 250 MW. Now that it is permitted to simplify the design of high voltage substations, their capital cost is lower than it used to be and the use of voltages of 110 - 220 kV is more economic than before. The whole subject of power supply to very large works should accordingly be reconsidered. Hitherto, works commonly obtained their electric power from their own heat and electric power stations, which were designed to cover all the electrical load. With the development of regional power stations, their capital cost per kW is lower and power costs are less. Accordingly, the works heat and electric power station need only be big enough to cover the thermal requirements of the works. In most metallurgical works the generating and distribution voltages are 6.3 kV, though 10.5 kV is used in some modern works. Motors of more than 1500 kW are designed for 10 kV and smaller motors for 3 kV. It will be desirable to extend the range of motors than can be run at 10 kV.

Card 1/3

SOV/94-58-9-11/30

Economic methods of electricity supply in modern metallurgical works.

The use of 6.3 kV distribution should be discouraged. It should be possible to bring power lines of 110, 154 or 220 kV right into the works and there to transform to 10.5 kV. Distribution inside the works at 35 kV may be justified when there are particularly heavy individual loads and in this case the main transformers should have three windings. According to the latest rules, switchgear need not be installed on the high voltage side of end-of-line substations, and this will simplify power distribution inside large works. Possible diagrams of power supply are given in Figs. 1. & 2. Circuit breakers will not be used on the high voltage side of the distribution sub-stations. According to the latest rules, line reactors should be installed only to limit short circuit currents and they are no longer required to maintain voltage on the busbars in the event of short circuits on outgoing lines. It will, therefore, be possible to use group reactors installed with the transformers. There are advantages in connecting transformers in parallel as shown in Fig.1B. Packaged distribution equipment should be widely used.

Card 2/3

Economic methods of electricity supply in modern metallurgical works. SOV/PA-SS-9-11/30

Building arrangements with individual and group reactors are shown in Fig.3, the construction is much simplified if group reactors are used. There are 3 figures.

ASSOCIATION: GPI "Tyazhpromelektroproyekt", Khar'kov. (State Planning Institute "Tyazhpromelektroproyekt" Khar'kov)

1. Steel--Production
2. Industrial plants--Power
3. Electricity
- Economic aspects
4. Electric power production--USSR

Card 3/3

L 51855-65 EWT(m)/EWA(d)/ENP(t)/ENP(k)/ENP(b)/EWA(c) PF-4 JD/WH
ACCESSION NR: AF5017109 UR/0228/64/00/012/0009/0011

AUTHOR: Semenov, V. M. (Candidate of technical sciences); Chesnokov, M. K. (Candidate of technical sciences); Zakharov, Yu. N. (Engineer)

TITLE: Breaking up rock with high-frequency currents (20
B

SOURCE: Stroitel'nyye materialy, no. 12, 1964, 9-11

TOPIC TAGS: structural mineral product, mining engineering, civil engineering

ABSTRACT: It is shown that non-metallic rocks may be destroyed by hf currents. The rocks are broken up without flying splinters and dust. The method described may be used for quarrying and processing of non-metalliferous structural materials both in open-pit conditions and at the reception points of road construction sites. Calculations show that the cost for breaking up the rock does not exceed 0.8 rb/m³ when the capacity of the installation is 28-30 m³/shift. The capacity attained on the installations in laboratory conditions comes to approximately 40-50 m³/shift. It is hoped that an industrial installation may be built with a capacity of up to 100 m³/shift which would bring the cost of crushed rock down to about 30 kp/m³.

Orig. art. has: 2 figures, 3 formulas, 2 graphs, 1 table.

Card 1/2

L 51855-65

ACCESSION NR: AP50L7109

ASSOCIATION: none

SUBMITTED: CO

NR REF SOV: 003

ENCL: 00

OTHER: 000

SUB CODE: HT, GO

JPRS

Card

L1
2/2

L 3977-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/I/ENP(k)/ENA(h)-2/ENA(h) SOT2/LJP(c) #5
UR/0181/65/007/010/3128/2130

ACCESSION NR: AP5025404

AUTHOR: Basov, N. G.⁴⁴; Zakharov, Yu. P.⁴⁴; Nikitin, V. V.⁴⁴; Sheronov, A. A.⁴⁴

02
60
3

TITLE: GaAs junction laser with a nonuniform distribution of injected current

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 3128-3130

TOPIC TAGS: laser, junction laser, injection laser, semiconductor laser, GaAs, p n junction, injection current, coherent radiation, recombination radiation

ABSTRACT: The effect of an uneven distribution of the injection current along the p-n junction area of a GaAs laser diode on its emission was experimentally investigated. Diodes with a 2-mm overall cavity length and a 0.4-mm width were used in the experiments. The p-side of a standard laser with polished ends was cut perpendicular to diode's length down to the junction area (see Fig. 1 of Enclosure), resulting in two electrically separated cavity sections with a contact attached to each part. The coupling resistance between the diodes was large in comparison with the resistance of the contacts and the bulk resistance. The diode, cooled to the liquid nitrogen temperature, was excited by current pulses of 1-μsec duration. The lowest threshold current was required when injection current densities in both sections of the diodes were equal. The wavelength of coherent emission at the threshold current was larger

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L 3977-66

ACCESSION NR: AP5025404 B

by about 20 Å than the wavelength of emission during uneven excitation regime, i.e., when current $I_1 = I_2$. When I_2 was constant while I_1 was increased from 0 to 1 amp, the frequency of laser emission at $\lambda \sim 8430$ Å was gradually shifted toward higher frequencies by 50 cps. When I_1 was further increased, generation was achieved at $\lambda \sim 8450$ Å while coherent emission at $\lambda \sim 8430$ Å decreased and finally disappeared. At the same time the maximum of the line (half width ~ 30 Å) was shifted by ~ 2 Å toward the longer wavelengths. A similar quenching effect at ~ 8430 Å was observed in the direction perpendicular to the axis of the diode. It was determined that when the injection current was sufficiently large in one section of the laser a large increase in power output was obtained by simultaneously injecting current through both contacts on the p-side of the diode. Since the slope of the power-current curve of the dual diode structure increased approximately two times in comparison with that of a single section diode, the use of the dual structure for modulation may be more useful than that of a standard injection laser. Orig. art. has: 1 figure. [CS]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR) 44

SUBMITTED: 17May65
NO REF SOV: 001

ENCL: 01
OTHER: 002

SUB CODE: EC, OP
ATD PRESS: 4118

Card 2/3

L 3977-66

ACCESSION NR: AP5025404

ENCLOSURE: 01

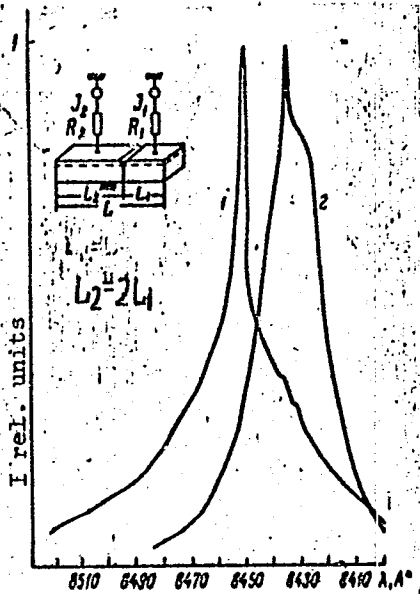


Fig. 1. Emission spectra near the threshold

1 - Current densities in both parts of the dual diode structure are equal, $I_1 = I_2 = 19$ amp; 2 - current densities in the two parts are not equal, $I_1 = 0$, $I_2 = 34$ amp.

90
Card 3/3

L 38)18-66 EEC(k)-2/EWP(k)/EWT(l)/EWT(m)/FBD/T/EWP(t)/ETI TIP(c) WC/JD
ACC NR: AP6024470 SOURCE CODE: UR/0181/66/008/007/2087/2091

AUTHOR: Zakharov, Yu. P.; Nikitin, V. V.; Semenov, A. S.; Uspenskiy, A. V.; Shcheglov, V. A. 69
B

ORG: Physics Institute in. P. N. Lebedev, AN SSSR (Fizicheskiy institut AN SSSR)

TITLE: The theory of optically coupled p-n GaAs lasers

SOURCE: Fizika tverdogo tela, v. 8, no. 7, 1966, 2087-2091

TOPIC TAGS: semiconductor laser, gallium arsenide, laser coupling, *Soz 10*
STATE LASER, PN JUNCTION

ABSTRACT: Using a slotted p-n GaAs diode as a model of a semiconductor laser, optical laser coupling was studied theoretically and experimentally. Eight different diodes, prepared by methods described by G. J. Lasher and F. Stern (Phys. Rev., 133, A553, 1964), with $0.2 \leq \gamma \leq 0.5$ were used ($\gamma = \frac{L_2}{L_1} \leq 1$, where L_1 and L_2 lengths of the p-n junction on each side of the slot). Spectral characteristics of each diode were observed for different values of the threshold injection currents (J_1 and J_2) through the slotted parts of a junction. Experimental results indicate that the

function $k = \frac{J_{1\text{thresh}}}{J_{2\text{thresh}}}$ increases with an increase in γ ($k = \frac{\gamma}{1-\gamma}$). This result agrees essentially with the theory. Orig. art. has: 3 figures and 10 formulas. [YK]

SUB CODE: 20/ SUBM DATE: 10Dec65/ ORIG REF: 002/ OTH REF: 004/ ATD PRESS: *5042*
Card 1/1

KHAYKIN, A.B., kand.tekhn.nauk; ZAKHAROV, Yu.P., inzh.

Results of testing the electric propulsion plant of a harbor ice-
breaker. Sudostroenie 31 no.1:40-42 Ja '65.

(MIRA 18:3)

ZAKHAROV, Yu.P., mayor, voyenny letchik pervogo klassa

In order not to repeat old mistakes. Vest.Vozd.Fl. no.8:50--
52 Ag '60. (MIRA 13:9)

(Bombing, Aerial)

BASOV, N.G.; ZAKHAROV, Yu.P.; NIKITIN, V.V.; SHERONOV, A.A.

Laser on a GaAs p-n junction with nonuniform distribution
of the injection current. Fiz. tver. tela 7 no.10:3128-3130
O '65. (MIRA 18:11)

1. Fizicheskiy institut imeni Lebedeva AN SSSR, Moskva.

L 4964-66 EWA(k)/FED/EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/EWP(k)/EWP(b)/EWA(m)-2/EWA(h)
ACC NR: AP5027449 SOURCE CODE: UR/0181/65/007/011/3460/3461

SCTB/IJP(c) WG/JD/JG 44
AUTHOR: Basov, N. G.; Zakharov, Yu. P.; Nikitin, V. V.; Sheronov, A. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR) 44

TITLE: Interaction between optically coupled GaAs diode lasers 54 B

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3460-3461

TOPIC TAGS: solid state laser, gallium arsenide laser, laser coupling, laser synchronization, laser beam, beam quenching

ABSTRACT: Two systems of optical coupling between p-n GaAs diode lasers—"longitudinal," in which laser beams coincide, and "transverse," in which they are perpendicular to each other—were investigated. In both cases, the diodes were prepared in the form of Fabry-Perot resonators and set up on the same substrate from 5 to 100 μ apart. The effectiveness of beam quenching for the transversely coupled lasers was 1%. The wavelength of the quenching laser emission was greater than that of the quenched and the beam entered the quenched laser laterally. Beam quenching in the longitudinally coupled system was observed only when the wavelength of the quenching emission was greater than that of the quenched. Similar effects were observed elsewhere

Card 1/2 09010313

I 4964-66

ACC NR: AP5027449

(A. Fowler, J. Appl. Phys., 35, 2275, 1964; J. Appl. Phys. Lett., 3, 1, 1963). The low effectiveness of quenching in both cases was attributed to the difficulties experienced in accurately setting up both diodes on the same substrate. Improved (~20%) beam quenching was achieved by means of special diodes, each with two resonators, described elsewhere by the authors (FTT, 7, 3128, 1965). The quenching effect is potentially applicable in computer technology (high-speed optical keying).
Orig. art. has: 1 figure. [YK]

SUB CODE: EC/ SUBM DATE: 15Jun65/ ORIG REF: 001/ OTH REF: 003

ATD PRESS: 4131

Card *mlr*
212

L 28149-66 . FBD/ENT(1)/ENT(m)/ERC(k)-2/T/ENP(t)/ETI/ENP(k) IJF(c) WUP
ACC NR: AP6018703 SOURCE CODE: UR/0386/66/003/011/0441/0443

AUTHOR: Basov, N. G.; Zakharov, Yu. P.; Nikitina, T. F.; Popov, Yu. M.; Strakhovskiy, G. M.; Tatarenkov, V. M.; Khvoshchev, A. N.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy Institut Akademii nauk SSSR)

TITLE: Gallium arsenide laser operating at room temperature

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pisma v redaktsiyu. Prilozheniye, v. 3, no. 11, 1966, 441-443

TOPIC TAGS: gallium arsenide, semiconductor laser, pn junction, junction diode, laser radiation spectrum

ABSTRACT: The authors investigated the performance of semiconductor lasers based on diffusion p-n junctions operating at 300K. The diodes were excited either with a pulse generator (current up to 4000 amp, pulse duration 20 nsec) or with a generator with discharge capacitor and mechanical discharge with current up to 1500 amp and pulse duration 30-60 nsec. The diode emission had at low currents a broad spectrum that narrowed down gradually from 300 to 110 Å with increasing current. At a threshold current density that varied from diode to diode ($10^5 - 5 \times 10^5$ amp/cm²), a single generation line was produced at ~9000 Å, which is of longer wavelength than the maximum of the spontaneous emission spectrum. With increase in current, additional lines appear in the spectrum, corresponding to different resonator modes and the

Card 1/2

L 28449-66

ACC NR: AP6018703

generation wavelength increases. Measurement of the diode emission directivity pattern yielded for the width of the luminescent region a value of 4μ . The directivity pattern in a plane parallel to the p-n junction shows a pronounced multilobe interference character, with average half-width 8° . Orig. art. has: 2 figures and 1 formula. [02]

SUB CODE: 20/ SUBM DATE: 02Apr66/ ORIG REF: 002/ OTH REF: 002/ ATD PRESS:

5006

Card 2/2 IC

L 44603-66 EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/ETI/EWP(k) IJP(c) WG/JD/JG
ACC NR: AP6030983 SOURCE CODE: UR/0181/66/008/009/2816/2818

AUTHOR: Basov, N. G.; Drozhbin, Yu. A.; Zakharov, Yu. P.; Nikitin, V. V.;
Semenov, A. S.; Stepanov, B. M.; Tolmachev, A. M.; Yakovlev, V. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: The effect of injection current on the temporal characteristics of a GaAs laser

SOURCE: Fizika tverdogo tela, v. 8, no. 9, 1966, 2816-2818

TOPIC TAGS: solid state laser, semiconductor laser, gallium arsenide, laser, injection laser, *ELECTRIC CURRENT, INJECTION CURRENT*

ABSTRACT: In an investigation of the temporal characteristics of a GaAs laser the radiative delay time (τ_g) was determined as a function of the injection current. Ordinary diodes, prepared by means of the diffusion process, were placed in a dewar at the liquid N temperature. The laser was excited by a current oscillator with pulse amplitudes from 4 to 40 amp and a duration of 40 nanosec. Several diodes were investigated at threshold currents from 1.8 to 4 amp. The dependence of τ_g on injection current indicates that the value of τ_g approaches 1.8×10^{-9} sec. This corresponds approximately to the spontaneous radiative lifetimes for electrons and holes calculated theoretically elsewhere (W. P. Dumke, Phys. Rev., 132, 1998, 1963). With a 16-fold

Card 1/2

L 44603-66

ACC NR: AP6030983

increase of I_{thr} , τ_g increases to 0.9 nanosec; this is explained by the time increase necessary to achieve population inversion. To eliminate delay due to spontaneous emission and to achieve stimulated emission, the diode was pulsed by currents from an auxilliary oscillator with amplitudes of $1.5 I_{thr}$ and durations of approximately 200 nanosec. Some 50 nanosec after the onset of the auxilliary pulse, the diode was pulsed by a positive current from the master oscillator. The delay time between the onset of the injection current from the master oscillator and the radiation induced by it was measured, and at $17 I_{thr}$ was reduced to 6×10^{-11} sec. A further decrease in τ_g calls for considerably increased injection currents. The experimental data indicate that GaAs lasers can be used as radiation modulators in the centimeter band and as high-speed (10^{-10} — 10^{11} sec) optical switches. Orig. art. has: 1 figure. [YK]

SUB CODE: 20/ SUBM DATE: 13Apr66/ ORIG REF: 001/ OTH REF: 002/ ATD PRESS: 5078

Card 2/2 *Lgm*

L 44601-66 EWT(1)/EWT(m)/EEC(k)-2/T/EWP(k)/EWP(t)/ETI IJP(c) WG/JD/JG

ACC NR: AP6030960

SOURCE CODE: UR/0181/66/008/009/2616/2622

AUTHOR: Basov, N. G.; Yeliseyev, P. G.; Zakharov, S. D.; Zakharov, Yu. P.;
Orayevskiy, I. N.; Pinsker, I. Z.; Strakhov, V. P.

72
B

ORG: Physics Institute im. P. N. Lebedev, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: Certain properties of ^{v1}GaAs ^{v1}laser diodes

SOURCE: Fizika tverdogo tela, v. 8, no. ^{v3}9, 1966, 2616-2622

TOPIC TAGS: solid state laser, semiconductor laser, gallium arsenide, laser, SEMICONDUCTOR DIODE

ABSTRACT: Phenomenological methods were used in an experimental study of certain properties of GaAs laser diodes (loss factor, quantum yield, differential efficiency, gain). The specimens were prepared by the diffusion of zinc into n-type GaAs crystals with electron concentrations of $2 \times 10^{18} \text{ cm}^{-3}$. The cavities consisted of silver mirrors sputtered on polished crystalline surfaces pre-coated with a thin layer of SiO₂, and the electrical contacts consisted of sputtered metal (Au, Ni, In, Sn) films and fused-in electrodes. The measurements were carried out at 77K and the pulsed output was recorded by a calibrated silicon photodiode. The lowest threshold currents occurred in diodes which were cleaved on all four sides. A threshold current of 25 mamp was attained at the liquid He temperature and at a density of 75 amp/cm². C-w operation was observed from diodes with $I_{thr} < 0.5 \text{ amp}$ at 4.2K. The results

Card 1/2

L 44601-66

ACC NR: AP6030960

indicate that the transformation of electrical power into optical power occurs with a yield of the order of unity and that the greatest loss is due to absorption in the medium inside the cavity. The loss coefficient for the better diodes was $5-10 \text{ cm}^{-1}$ at 77K, a value which had been theoretically predicted elsewhere. The highest differential efficiency at 77K was 67%, although it was much lower in the case of diodes with Fabry-Perot cavities under high threshold current densities and in four-sided diodes with low threshold current densities. The efficiency of the p-n junctions was 0.5-0.55 with a 25% gain, which took into account losses in series resistance. Efficiencies of 60% were achieved in the case of optimal reflectivity and cavity length. The optical gain in the subthreshold region was $3 \cdot 10^{-2} \text{ j cm}^{-1}$.
Orig. art. has: 2 tables, 6 figures, and 9 formulas. [YK]

SUB CODE: 20/ SUBM DATE: 17Jan66/ ORIG REF: 001/ OTH REF: 009/ ATD PRESS: 5078

Card 2/2 2977

L 08478-67

ACC NR: AR6017577

(N)

SOURCE CODE: UR/0196/66/000/001/L025/L025

AUTHOR: Zakharov, Yu. P.; Rasskazov, B. N.

53
B

TITLE: The operation of the propulsive electrical plant in the icebreaker "Leningrad"

SOURCE: Ref. zh. Elektrotekhnik i energetika, Abs. 1L136

REF SOURCE: Inform. sb. Tsentr. n.-i. in-t morsk. flota, vyp. 131, 1965, 81-90

TOPIC TAGS: shipbuilding engineering, electric power plant, electric propulsion, advanced propulsion engine, propulsion performance, propulsion R and D, propulsion system, propulsion system test, propulsion test, marine engine, marine engineering

TRANSLATION: The icebreaker "Leningrad" has 8 main diesel generators supplying three propulsion electric drives. The main generators are rated at 2160 kilowatt, 600 v, 3600 amps and 3300 rpm. The propulsion electric drives on the port and the starboard are rated at 4050 kilowatt, 1200 v, 3600 amps and 115/155 rpm. The middle screw is driven by a tandem propulsion electric drive rated at 2 x 4050 kilowatt, voltage across each armature of 1200 v, and a current of 3600 amps. The power to the screws is distributed in a ratio of 1:2:1. The electric propulsive plant was tried out under the operational conditions of ship's opening up the Yenisey delta. As a result of the test data analysis for the icebreaker "Leningrad" the following conclusions were reached:
1. The start and the reverse of the electric propulsive plant is smooth and ensures

Card 1/2

UDC: 629.12.066

81665

S/112/60/C90/05/16/023

6.4700

Translation from: Referativnyy zhurnal. Elektrotehnika. 1960, No. 5, p. 412,
6.3421

AUTHOR: Zakharov, Yu. S.

TITLE: Correlation Receiver With a Coherent Detector, S

PERIODICAL: Tr. Kazansk. aviats. in-ta, 1958, Vol. 38, pp. 131-133

TEXT: One of the most essential deficiencies of correlation receivers is the necessity of using a multiplier device, the practical realization of which is rather complicated. The author elucidates the possibility of replacing the multiplier device by the more simple coherent detector, since the effects of both these devices are identical by their nature: h-f signals are transformed into d-c. It is shown that, theoretically, if the frequencies coincide exactly, such a replacement in the composition of the correlation receiver will only result in a twofold reduction of the magnitude of the signal-to-noise ratio at the output. Practically, the noise proofness of the receiver with a coherent detector will be determined by the frequency instability of the local heterodyne. There is 1 figure.

Ye. F. T. ✓

Card 1/1

ZAKHAROV, Yu.S., inzh. (Leningrad)

Armature-reaction effect on the performance of d.c. motors
equipped with permanent magnets. Elektrichestvo no.10:34-36
0 '58. (MIRA 12:1)

(Electric motors, Direct current)

ZAKHAROV, Yu.S. (Kazan')

Correlation receiver with a coherent detector. Trudy KAI 38:131-133
'58. (MIRA 16:8)

(Electronic computers)

AUTHOR: Zakharov, Yu.S., Engineer

SOV/110-59-5-21/25

TITLE: An Experimental Investigation of Armature Reaction in Direct Current Machines with Permanent Magnets by Means of Semi-Conducting Hall Effect Emitters (Eksperimental'noye issledovaniye reaktsii yakorya v mashinakh postoyannogo toka s postoyannymi magnitami pri pomoshchi poluprovodnikovyykh datchikov s.s.s. Kholla)

PERIODICAL: Vestnik elektropromyshlennosti, 1959, Nr 5, pp 72-74 (USSR)

ABSTRACT: Because of recent developments in magnetic materials, electrical machines with permanent-magnet fields are becoming more widely used. Armature reaction is particularly important in such machines but methods of calculating it are very complicated. An experimental investigation was made of armature reaction in a 250 W, 60 V motor running at 6000 rpm. The motor was investigated under conditions of reversing and short-circuit, when the demagnetising effects of armature reaction are greatest. Three small Hall-effect emitters were placed in the machine air-gap under one of the poles. There was one emitter at the middle and two at the edges

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SOV/110-59-5-21/25

An Experimental Investigation of Armature Reaction in Direct Current Machines with Permanent Magnets by Means of Semi-Conducting Hall Effect Emitters

of the pole. The circuit used to measure the Hall effect is shown in Fig 1; recordings were made on an oscillograph and millivoltmeters. Oscillograms taken with the rotor locked and 30 V applied to the stator are drawn in Fig 2. Here curve 1 represents the armature current, curve 2 the speed and curves 3, 4 and 5 the Hall emf's from the two pole edges and the middle of the pole respectively. It will be seen that with the rotor locked the induction under the leading edge of the pole rises by 50 to 60% whilst under the trailing edge it falls by 80 to 90% and in the middle it is practically unaltered. An oscillogram obtained during two reversals of the motor is represented in Fig 3: at the instant when the armature current reaches its maximum value of 14 times the rated current the induction under the leading edge of the pole is seen to increase by 150 to 200% and under the trailing edge it falls so much that the magnetic field is reversed. The field at the middle of the pole also alters during reversal. During reversals of the

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SOV/110-59-5-21/25

An Experimental Investigation of Armature Reaction in Direct Current
Machines with Permanent Magnets by Means of Semi-Conducting Hall
Effect Emitters

motor, in addition to quadrature armature reaction, there is the reaction of the commutating-currents on the direct axis, which influences all three emitters. The large changes in induction under the edges of the poles during short-circuit, and particularly during reversal, indicate that in direct current machines with permanent magnet fields the quadrature armature reaction has an important influence on the magnitude and distribution of magnetic induction in the air-gap. In the case of reversal, the reaction of commutating-currents has an appreciable demagnetising effect which is superimposed on the demagnetising effect of transverse armature reaction. This disproves some existing ideas about the effect of armature reaction due to

Card 3/4

SOV/11G-59-5-21/25

An Experimental Investigation of Armature Reaction in Direct Current
Machines with Permanent Magnets by Means of Semi-Conducting Hall
Effect Emitters

commutating-currents. There are 3 figures and
1 Soviet reference.

SUBMITTED: 17th November 1958

Card 4/4

ZAKHAROV, Yu.S.; TIKHOMIROV, V.P.

Detection and measurement of the frequency of a weak noise-masked
signal using a zero counting technique. Izv.vys.ucheb.zav.;
radiotekh. 7 no.5:603-609 S-O '64. (MIRA 18:4)

AUTHOR: Zakharov, Yu. S., Engineer (Leningrad) SOV/105-58-10-7/28

TITLE: On the **Effect** of Armature Reaction on the Performance of Direct-Current Motors With Permanent Magnets (O vliyanií reaktsii yakorya na rabotu dvigateley postoyannogo toka s postoyannymi magnitami)

PERIODICAL: Elektrichestvo, 1958, Nr 10, pp 34 - 36 (USSR)

ABSTRACT: This is a qualitative description of the phenomena occurring in the reversing of a d.c. motor with permanent field magnets. The problem of the demagnetization of the machine when it is reversed is approached by dividing the reversion process into three stages, contrary to common usage, which employs a division into only two stages. Two causes are made responsible for the demagnetization: The occurrence of a magnetomotive force of the commutation currents which is opposed to the pole field and the transverse component of the armature magnetomotive force changing its direction. Summary:
1) The customarily applied methods of ageing the permanent magnets (which are used for the self-excitation of d.c.

Card 1/2

On the **Effect** of Armature Reaction on the SOV/105-58-10-7/28
Performance of Direct-Current Motors With Permanent Magnets

reversible motors) by short circuiting the motor under rated voltage are not capable of giving the desired results as under short circuit conditions the magnetomotive force of the commutation currents is completely missing and the magnetomotive force of the transverse armature reaction is not only deficient of the actual value but also does not change its direction. 2) This is the method of stabilizing the magnets: The motor is fitted with a fly-wheel with a sufficient moment of inertia and is then reversed or a special device is used which provides the required demagnetization force. 3) Magnets with a high coercive force and with great residual induction which goes with a very convex demagnetization curve must be chosen for the excitation of reversible d.c. motors. There are 3 figures and 3 references, 3 of which are Soviet.

SUBMITTED:
Card 2/2

August 12, 1957

L 39579-56
ACC NR: AP6000518

GD
SOURCE CODE: UR/0142/65/008/005/0530/0537

AUTHOR: Belousov, N. N.; Zakharov, Yu. S.

ORG: none

TITLE: Noise rejection by a signal detector based on the method of counting zeros

SOURCE: IVUZ. Radiotekhnika, v. 8, no. 5, 1965, 530-537

TOPIC TAGS: signal detector, signal noise separation

ABSTRACT: Noise rejection by a weak-signal detector based on the counting-zeros method (x-axis crossings by the incoming signal-noise mixture) is analyzed. The probabilities of false alarm and correct detection are estimated. It is found that: (1) The noise rejection depends on the frequency response of the filters used; by appropriate selection of the filters, the noise rejection of the counting-zeros detector can be made higher than that of the optimal amplitude detector; (2) The counting-zeros detector has these advantages over the optimal detector: (a) its threshold is independent of the gain of the linear part of the detector; (b) clipping permits wider dynamic range of input-signal amplitudes; (c) the numerical form of

UDC: 621.391.8

Card 1/2

1. 3757 A-58

ACC NR: AP6000518

the threshold is stable; (d) the counting integrator permits setting long detection time which is important in detecting weak signals; (3) The counting-zeros detector has these disadvantages: (a) noise rejection is affected when the signal frequency or filter center frequency is unstable; (b) the dependence of detection on the signal frequency results in a lower noise rejection when the exact signal frequency is unknown. Orig. art. has: 3 figures and 24 formulas.

SUB CODE: 09 / SUBM DATE: 11Mar64 / ORIG REF: 002

Card 2/2 | S

BELOUSOV, N.N.; ZAKHAROV, Yu.S.

Interference rejection of a signal detector operating on a zero count principle. Izv.vys.usheb.zav.; radiotekh. 8 no.5:530-537 S-0 '65. (MIRA 18:12)

1. Submitted October 6, 1964.

ZAKHAROV, Yu.V., inzh.; LEBEDEV, O.N., inzh.

Two simple methods for measurement of gas flow. Energomashino-
stroenie 6 no.3:41-43 Mr '60. (MIRA 13:6)
(Gas flow--Measurement)

ZAKHAROV, Yu. V., Cand Tech Sci -- (diss) "Experimental research into some principles of jet motion of gas and the efficiency of sharply directed drafts." Novosibirsk, 1960. 25 pp; with charts; (Ministry of River Fleet RSFSR, Leningrad Inst of Water Transport); 230 copies; price not given; (KL, 23-60, 124)

IGNATCHENKO, V.A.; DEGTYAREV, I.F.; ZAKHAROV, Yu.V.

Behavior of the domain structure during magnetization.
Izv. AN SSSR. Ser. fiz. 25 no.12:1439-1444 D '61. (MIRA 14:12)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.
(Ferromagnetism) (Crystal lattices)

KHOZE, A.N.; ZAKHAROV, Yu.V.

Studying the aerodynamics of furnaces and performance of marine
boilers with a strong blast. Trudy Transp.-energ.inst.Sib.otd.
AN SSSR no.8:79-88 '59. (MIRA 15:5)
(Furnaces--Aerodynamics)

D.YAKOV, V.I.; ZAKHAROV, Yu.V.

Simplifying the circuit of the MShchPr-54 control millivoltmeter.
Priborostroenie no.5:27 My '62. (MIRA 15:5)
(Voltmeter)

ACCESSION NR: AP4037637

S/0096/64/000/006/0040/0043

AUTHOR: Lupakov, I. S. (Candidate of technical sciences); Moskvichov, G. S. (Candidate of technical sciences); Zakharov, Yu. V. (Engineer); Gerasimov, V. V. (Doctor of technical sciences)

TITLE: Comparative investigation of the resistance of some austenitic and austenitic-ferritic steels to corrosion cracking

SOURCE: Teploenergetika, no. 6, 1964, 40-43

TOPIC TAGS: steel, stainless steel, austenitic stainless steel, OKh18N10T steel, austenitic ferritic steel, corrosion resistant steel, steel corrosion, corrosion cracking, steel corrosion cracking, stress corrosion, steel stress corrosion

ABSTRACT: Corrosion cracking resistance of ten chromium-nickel stainless steels containing 0.02—0.07% carbon, 19.2—22.42% chromium, 3.98—12.95% nickel, 0.12—1.13% titanium, 1.57—3.55% molybdenum (four steels), 0.15—0.22% silver (two steels), and 1—90% ferrite has been investigated with sheet specimens 1—1.5 mm thick, annealed at 1050C and air cooled. The corrosion cracking

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ACCESSION NR: AP4037637

tests were done in saturated vapor at 330C under a 150-bar pressure and 16—18 kg/mm² stress and for some specimens in a 42% magnesium chloride solution at 150C. Tests showed that ferrite content is no indicator of susceptibility to corrosion cracking. Susceptibility to corrosion cracking depends upon the electrochemical behavior of the structural components, which in turn is determined by the chemical composition of the components. It can be assumed that steels in which ferrite and austenite are both in the passive state and have roughly the same dissolution rates are susceptible to corrosion cracking. Two-phase steels containing 0.05% C, 19.0% Cr, 8.7% Ni, 0.22% Ti with 5—6% ferrite; 0.02% C, 19.2% Cr, 5.96% Ni, 0.15% Ti with 15—20% ferrite; or 0.04% C, 20.3% Cr, 6.47% Ni, 0.27% Ti, 1.57% Mo with 50—60% ferrite were found to be the most resistant to corrosion cracking and withstood the test for 400 hr. Molybdenum at a content of 1.57% does not appear to affect susceptibility to corrosion cracking, but definitely increased it at a content of 2.8% and more. The addition of 0.15—0.22% silver to steels with a low ferrite content increases the steel's resistance to corrosion cracking but lowers greatly its forgeability. Orig. art. has: 2 tables and 4 figures.

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27

ZAKHAROV, YU V

PHASE I. BOOK EXPLOITATION SOV/5457

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki metallov.

Metallovedeniye i termicheskaya obrabotka metallov; trudy Sektsii metallovedeniya i termicheskoy obrabotki metallov (Physical Metallurgy and Heat Treatment of Metals; Transactions of the Section of Physical Metallurgy and Heat Treatment of Metals) no. 2. Moscow, Mashgiz, 1960. 242 p. 6,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye pravleniye.

Editorial Board: G. I. Pogodin-Alekseyev, Yu. A. Geller, A. G. Babakadt, and G. K. Shreyber; Ed. of Publishing House: I. I. Lezhichenko; Tech. Ed.: B. I. Mordal; Managing Ed. for Literature on Metalworking and Machine-Tool Making: V. I. Mitin.

PURPOSE: This collection of articles is intended for metallurgists, mechanical engineers, and scientific research workers.

COVERAGE: The collection contains articles describing results of research conducted by members of NTO (Scientific Technical Society) of the machine-building industry in the field of physical metallurgy and in the heat treatment of steel, cast iron, and non-ferrous metals and alloys. No personalities are mentioned. Most of articles are accompanied by Soviet and non-Soviet references and contain conclusions drawn from investigations.

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Fakhtadt, A. G., Candidate of Technical Sciences, Docent, and Yu. V. Zakharov, Engineer. Transformation, Properties, and Application of Alloys of the Cu-Ni-Mn System Used for Springs 135

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Shepelyakov, K. Z., Candidate of Technical Sciences, and K. Z. Shepelyakov, Engineer. New Transformers for High-Frequency Quench-Hardening Installations 220

Porodin-Alekseyev, G. I., and V. V. Zabolotny-Zotov. Effect of Ultrasonics on the Structure-Formation Processes in Metal Alloys 229

AVAILABLE: Library of Congress (JN672.N34)

18 1220

24596

S/137/61/000/005/052/060
A006/A106

AUTHORS: Rakhshadt, A. G., and Zakharov, Yu. V.

TITLE: Transformations, properties and treatment of Cu-Ni-Mn system spring alloys

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 5, 1961, 28, abstract 5I213 (V sb. "Metallovedeniye i term obrabotka metallov" [Tr. Sektsii metalloved. i term. obrabotki metallov. Tsentr. pravl. Nauchno-tekhn. o-va mashinostroit. prom-sti, no. 2] Moscow, 1960, 135-159)

TEXT: The effect of heat treatment on the properties of 60-20-20 type alloys (60% Cu, 20% Ni, 20% Mn) was determined by measuring the hardness, internal friction E, electric resistivity and by microstructural and roentgenostructural analyses. It was found that strengthening depended on ordering (formation of θ' -phase, consisting of antiphase domains, separated by deficient layers) which begins and proceeds near the grain boundaries. The strong effect of quenching temperature on strengthening after tempering is caused by a fine-grained structure with crushed domains after low-temperature quenching. Plastic deformation of the alloy after quenching produces fine structure and eliminates the

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Transformations, properties and treatment ... 24596

S/137/61/000/005/052/060
A006/A106

effect of quenching temperature on strengthening during tempering. The addition of small B admixtures distributed along the boundaries of grains and domains retards considerably structural processes entailing strengthening but somewhat raises σ_e of the alloy and its relaxation stability during heating. Best properties are obtained after low-temperature quenching from 550°C and tempering at 400°C (10 hours). As a result of quenching at a heterogeneous fine-grained structure (solid solution on Cu and θ' phase base) satisfactory ductility is preserved. Tempering assures high strengthening. The relaxation stability during heating and resistance to weak deformation of a 60-20-20 alloy exceed those of expensive Be-bronze. σ_e of the 60-20-20 alloy without B is 78 kg/mm²; with B it is 86 kg/mm², σ_e of Sp.52 (BrB2) is 80 - 85 kg/mm²; and of Sp.52.5 (BrB2.5) it is 80 - 90 kg/mm². The 60-20-20 alloy can be employed for the manufacture of various types of spring. There are 26 references.

V. K.

[Abstractor's note: Complete translation]

Card 2/2

S/058/62/000/006/004/136
A061/A101

AUTHOR: Zakharov, Yu. V.

TITLE: The calculation of Lamb's shift in the spectrum of singly ionized helium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 34, abstract 6A296
(In collection: "Nekotoryye vopr. emission. i molekulyarn. spektroskopii", Krasnoyarsk, 1960, 229 - 231)

TEXT: The expression for Lamb's shift taking into account the terms of the order of $\alpha(\alpha Z)^4 \ln(\alpha Z)$, $\alpha(\alpha Z)^4$, $\alpha(\alpha Z)^5$ has been calculated in the paper by Karplus, R., et al. (Phys. Rev., 1952, v. 86, 228). The author substitutes the data for helium in this expression, while taking from other papers the values of the mean excitation energy and of the correction for the finiteness of the nuclear mass. When taking only the mentioned factors into account, it is not possible to reach an agreement between theory and experiment. Reviewer's comment. A considerably more precise analysis of Lamb's shift for singly ionized helium has been made by Leyzer (RZhFiz, 1962, 2A323; 2A324) by calculating cor-

Card 1/2

The calculation of...

S/058/62/000/006/004/136
A061/A101

reactions of higher orders (up to $\alpha(\alpha Z)^6 \text{In}(\alpha Z)$) and by taking also the nuclear structure into account. With these corrections a good agreement is reached between theory and experiment.

V. Bayer



[Abstracter's note: Complete translation]

Card 2/2

L 14926-63

EPR/EPF(c)/EPF(n)-2/EWP(q)/EWT(m)/BDS AFFTC/ASD/SSD

Ps-4/Pr-4/Pu-4 WW/JD/DM

ACCESSION NR: AP3003987

8/0089/63/015/001/0079/0080

AUTHORS: Lupakov, I. S.; Kuz'michev, Yu. S.; Zakharov, Yu. V. 80.TITLE: Determination of permeability at tubes and walls for helium 27

SOURCE: - Atomnaya energiya, v. 15, no. 1, 1963, 79-80

TOPIC TAGS: permeability of helium, helium diffusion, heat transfer, vacuum furnace

ABSTRACT: There is a discrepancy in the data concerning the diffusion of helium through metals. The present work was undertaken because of the possible applications of helium gas for heat transfer in installations working at high pressures and temperatures. The experimental arrangement consisted essentially of a vacuum furnace, leak detector (mass spectrometer type) PFI-4A, pumps and a helium tank. The method of measurement consisted of determination of the amount of gas (by pressure measurements) in the chamber surrounding the tube under study, accumulating, in a given time, after the stationary condition was established. This condition was checked with the leak detector. By measuring the accumulation of gas with and without helium in the tube, the permeability of helium was determined, as the difference of these two measurements. For tubes made of stainless steel and of a nickel alloy, it was found that at 600C and 60 atm/cm², the permeability was less than 1×10^{-9} liters/sec*cm².

Card 1/1

YEGOROV, G.L., inzh.; ZAKHAROV, Yu.V., kand. tekhn. nauk

Regulating atomizers and air feed in mazut-fired marine
boilers. Trudy NIIVTa no.10:85-90 '62. (MIRA 16:6)

(Boilers, Marine—Firing)
(Atomization)

L 35457-65 EWP(n)/EWT(1)/FCS(k)/EWA(d)/EWA(1) Pd-1

ACCESSION NR: AP5007800

S/0281/65/000/001/0129/0134

AUTHOR: Sevast'yanov, R. I.; Zakharov, Yu. V.; Alad'yev, I. T.

TITLE: The influence of tube length, nonuniformity in heat liberation, and "worm"-type whirlers on the critical heat currents in pipes

SOURCE: AN SSSR. Izvestiya, Energetika i transport, no. 1, 1965, 129-134

TOPIC TAGS: critical fluid flow, critical heat flow, turbulent flow, forced convection, heat loss

ABSTRACT: The majority of reports on the critical heat currents in various fluids flowing through channels of different geometry refer to cases when the kernel of the fluid flow is not heated up to the saturation temperature. The present authors established the dependence of the critical heat flow during the boiling of water within tubes 8 mm in diameter (d) at a pressure of approximately 175 atm. abs. on the mass velocity of the flow (10-500 kg/m² sec) and the heated length (L) of the tube (L/d=25-150). The magnitude of the necessary pressure was obtained from the modeling conditions which would permit the application of the results to other liquids with high boiling points. The authors also studied the influence of non-uniformity in heat liberation along the tube, and of "worm"-type whirlers, on the

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L 35457-65

ACCESSION NR: AP5007800

magnitude of the critical heat currents. These data as well as those on the local and average critical heat flows as a function of the mass speed of the fluid and the degree of nonuniformity are given in the form of tables and diagrams. Orig. art. has: 8 formulas, 4 figures, and 1 table.

ASSOCIATION: none

SUBMITTED: 27May64

ENCL: 00

SUB CODE: ME, TD

NO REF SOV: 009

OTHER: 005

Card 2/2

LAKHANIN, Vladimir Vladimirovich; ZAKHAROV, Yuriy Vasil'yevich;
LEBEDEV, Oleg Nikolayevich; FEDOROV, G.N., ratsenent;
MIGICHEV, B.S., red.; SHLENNIKOVA, Z.V., red.

[Use of atomic energy in water transport] Ispol'zovanie
atomnoi energii na vodnom transporte. Moskva, Transport,
1965. 187 p. (MIRA 18:4)

ACCESSION NR: AP4023408

S/0048/84/028/003/0568/0571

AUTHOR: Ignatchenko, V.A.; Zakharov, Yu.V.

TITLE: On taking into account the finite geometrical dimensions of the ferromagnet in the theory of domain structure [Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.3, 1964, 568-571

TOPIC TAGS: domain size, finite crystal domain size, thin film domain size, domain size theory

ABSTRACT: The size of the domains in a finite rectangular parallelepiped having the simple domain structure illustrated in Fig.1 of the Enclosure is discussed theoretically. The surface energy density in a domain wall is assumed to be independent of the size of the crystal. The problem thus reduces to that of calculating the energy of the system in its own demagnetizing field. After a brief discussion of formulas for the demagnetization energy previously published for the case in which the crystal is finite only in the z direction (see figure) (C.Kittel, Rev.Mod.Phys.21,541, 1949; J.Goodenough, Phys, Rev.102,356,1956), and for the case in which the crystal is

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ACCESSION NR: AP4023408

finite in the y and z directions (V.A. Ignatchenko, I.F. Degtyarev and Yu.V. Zakharov, Izv. AN SSSR, Ser. fiz. 25, 1439, 1961), the authors present an analogous formula that they have derived for the case in which the crystal is finite in all three directions. The demagnetization energy was evaluated numerically for the case of a square thin film in the x-z plane and the condition was derived that a uniformly magnetized film be stable against domain formation. This condition is

$$y_0 < k \frac{\gamma}{M_s^2}$$

where y_0 is the thickness of the film, M_s is the saturation magnetization, γ is the surface energy density of the domain walls, and the dimensionless quantity k is a function of the side $x_0 = x_0$ of the square film. When x_0 is 0.2, 0.2 or 2.0 cm, the value of k is 4.03, 1.67 or 0.177, respectively. Thus, a 1 cm² film of a material having a saturation magnetization of 600 gauss and a domain wall energy density of 1 erg/cm² will be stable against domain formation provided it is less than about 50 Å thick. Orig. art. has: 10 formulas and 2 figures.

Card

2/4

ACCESSION NR: AP4023408

ASSOCIATION: Institut fiziki Siberskogo otdeleniya Akademii nauk SSSR (Institute of
Physics, Siberian Division, Academy of Sciences, SSSR)

SUBMITTED: OO

DATE ACQ: 10Apr64

ENCL: 01

SUB CODE: PH

NR REF SOV: 004

OTHER: 005

Card 3/4

39482
S/056/62/043/002/016/053
3102/3104

24,2200

AUTHORS: Ignatchenko, V. A., Zakharov, Yu. V.

TITLE: Domain structure of thin ferromagnetic films

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 2(8), 1962, 459-461

TEXT: The equilibrium domain structure of a uniaxial ferromagnetic plate of thickness y_0 with its axis of easiest magnetization lying in the plane of the sample is calculated. The volume density of the energy of the demagnetizing fields is given by

$$F_m = \frac{32y_0^2 J_s^2}{\pi^2 \alpha_0} \sum_{n \in \mathbb{N}} \frac{1}{m^2} \left\{ \frac{\pi^2}{2} \operatorname{Arsh} \frac{2\delta}{45m} + 18,09 [1 + (45m/2\delta)^2]^{-1/2} + \right. \\ \left. + 4,75 [1 + (45m/24\delta)^2]^{-1/2} + 0,51 [1 + (45m/46\delta)^2]^{-1/2} + \right. \\ \left. + 0,18 [1 + (45m/68\delta)^2]^{-1/2} + (\delta^2/m^2) [\sqrt{1 + (m/2\delta)^2} - 1] \right\}, \quad \delta = D/y_0. \quad (2)$$

where J_s is the surface density of magnetic poles, D is the domain diameter,

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Domain structure of thin ...

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B102/B104

and z_0 is the plate dimension along the direction of easiest magnetization. Perpendicular to z_0 the plate is infinitely long. The equilibrium width of a domain: $R(\delta) = \gamma z_0 / J_s^2 y_0^2$ is derived from the free energy minimum condition. Here, γ is the surface density of the end-point energy. For $\delta \ll 1$ (massive material) $D = (\pi/4) [\gamma z_0 / 1.052 J_s^2]^{1/2}$; this relation agrees with the Kittel formula with an error of 1.2%. If $\delta \gg 1$, $D = 0.493 \gamma z_0 / J_s^2 y_0 - 24.8 y_0$. These relations hold for a sufficient number of domains in the sample so that the surface density of magnetic poles is a periodic function. There is 1 figure.

X

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR
(Institute of Physics of the Siberian Department of the Academy of Sciences USSR)

SUBMITTED: October 28, 1961

Card 2/2

RAKHSHTADT, A.G., kand.tekhn.nauk, dots.; ZAKHAROV, Yu.V., inzh.

Transformations, properties and treatment of spring alloys of the
system Cu - Ni - Mn. Trudy Sek.metalloved.i term.obr.met.MTO mash.
prom. no.2:135-159: '60. (MIRA 14:4)
(Copper-Nickel-Manganese alloys—Metallography)
(Phase rule and equilibrium) (Elasticity)