

PHASE I BOOK EXPLOITATION

SOV/5414

Nechayev, P. A., Engineer, A. A. Yakushenkov, Candidate of Technical Sciences, and N. B. Kudrevich, Engineer

Elektronavigatsionnyye pribory (Electric Navigation Instruments)
Leningrad, Izd-vo "Morskoy transport," 1960. 496 p. Errata slip inserted. 8,000 copies printed.

Special Ed.: D. N. Ikonnikov; Ed. of Publishing House: K.N. Denisov;
Tech. Ed.: L. P. Drozhzhina.

PURPOSE: This book is intended for students in the navigation departments of maritime academies and is composed in accordance with the program approved by the Ministry of Merchant Marine.

COVERAGE: The textbook presents elements of theory and the fundamentals of construction and operation of modern gyrocompasses used on ships of the fishing industry and merchant marine. Individual sections cover logs and sounding devices. The theoretical material of the book is based on elementary mathematics and is confirmed by consideration of the physical nature of the processes and phenomena.

Card ~~1/12~~

Electric Navigation Instruments

SOV/5414

studied. The first part of the book, "Gyrocompasses", was written by Engineer P. A. Nechayev (Introduction, Chapters I, II, III, V, VI, VII, and VIII) and Candidate of Technical Sciences A. A. Yakushenkov (Chapters IV and IX); the second part, "Logs", was written by Engineer A. D. Kuznetsov, and the third part, "Sounding Devices", by Engineer N. B. Kudrevich. Also participating was Engineer V. Ya. Khodyrev who wrote sections 29, 30, 31, and 32. The authors thank D. N. Ikonnikov, docent, and Engineers A. F. Matsyuto, M. Ye. Ivanov, F. S. Boytsov, B. A. Grebenshchikov, and V. V. Kvoksha. No personalities are mentioned. There are 16 references, all Soviet.

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Card 2/12

BLINOV, Igor' Aleksandrovich, dots., kand. tekhn. nauk; ZHERLAKOV, Aleksandr Vasil'yevich, dots., kand. tekhn. nauk; IKONNIKOV, Dmitriy Nikolayevich, dots.; SMIRNOV, Yevgeniy Leonidovich, dots., kand. tekhn. nauk; YAKUSHENKOV, Andrey Andreyevich, starshiy nauchnyy sotr., kand. tekhn.nauk; SIGACHEV, N.I., dots., kand. tekhn. nauk, retsenzent; RODIONOV, A.I., dots., kand. tekhn. nauk, retsenzent; ZOTEYEV, Ye.S., kand. fiz.-mat. nauk, retsenzent; SERKO, G.S., red.; TIKHONOVA, Ye.A., tokhn. rod.

[Electric navigation instruments] Elektronavigatsionnye pribory. [By] I.A.Blinov i dr. Moskva, Izd-vo "Morskoi transport," 1960. 674 p. (MIRA 15:3)
(Electricity on ships) (Aids to navigation)

28540

S/123/61/000/018/011/015
A004/A101

13,2520

AUTHOR: Yakushenkov, A. A.

TITLE: On the effect of an inaccurate initial orienting and side drift of the azimuth gyroscope on the accuracy of the inertial navigation system with integrated speed correction

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 18, 1961, 18, abstract 18D109 ("Tr. Tsentr. n.-i. in-ta morsk. flota", 1960, no. 30, 16-27)

TEXT: The author investigates the behavior of a 3-axis inertial platform with three two-stage integrating gyroscopes and two accelerometers. To simplify the analysis, the case is discussed when the object is located on the equator and has no speed relative to Earth. It is shown that an inaccurate initial setting along the azimuth causes complex oscillations, in which components with the Shuler period and with the period of the Earth's rotation are included. To eliminate these errors the author suggests to introduce into the system external information not only on the speed and coordinates of the object, but also on its course. This makes it possible to damp the oscillations in the system. There are 3 figures.

[Abstracter's note: Complete translation]

I. Lekhtman

Card 1/1

31230

S/123/61/000/020/027/035

A004/A101

13,2521

AUTHOR: Yakushenkov, A. A.

TITLE: On the condition of aperiodic transition of single-rotor gyrocompasses

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 20, 1961, 23, abstract 20D134 ("Tr. Tsent. n.-i. in-ta morsk. flota", 1960, no. 30, 91-97)

TEXT: The author discusses the problem of increasing the accuracy of single-rotor gyrocompasses with braking suspension by way of theoretically improving the production conditions of aperiodic gyrocompasses satisfying the requirements of the Shuler theorem. The oscillations relative to the position of the dynamic equilibrium of the gyrocompass are assumed to be small; the effect of the components of the ship's speed is taken into account. The author determined the period of sustained oscillations and the conditions of aperiodic transitions of gyrocompasses. It is shown that the Shuler condition on the absence of inertial errors of gyrocompasses, if the period of sustained oscillations is equal to 84.4 minutes, is correct if the ship's own speed is taken

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On the condition of aperiodic transition ...

S/123/61/000/020/027/035
A004/A101

into account and at any direction of the horizontal acceleration of the gyro-compass bearings. It was found that the Shuler period (84.4 min) is the period of a mathematical pendulum of infinite length. There are 3 figures and 3 references.

+

F. G. M.

[Abstracter's note: Complete translation]

Card 2/2

SYROMYATNIKOV, V.; YAKUSHENKOV, A.

Important problems concerning the complex of seagoing ships; a book review. Vestis Latv ak no.3:165-167 '61.

(EEAI 10:9)

(Ships)

POLYANSKIY, V.M.; YAKUSHENKOV, A.A., kand.tekhn.nauk

Economic efficiency in the use of radio navigation systems in
the merchant marine. Inform.sbor.TSNIMF no.60 Sudovozh. 1
sviaz' no.15:7-13 '61. (MIRA 16:2)
(Radio in navigation)
(Merchant marine—Cost of operation)

YAKUSHENKOV, A.A., kand.tekhn.nauk

Automatic navigation of ships according to a given program.
Trudy TSNIIIMF no.39:3-11 '61. (MIRA 15:5)
(Navigation) (Programming (Electronic computers))

YAKUSHENKOV, A.A., kand. tekhn. nauk; KONDRASHIKHIN, V.T.

Method of the automatic control of a ship on the amount and speed of lateral shifting. Inform. sbor. TSNIIMF no.74: Sudovo-vozh. i sviaz' no.19:41-47 '62. (MIRA 16:6)

(Ship handling)
(Automatic control)

GURIN, L., kand.ekon.nauk; YAKUSHENKOV, A., kand.tekhn.nauk

Introduce new specialties rather than redescribe the old. Mor.:
flot 22 no.2:15 F '62. (MIRA 15:4)
(Merchant seamen)

YAKUSHENKOV, A., kand.tekhn.nauk

Automatic control of ship handling and new navigation methods.
Mor. flot 22 no.11:11-13 N '62. (MIRA 15:12)

1. Nachal'nik otdela tekhnicheskikh sredstv sudovozhdeniya
TSentral'nogo nauchno-issledovatel'skogo instituta morskogo
flota.

(Ship handling)
(Electronics in navigation)

YAKUSHENKOV, Andrey Andreyevich, kand. tokhn. nauk; YUSHCHENKO,
A.P., red.; MESHKOV, O.I., red.izd-va; TIKHONOVA, Ye.A.,
tekhn. red.

[Principles of inertial navigation] Osnovy inertsial'noi
navigatsii. Moskva, Izd-vo "Morskoi transport," 1963. 145 p.
(MIRA 16:12)

(Inertial navigation)

L 39100-66 EWT(d) BC

ACC NR: AT6014771

(N)

SOURCE CODE: UR/2752,65/000/051/0003/0014

AUTHOR: Yakushenkov, A. A. (Candidate of technical sciences)

ORG: none

TITLE: The effect of coordinate determination errors on the accuracy of an automatic navigation system

SOURCE: Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota.
Trudy, no. 51, 1963. Vychislitel'naya tekhnika i avtomatizatsiya na morskoy flote
(Computer technology and automation in the merchant marine), 3-14

TOPIC TAGS: automatic navigator, tracking system, error minimization, ship navigation

ABSTRACT: In an automatic navigation system, the regulated quantity is taken to be the angle of trajectory formed by the true speed vector of the vessel and the line of the given path tangent to it. Regulation is performed by movement of the rudder. The control system consists of the complex of navigational instruments. A computer determines the departures of the vessel from true course on the basis of information from the position transmitter. A mathematical estimate is given of the possible improvement arising from the use of two different navigational instruments as position transmitters. It is shown that this procedure considerably reduces the errors in the angle of trajectory caused by errors in coordinate determination. Orig. art. has: 56 formulas, 1 table, 4 figures.

SUB CODE: 17,13/

SUBM DATE: none/

ORIG REF: 005

Card 1/1 MLP

YAKUSHENKOV, A.A., kand.tekhn.nauk

Effect of unsteady roll and yaw on the accuracy of single rotor
gyrocompasses. Trudy TSNIIMF 8 no.47:45-54 '63. (MIRA 16:12)

YAKUSHENKOV, A.A., kand.tekhn.nauk; KHODYREV, V.Ya.

New method of correcting a single-rotor gyrocompass with torque
gimbals of the sensitive element. Trudy TSNIIMF 8 no.47:55-59
'63. (MIRA 16:12)

YAKUSHENKOV, A.A., kand. tekhn. nauk

New gyrocompasses and prospects for developing a means of
navigation course indication for the merchant marine. Inform.
sbor. TSNIIMF no.115. Sudovozh. i svyaz' no.26:3-37 '64.
(MIRA 18:2)

YAKUSHENKOV, A.A., kand. tekhn. nauk

A ship as the object of automatic control. Trudy TSNIIMF no.55:
3-27 '64. (MIRA 18:2)

SMIRNOV, Yevgeniy Leonidovich; YAKUSHENKOV, Andrey Andreyevich;
BLINNIKOV, Mikhail Yefimovich; FILIPCHENKO, Vladimir
Grigor'yevich; MESHKOV, G.I., red.

[Estimating gyrocompass errors in navigation] Uchet pog-
reshnostei girokompasa v sudovozhdenii. [By] E.L. Smirnov
i dr. Moskva, "Transport," 1964. 66 p. (MIRA 17:7)

(N) L 11075-66 EWT(d) BC

ACC NR: AR6000422

SOURCE CODE: UR/0271/65/000/009/8057/8058

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika, Abs. 9B457'

AUTHOR: Yakushenkov, A. A.; Perevezentsev, Ye. N.

TITLE: Optimal systems of automatic ship navigation using computers

CITED SOURCE: Sb. po obmenu opytom primeneniya vychisl. tekhn. na vodn. transp. M. - L., Transport, 1964, 110-124

TOPIC TAGS: ship navigation, navigation computer

TRANSLATION: Two topics are considered: (1) The state of and prospects for the automatic ship-navigation systems; (a) selection of the best path depending on the navigation conditions; (b) obtaining and processing navigational information needed for ship steering; (c) ship steering proper according to a prepared program; (d) optimization of the automatic navigation system; (2) Automatic ship navigation as a probabilistic information process; (a) from the received primary information, to obtain information on the ship position in a definite coordinate system, on the parameters of ship movements, etc., according to a specified program; (b) based on a control algorithm and the gained navigational information, ship control operations can be carried out. Bib 3, figs 4.

SUB CODE: 17

Card 1/1

NW

UDC: 681.421.347.343:629.12

2

29
B

L 27051-66 EWT(d) BC

ACC NR: AT6005743

(N)

UR/2914/64/000/115/0003/CC37

AUTHOR: Yakushonkov, A.A. (Candidate of technical sciences)

40

ORG: None

37

TITLE: New gyrocompasses⁹ and outlook for the development of means for navigational course indication for the fleet

B+1

SOURCE: Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota. Informatsionnyy sbornik, no. 115, 1964. Sudovozhdeniye i svyaz' (Navigation and communications), no. 26, 3-37

TOPIC TAGS: navigation aid, ship navigation, gyroscope system, gyrocompass

ABSTRACT: The paper is an expository review of gyroscopic navigational⁹ developments, leading up to an outlook and recommendations for optimum course-indicating navigational systems, aimed at the practical requirements of sea transport. The first chapter is a review of course and position indicating navigational aids, including magnetic compasses, gyrocompasses, directional gyroscopes, gyromagnetic (slaved) gyros, inertial systems and inertial/doppler systems. The second chapter deals with the requirements for the directional and positional course indicating systems related to the need of commercial seafleet operations. The principles and some mathematical background of

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UDC: 629.12.018.5

L 27051-66

ACC NR: AT6005743

3

operation of two and three degrees-of-freedom gyroscopes are presented in the third chapter. The HIG (hermetically sealed integrating) gyroscope is then described briefly in connection with its utilization in the inertial systems. Reviewed gyroscopic instruments include some products of Arma, Sperry, Anschuetz, Plat, Microtechnika and Brown. Of the Soviet gyro instruments, a very brief mention is made of the single gyro gyrocompasses GUM-VIII and MOK, and the two-gyro gyrocompasses "Kurs" and "Amur". The British Admiralty induction type magnetic compass system of Kelvin-Hughes, and the Danish Navy magnetic system produced by Arkas are also noted. The conclusions and recommendations of the author emphasize subsystem autonomy, reliability improvement by system redundancy and outright duplication, and the integration of all available shipboard course indicating means into an optimized navigational system. The introduction of the directional gyro operational mode ("astatic gyroscope") into the shipboard navigational gyrocompasses is recommended to assure capability for fast short time navigation at high latitudes. Orig. art. has: 9 figures, 8 formulas.

SUB CODE: 17

SUBM DATE: 00

ORIG REF: 005

OTH REF: 001

Card 2/2/1

ACC NR: AR6028522

(N)

SOURCE CODE: UR/0398/66/000/005/V021/W22

AUTHOR: Yakushenkov, A. A.

TITLE: Automatic stabilization of a ship on an assigned movement trajectory

SOURCE: Ref. zh. Vodnyy transport, Abs. 5V104

REF SOURCE: Tr. Tsentr. n.-i. in-ta morsk. flota, vyp. 64, 1965, 3-18

TOPIC TAGS: automatic stabilization equipment, cargo ship, ship navigation, ~~math-~~
~~ematic method~~, shipbuilding engineering, ~~trajectory optimization~~, shipborne automatic control system

ABSTRACT: Questions of synthesis of a system for controlling a ship and designed to automatically stabilize the ship's center of gravity on an assigned course line are reviewed in a linear arrangement. But no simplified assumptions as to the nature of the perturbation movement of the ship are given. It is demonstrated that in the class of regulation systems according to deviations, it is possible to construct a closed system of equations providing for the unperturbability of the lateral displacement of the ship by external influences (forces and movements) applied to the ship. The analysis is the basis for considering the following questions: (1) a system for automatically stabilizing the ship on an assigned trajectory within a class of regulation systems in accordance with deviation, and which has the following proper-

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UDC: 656.61.052.15

ACC NR: AR6028522

ties can be created with the help of two regulating organs (the main and the auxiliary steering gear): (a) the lateral displacement of the center of gravity of the ship with an assigned trajectory is invariant to the external perturbing effect; (b) change in course angle is invariant to the external perturbing moment; (c) constant currents create no static errors in the lateral displacement system; (d) dynamic stability of the system is provided for; (e) the ship's course angle control is retained; (2) it is necessary to provide an input to the system for controlling the following signals in order to obtain the qualities listed: (a) course angle, the values for the lateral displacement, and an integral of one value, to the main regulator; (b) drift angle to the auxiliary regulator. Both regulators must be contained by rigidly cross-connected feedbacks; (3) the conditions for invariance obtained in the work establish the connection between the regulation parameters, which are not dependent on ship's speed and load, and are not dependent on the type of transfer function of lateral displacement; (4) the results of the work can be used in designing automatic navigation systems for newly building automated ships for the merchant marine. 3 figures. I. Makarov. [Translation of abstract]

SUB CODE: 17, 13

Card 2/2

ACC NR: AR6034813 (N) SOURCE CODE: UR/0398/66/000/008/V013/V014

AUTHOR: Yakushenkov, A. A.

TITLE: Use of inertial navigation systems

SOURCE: Ref. zh. Vodnyy transport, Abs. 8V92

REF SOURCE: Inform. sb. Tsent. n. -i. in-t morsk. flota, no. 31(141), 1965,
3-17

TOPIC TAGS: inertial navigation equipment, ship navigation, inertial guidance,
inertial guidance system

ABSTRACT: The following uses of inertial systems as compared to existing ship navigation facilities are described: inertial course finding, inertial determination of the vertical, inertial ship navigation. It is noted that inertial navigation systems are a promising method of navigation which can not only provide uninterrupted navigation information, but likewise insures automatic ship navigation. Inertial systems will supersede all existing autonomous navigation systems. In order to achieve automatic ship navigation it is useful to use the inertial system oriented in

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UDC: 556.61.052

ACC NR: AR6034813

the ship's system of route coordinates. Such a system included in the self-regulation chain offers the simplest solution of the problem of automatization of the ship's navigation according to a given program. At present it is not feasible to achieve completely autonomous inertial ship navigation for long periods of time. But the inertial system can be used simultaneously with nonautonomous navigation facilities to produce sufficiently effective complex system of automatic navigation. I. Makarov. [Translation of abstract] [GC]

SUB CODE: 13/

Card 2/2

YAKUSHENKOV, S.M.

VIDANOV, V.A.; KASHEKOV, L.Ya., inzhener; YAKUSHENKOV, S.M., inzhener;
MATVEYEVA, Ye.N., tekhnicheskii redaktor

[BN-3 drilling and pumping unit developed by V.A.Vidanov] Buril'no-
nasosnaya ustanovka BN-3 sistemy V.A.Vidanova. Moskva, Gos. nauchno-
tekhn. izd-vo mashinostroit. lit-ry, 1957. 21 p. (MIRA 10:7)

1. Vsesoyuznyy institut mekhanisatsii (for Kashekov, Yakushenkov)
(Boring machinery) (Pumping Machinery)

ACCESSION NO. AP4048298

S/0146/64/007/005/0128/0131

AUTHOR: Yakushenkov, Yu. G.

TITLE: Calculation of the accuracy of an automatic photoelectric goniometric system

10

SOURCE: IVUZ. Priborostroyeniye, v. 7, no. 5, 1964, 128-131

TOPIC TAGS: goniometer 25

ABSTRACT: A goniometer system with a stationary beam-splitting block and movable compensating (scanning) plate 1 located after the objective is considered (see Enclosure 1). When an error arises, i. e., the beam axis deviates from the optical axis, the quantities of radiant energy passing during the two halves of the obturation period become different. Receiver 2 will produce an electric signal proportional to the angular error. The signal is amplified and applied to the control winding of a phase-induction actuator motor 3, whose excitation

L 18233-65

ACCESSION NR: AP4048298

winding is supplied from reference-voltage source 4. The motor, via a feedback (dotted line) will slew plate 1 until a new equilibrium is attained. A few hints about the testing the accuracy of the optics-receiver-amplifier-actuator system. The computer is intended for automatic-checking of data. Orig. art. has: 1 figure and 5 formulas.

ASSOCIATION: Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartirovaniya (Moscow Institute of Geodetic, Air-Surveying, and Mapping Engineers)

SUBMITTED: 28Dec63

ENCL: 01

SUB CODE: IE, EC

NO REL. SOV: 002

OTHER: 000

Card 2/3

KORNDORF, S.F.; FEKLISTOV, Ye.M., kand. tekhn. nauk, retsenzent;
YAKUSHENKOV, Yu.G., kand. tekhn. nauk, red

[Photoelectric measuring devices used in the manufacture
of machinery] Fotoelektricheskie izmeritel'nye ustroistva
v mashinostroenii. Moskva, Mashinostroenie, 1965. 193 p.
(MIRA 18:4)

YAKUSHENKOV, Yuriy Grigor'yevich; LYUBIMOVA, T.M., red.

[Physical principles of optical-electronic devices]
Fizicheskie osnovy optiko-elektronnykh priborov. Mo-
skva, Sovetskoe radio, 1965. 208 p. (MIRA 18:3)

VORONTSOV, L.N.; VIKHMAN, V.S., doktor tekhn. nauk, prof.,
retsenzent; YAKUSHENKOV, Yu.G., kand. tekhn. nauk, red.

[Photoelectric systems of control of linear magnitudes]
Fotoelektricheskie sistemy kontrolya lineinykh velichin.
Moskva, Mashinostroenie, 1965. 235 p. (MIRA 18:5)

YAKUSHENKOV, Yu.G., kand. tekhn. nauk

Using photoelectronic multipliers with large light flows. Izv.
vys. ucheb. zav.; geod. i aerof. no.4:105-110 '64.

(MIRA 18:2)

1. Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i
kartografii. Rekomendovana kafedroy priborostroyeniya.

YAKUSHENSKY

POLAND / Physical Chemistry. Thermodynamics, Thermo-chemistry, Equilibriums, Phys. Chem. Analysis, Phase Transitions. B

Abs Jour: Ref Zhur-Khimiya, No 16, 1958, 52915.

Author : Doryabalskaya, Yakushensky, ^{Kvapiński, 16.} Kvapinsky.

Inst : Not given.

Title : Thermochemical Studies in the Field of Selenium Allotropy.

Orig Pub: Zesz. nauk. Politechn. łodzkiej, 1957, No 18, 45-56.

Abstract: The heat of transformation of amorphous Se into the metal when heated above the transformation point is determined as well as the heat of metal Se transformation into amorphous Se by means of

Card 1/2

YAKUSHER, V.P.; SHREYNER, L.A.

Effect of mineralogical composition and texture of rocks on
their hardness and plasticity. Trudy Inst.nefti 11:3-17
'58. (MIRA 11:12)

(Petrology)

YAKUSHEV, A., inzh.; SMOL'SKIY, L., inzh.; BIRNAS, I., inzh.; AKISHEV,
B., inzh.

Panel houses built of reinforced concrete elements made in plants
with conveying and flow-line equipment. Zhil.stroi. no.4/5:18-21
'58. (MIRA 12:6)

(Apartment houses)
(Precast concrete construction)

GRAYPEL', S.; YAKUSHEV, A.

This is the way the detachment operated. Voen. znan. 40 no.2:
25-26 Ag '64. (MIRA 17:11)

YAKUSHEV, A.A., inzhener; PLOTKE, G.S., inzhener.

Experience with vibration grinding of cement in factory production
of precast reinforced concrete. Bet. 1 shel.-bet. no.2:41-45 P '56.
(Cement)

GORBACHEV, S.S., inzh.; KHANIN, Ye.M., inzh.; MOROZOV, N.F., inzh.;
RABINOVICH, Ye.M., inzh.; STROYEV, A.Ye., inzh.; FEL'MAN, Ya.M.,
inzh.; DOLGIKH, V.M., inzh.; ROGACHEV, S.A., inzh.; YAKUSHEV, A.A.

Dismountable plant for making and assembling house made of
large aerated concrete blocks. Rats.i izobr.predl.v stroi.
no.12:11-18 '59. (MIRA 13:5)

1. Glavnyy inzhener Konstruktorskogo byuro po zhelezobetonu
Glavmosoblstroyaterialov pri Mosoblispolkome (for Yakushev).
2. Konstruktorskoye byuro po zhelezobetonu Glavmosoblstroy-
aterialov, Moskva, D'yakov per., d.4 (for all).
(Lightweight concrete) (Concrete blocks)

YAKUSHEV, A.A.

FRENKEL', I.M., kand. tekhn. nauk; MIRONOV, S.A., doktor tekhn. nauk, prof.; BARANOV, A.T., kand. tekhn. nauk; BUZHEVICH, G.A., kand. tekhn. nauk; MIKHAYLOV, K.V., kand. tekhn. nauk; MULIN, N.M., kand. tekhn. nauk; KHAYLUKOV, G.K., kand. tekhn. nauk; KORNEV, N.A., kand. tekhn. nauk; TESLER, P.A., kand. tekhn. nauk; BERDICHEVSKIY, G.I., kand. tekhn. nauk; VASIL'YEV, A.P., kand. tekhn. nauk; LYUDKOVSKIY, I.G., kand. tekhn. nauk; SVETOV, A.A., kand. tekhn. nauk; CHINENKOV, Yu.V., kand. tekhn. nauk; BELOBROVYY, K., inzh.; KLEVTSOV, V.A., inzh.; DOBROMYSLOV, N.S., arkh.; DESOV, A.Ye., doktor tekhn. nauk, prof.; LITVER, S.L., kand. tekhn. nauk; PISHCHIK, M.A., inzh.; SKLYAR, B.L., inzh.; POPOV, A.P., kand. tekhn. nauk; NEKRASOV, K.D., doktor tekhn. nauk, prof.; MILOVANOV, A.F., kand. tekhn. nauk; TAL', K.E., kand. tekhn. nauk; KALATUROV, B.A., kand. tekhn. nauk; KARTASHOV, K.N., red.; MAKARICHEV, V.V., kand. tekhn. nauk, red.; YAKUSHEV, A.A., inzh., nauchnyy red.; BEGA, B.A., red. izd-va; NAUMOVA, G.D., tekhn. red.

[Reinforced concrete products; present state and prospects for development] Zhelezobetonnye konstruksii; sostoianie i perspektivy razvitiia. Pod obshchei red. K.N.Kartashova i V.V.Makaricheva. Moskva, Gosstroizdat, 1962. 279 p.

(MIRA 15:8)

(Continued on next card)

FRENKEL', I.M.---(continued) Card 2.

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i zhelezobetona, Perovo. 2. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Kartashov). 3. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Mironov).
4. Gosudarstvennyy institut tipovogo proyektirovaniya i tekhnicheskikh issledovaniy (for Berdichevskiy, Vasil'yev, Lyudkovskiy, Svetov, Chinenkov, Bolobrovyy, Klevtsov, Dobromyslov).
4. Vsesoyuznyy gosudarstvennyy projektno-konstruktorskiy institut (for Desov, Litver, Pishchik).

(Precast concrete)

RIGER, L. [Rieger, Ladislav] [deceased]; VAGNER, V.N.[translator];
~~YAKUSHEV, A.A., red.~~; KHAR'KOVSKAYA, L.M., tekhn.red.

[Introduction to the cosmology] Vvedenie v kosmologiu.
Moskva, Izd-vo inostr.lit-ry, 1959. 127 p. (MIRA 12:10)
(Cosmology)

YELEN'SKIY, Shchepan [Jelenski, Shchepan]; BOYARSKAYA, G.F. [translator];
BOYARSKIY, B.V. [translator]; YAKUSHEV, A.A. [translator]; SHIROKOV,
F.V., nauchmyy red.; MIXOYAN, E.P., otv. red.; MARKOVICH, S.G.,
tekh. red.

[Following the tracks of Pythagoras; entertaining mathematics] Po
sledam Pifagora; zanimatel'naya matematika. Moskva, Gos. izd-vo
detskoi lit-ry M-va prosv. RSFSR, 1961. 485 p. Translated from
the Polish. (MIRA 14:9)

(Mathematics--Juvenile literature)

AKISHEV, Boris Sergeevich; YAKUSHEV, A.A., nauchn. red.; SHIROKOVAA,
G.M., red.

[Large-panel construction from components made at plants for
reinforced concrete and silicate products (Series 1-467)]Krup-
nopanel'noe stroitel'stvo iz detalei, izgotovlennykh na zavo-
dakh zhelezobetonnykh i silikatnykh izdelii (Seria 1-467). Mo-
skva, Stroiizdat, 1964. 141 p. (MIRA 17:3)

YAKUSHEV, A.A., man.

Large-panel buildings in series 467A. Transp. stroi. 15 no.1:
23-26 Ja '65. (MIRA 18:3)

YAKUSHEV, A.A., kand. filosofskikh nauk

Structure of forms of thinking. Trudy MIIT no.223:59-74
165. (MIRA 18:11)

YAKUSHEV, A.D.

SMIRNOV, A.S.; YAKUSHEV, A.D., inzhener.

Surface smoothness modifications in electrodeposition. Standartizatsiia
no.3:58-63 My-Je '54. (MLRA 7:6)

1. Nachal'nik instrumental'nogo otdela NII Ministerstva sudostroitel'noy
promyshlennosti (for Smirnov).
(Electroplating) (Surfaces (Technology)--Standards)

BELIKOV, Sergey Ivanovich, inzh.; DOKUNINA, Natal'ya Aleksandrovna,
kand. tekhn. nauk; BURDINA, Nadezhda Nikolayevna, inzh.;
KRINZBERG, F.Ye., inzh., ~~retsensent~~; YAKUSHEV, A.I., prof. doktor
tekhn. nauk, retsensent; BUMSHTEYN, S.I., inzh., red.;
STEPANOVA, A.A., red. izd-va; NOVIK, A.Ya., tekhn. red.

[Allowances, fits and technical measurements in the
manufacture of aircraft] Dopuski, posadki i tekhnicheskie iz-
mereniia v proizvodstve letatel'nykh apparatov. Moskva, Oboron-
giz, 1963. 290 p. (MIRA 17:2)

IVANOV, V., inzh.; YAKUSHEV, A., inzh.; AKISHEV, B., inzh.

Replace large-block apartment houses with large-panel ones.
Zhil. stroi. no.6:4-7 '63. (MIRA 16:10)

YAKUSHEV, A. I.

Issledovanie prochnosti rez'bovykh soedincenii. (Vestn. Mash., 1951, no. 1,
p. 5-14)

Bibliography included.

Testing the strength of threaded joints.

DLC: TMh.Vh

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library
of Congress, 1953.

1. YAKUSHEV, A. I.
2. USSR (600)
7. Research of the Influence of the Basic Parameters of Thread on the Strength of Thread Connections, Herald of Machine Construction No. 12, Dec 1952

9. Compilation of Information of the USSR Machine and Machine Tools Industry Contained in Soviet Publications. [REDACTED]

YAKUSHEV, A. I.

Screw Threads

Effect of the technology of thread-cutting on the strength of thread joints. Vest. mash. 33, No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

YAKUSHEV, A.I., kandidat tekhnicheskikh nauk.

Effect of the curving of bearing surfaces and of the preliminary tightening of bolts on the durability of thread joints. Vest.mash. 33 no.7:7-10 J1
(MLRA 6:8)
'53. (Bolts and nuts)

YAKUShev, A.I

USSR/Engineering - Structural tests

Card 1/1 Pub. 128 - 1/34

Authors : Yakushev, A. I.

Title : The dependency of the strength of threaded joints on the metal hardness of bolts and pins

Periodical : Vest. mash. 12, 3-6, Dec 1954

Abstract : The resistance to wear, torsional and breaking strength of threaded joints in relation to the degree of metal hardness of bolts and pins was investigated. Tables specifying the metal hardness of bolts and pins and the types of steel used are presented. Graphs; diagrams; drawings.

Institution :

Submitted :

YAKUSHEV, A.I., professor, doktor tekhnicheskikh nauk.

Technical progress in the machine construction industry. Standarti-
zatsiia no.5:3-7 S-O '56. (MIRA 10:1)

(Machinery industry) (Efficiency, Industrial)

YAKUSHEV, Aleksandr Ivanovich; VASIL'YEV, D.T., kandidat tekhnicheskikh nauk, ratsenzent; MOZHEYKO, A.F., inzhener, ratsenzent; ROZENBLIT, Ya.M., inzhener, redaktor; KETRONA, I.A., redaktor; ZUBAKIN, I.M., tekhnicheskii redaktor.

[Influence of the manufacturing process and basic threading factors on the durability of threaded joints] Vliianie tekhnologii izgotovleniya i osnovnykh parametrov rez'by na prochnost' rez'bovykh soedinenii. Moskva, Gos.izd-vo obor.promyshl., 1956. 188 p. (MLRA 9:5)
(Screw threads)

YAKUSHEV, P.I.

28-5-3/30

AUTHOR: Budyakov, G.P., and Yakushev, A.I.

TITLE: Perfecting Dimension Parameters and Interchangeability in USSR Machinebuilding (Sovershenstvovaniye razmernykh parametrov i vzaimozamenyayemost' v mashinostroyenii SSSR)

PERIODICAL: Standartizatsiya, 1957, # 5, p 13-18 (USSR)

ABSTRACT: The article presents a general review of progress in Soviet machinebuilding since 1919.

The current information includes general data on presently used and planned systems of fits and tolerances (of smooth-surface connections, gears, threads, key and spline connections) and surface roughness.

Institutions such as the following are mentioned: The Scientific Research Bureau for Interchangeability in the Metalworking Industry (Nauchno-issledovatel'skoye byuro vzaimozamenyayemosti v metalloobrabatyvayushchey promyshlennosti - NIBV) which is subordinated to the Committee of Standards, Measures and Measuring Devices and is working on interchangeability and technical measurements; TsNIITMash; scientific research institutes ENIMS; NIAT; NIIOrgavtoprom; Institute for Automatics and Telemechanics of the USSR Academy of Sciences (Institut avtomatiki i telemechaniki Akademii nauk SSSR). Some large plants are also con-

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28-5-3/30

Perfecting Dimension Parameters and Interchangeability in USSR Machinebuilding

tributing to the progress of interchangeability (Automobile Plant imeni Likhacheva, Gor'kiy Automobile Plant, and others).

Soviet participation in the work of the International Standard Organization is mentioned. The Russian scientist V.L. Chebyshev is said to be the pioneer in the science of surface roughness because he worked on this problem 50 or 60 years before the German researchers Bauer and Schmaltz. The ISO Technical Committee 57 "Smoothness of Surfaces", located in Moskva, developed in 1953 the first and in 1957 the second project of ISO recommendations for standard of surface roughness. IMash of the USSR Academy of Sciences has prepared a new "GOCT" project for surface roughness, utilizing Soviet experience as well as the experience of the most technically advanced countries. The present practice of selecting the tolerances for machine parts (mainly from the point of view of the kinematic accuracy and mechanical strength) will have to be changed and new tolerance calculation methods will have to be developed that take into account deformations, temperature, wear, and other physical and technical causes of inaccuracy

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28-5-3/30

Perfecting Dimension Parameters and Interchangeability in USSR Machinebuilding

in mechanisms.

There is one figure, a full-page photo of the 19 m faceplate of a vertical lathe.

AVAILABLE: Library of Congress

Card 3/3

YAKUSHEV, A. I.

28-1-7/42

AUTHOR: Yakushev, A.I., Professor, Doctor of Technical Sciences

TITLE: Profile, Tolerances, and Tolerance Fields of Metric Screw Thread (O profile, dopu'akh i raspolozhenii poley dopuskov metriceskoy krepezhnoy res'by)

PERIODICAL: Standartizatsiya, # 1, Jan-Feb 1957, p 30-36 (USSR)

ABSTRACT: The article deals with the current work on new standards for metric screw threads by the USSR and the International Standard Organization, and gives the results of the author's own investigation, with conclusions concerning the effect of root outline in general and of various root radii in particular, the effect of crest outline, clearances, variations of pitch and helix of an angle on the strength of connections under static and dynamic loads. The author makes recommendations concerning advantageous root radius, fits and tolerances, and stresses that the absence of a special "FOCT" (standard) for thread shape and tolerances of heavy-duty thread connections in high-speed machines causes the machinebuilding industry to waste metal, and delays creation of thread connections with longer service life. The article contains 2 tables, 2 drawings and 1 diagram.

AVAILABLE: Library of Congress
Card 1/1

28-6-33/40

AUTHOR: Yakushev, A.I., Professor, Doctor of Technical Sciences

TITLE: In the Technical Committee No. 1 "Threads" (V Tekhnicheskoye komitete No. 1 "Rez'by")

PERIODICAL: Standartizatsiya, 1957, # 6, pp 83 - 84 (USSR)

ABSTRACT: Information is given on the 4th conference of the sub-group 1 "Thread Tolerances" of the ISO Technical Committee No. 1 "Threads", which convened in Berlin over the end of September and the beginning of October 1957. The delegations of Britain, Germany, USSR, France and Sweden participated as active members; the delegations of Holland and Poland - as observing members. The author, Professor A.I. Yakushev was present.

ASSOCIATION: Moscow Higher Technical School imeni Bauman (Moskovskoye vyssheye tekhnicheskoye uchilishche imeni N.E. Baumana)

AVAILABLE: Library of Congress

Card 1/1 1. Threads-Standards 2. Thread tolerance-Standards

YAKUSHEV, A. I., Prof., Moscow Higher Technical School im. N. D. Bauman

"Basic directions of the development of length and angle measuring instruments"
(Section II)

report submitted for Measurement and Automation, Scientific Society for (Hungarian)
Intl Measurements Conference - Budapest, Hungary, 24-30 Nov 58

YAKUSHEV, A. I.

307/1592

FRASE I BOOK KIPLOIATION

25(1,6)

Akademiya nauk SSSR. Institut mashinovedeniya
Osnovnye voprosy tochnosti, vsimozmenyivayemosti i tekhnikeskikh
izmeneniy v mashinostroyeni (Basic Problems of Accuracy, Inter-
changeability and Engineering Measurements in Machine Building)
Moscow, Mashgis, 1958. 411 p. 4,500 copies printed.

Ed.: A.M. Gavrilov, Doctor of Technical Sciences, Professor;
Tech. Ed.: E.I. Medvedev, Candidate of Technical Sciences, Engineer.
Verking and Tool Making (Mashgis); E.D. Boyzel'man, Engineer.

PURPOSE: This collection of articles is intended for engineering
and scientific workers and for teachers and students of machine
and instrument building courses.

COVERAGE: This collection of articles presents the works of a com-
mittee on basic problems of accuracy, interchangeability and
engineering measurements, convened in March 1956 by the Machine
Building Technology Commission of IMASH AN SSSR (Institute of
Machine Construction of the Academy of Sciences, USSR), the
State Committee for Modern Technology, the Committee Council
of Standard Weights and Measuring Instruments under the Council
of Ministers, USSR, the Ministries for Machine Building and the
Ministry of Higher Education of the USSR. In the articles
dealing with accuracy of fabrication, problems of the theory and
practice of calculating accuracy of stamping processes and
standard products are discussed. In other articles on inter-
changeability and engineering measurements an evaluation of the
present state of this field is given, and articles on inter-
scientific and engineering problems for the future. Theoretical
and practical problems of automatic inspection are discussed.
No personalities are mentioned. There are 140 references of
which 121 are Russian, 10 German, 8 English, 1 French.

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- Basic Problems of Accuracy (Cont.)
- Gromova, A.M., Candidate of Technical Sciences. Accuracy In-
crease in Making Machine Parts Out of Sheets and Shapes in
Small Lot Production 164
- Fayta, B.A., Doctor of Technical Sciences, Professor. Pre-
sent State and Anticipated Problems in the Field of
Accuracy and Interchangeability in Gearing 181
- Prokopovich, A.Ye., Engineer. Accuracy of Manufacturing
Processing on Automated Lathes 197
- Kasatkov, I.P., Candidate of Technical Sciences. Tolerances
for Making Fixtures and Verr of Component Parts 211
- Dlin, A.M., Docent. Application of Mathematical Statistics
in Machine Building 229
- Yakushev, A.I., Doctor of Technical Sciences, Professor.
Present State and Basic Problems of Interchangeability and
Engineering Measurement in Machine and Instrument Building 246

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SOV/159-58-3-17/31

25(1)

AUTHOR:

Yakushev, A.I.

TITLE:

The Principal Interchangeability Problems in Connection With the Further Development of Machine Building

PERIODICAL:

Nauchnyye doklady vysshey shkoly, Mashinostroyeniye i priborostroyeniye, 1958, Nr 3, pp 114-121 (USSR)

ABSTRACT:

This paper was read at the inter-vuz scientific-technological conference at the MVTU imeni Baumana in January 1958. The author presents his views on the interchangeability of modern machine parts. Thereby, it is not only necessary that the parts have the identical dimensions, but their physical properties must be interchangeable at the same time. For example, the properties of metal surfaces are one of the principal problems of contemporary machine building. The author mentions the work on turbine blades performed at NIAF under the guidance of Candidate of Technical Sciences S.S. Losev and others. The author further investigates tolerances and fits of smooth connections, tolerances for gear and worm gear transmissions, thread

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SOV/159-58-3-17/31

The Principal Interchangeability Problems in Connection With the Further Development of Machine Building

connections. Thereby he mentions that the OST system will be maintained although it will be adapted to the ISO system as far as possible. He mentions that the metric thread with a profile angle of 50° has a number of essential disadvantages and does not meet the requirements of thread connections of watch mechanisms, according to joint investigations of the MVTU imeni Baumana and the NIChASPROM. Based on these investigations, a project of a new GOST for metric thread, to be used by the watch industry, is being prepared in cooperation with the Byuro vzaimozamenyayemosti (Bureau of Interchangeability) and the Komitet standartov, mer i izmeritel'nykh priborov (Committee of Standards, Measures and Measuring Instruments). Then the author considers dimension and accuracy parameters of key joints and splined joints. He devotes the final part to problems of controlling the dimensions of interchangeable parts. According to data furnished by Gosplan SSSR, the losses because of rejections

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amounted to 1,768.6 million rubles in the Soviet machine building industry during 1955. The author explains this high loss by the fact that the checkers are merely concerned with the determination of parts to be rejected, but they do not prevent rejects by eliminating the causes. Therefore, an automatic control is required which is directly connected with the production process. The development of measuring systems for program-controlled machine tools is thereby of great importance. Automatic control and measuring methods must be developed. An increased precision of the measurements must be connected with a higher productivity of the measuring process. In this connection, the author mentions an instrument used for checking the surface finish of machine parts which was developed by the plant "Kalibr VEI". Another example are the optical systems developed for checking 5-10 m long lead screws by the Kafedra "Metrologiya i vzaimozamenyayemost'" (Chair "Metrology

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The Principal Interchangeability Problems in Connection With the Further Development of Machine Building

and Interchangeability) of the MVTU imeni Baumana under the guidance of Docent V.P. Korotkov. The lead screws are compared to reference screws by means of the aforementioned optical systems. Generally speaking, the author demands that the durability of available measuring instruments be increased with a simultaneous standardization. There are 3 Soviet references.

SUBMITTED: February 19, 1958

Card 4/4

BARDIN, I.P., akademik; DYMOV, A.M., prof., doktor khim.nauk; DIKUSHIN, V.I.; akademik; TSELIKOV, A.I.; OTLEV, I.A., inzh. (g. Khimki, Moskovskoy oblasti).; DEM'YANYUK, F.S., prof., doktor tekhn.nauk; RYBKIN, A.P., prof., doktor tekhn.nauk; ~~YAKUSHEV, A.L., prof., dokt. tekhn.nauk;~~ KIDIN, I.N., prof. doktor tekhn.nauk; KOROTKOV, V.P., dots., kand. tekhn.nauk; SHUKHGAL'TER, L.Ya., dots., kand.tekhn.nauk; KUKIN, G.N., prof., doktor tekhn.nauk.

Every specialist should know the principles of of standardization.
Standartizatsiia 22 no.4:34-40 JI-Ag '58. (MIRA 11:10)

1.Chlen-korrespondent AN SSSR (for Tselikov). 2.Predsedatel' tekhniko-ekonomicheskogo soveta Mosoblsovnarkhoza (for Rybkin). 3.Direktor Moskovskogo instituta-stali imeni I.V. Stalina (for Kidin). 4.Direktor Moskovskogo vechernego mashinostroitel'nogo instituta (for Korotkov).
(Standardization--Study and teaching)

SOV/4106

YAKUSHEV, A.I.
8-3

PHASE I BOOK EXPLOITATION

Moscow. Moskovskoye vyssheye tekhnicheskoye uchilishche
Vzaimozamenayemost' i tekhnika izmereniy v mashinostroyeni (Interchangeability
and Measurement Techniques in Machinery Manufacture) Moscow, Mashgiz, 1959.
232 p. (Series: Mezhdvuzovskiy sbornik, No. 1) Errata slip inserted. 3,000
copies printed.

Additional Sponsoring Agency: Moscow. Stankoinstrumental'nyy institut imeni
I. V. Stalina.

Editorial Board: A. I. Yakushev, Doctor of Technical Sciences, Professor;
Ye. I. Volodin, Candidate of Technical Sciences; and N. N. Ganchev, Candidate
of Technical Sciences; Eds.: Yu. N. Lyandon, Candidate of Technical Sciences;
N. A. Dokunina, Candidate of Technical Sciences; and A. I. Yakushev, Doctor
of Technical Sciences, Professor; Managing Ed. for Literature on Machine and
Instrument Construction: N. V. Pokrovskiy, Engineer; Ed. of Publishing
House: G. F. Kochetova; Tech. Ed.: A. F. Uvarova.

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Interchangeability and Measurement Techniques (Cont.)

SOV/4106

PURPOSE: This collection of articles is intended for scientific workers and technical personnel studying problems of interchangeability and technical measurements in machinery manufacture.

COVERAGE: The book deals with trends in the development of basic problems of interchangeability. Existing measuring equipment in the USSR and other countries is discussed. Some design and utilization problems in the use of conventional and automatic measuring devices are outlined. Emphasis is given to methods and equipment for feedback and mechanized control and control of the geometry and surface roughness of parts. No personalities are mentioned. References accompany several of the articles.

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3

PHASE I BOOK EXPLOITATION

SOV/3553

Yakushev, Aleksandr Ivanovich, Doctor of Technical Sciences, Professor

Osnovy vzaimozamenyayemosti i tekhnicheskkiye izmereniya (Fundamentals of Interchangeability and Engineering Measurements) Moscow, Mashgiz, 1959. 375 p. Errata slip inserted. 23,000 copies printed.

Reviewers: A.N. Zhuravlev, Docent, Candidate of Technical Sciences, Head of the Department of Tolerances and Physical Measurements, Moscow Aviation Institut imeni S. Ordzhonikidze, and A.K. Kutay, Candidate of Technical Sciences; Ed.: Ye.I. Volodin, Docent, Candidate of Technical Sciences; Ed. of Publishing House: M.N. Morozova; Tech. Ed.: L.P. Gardeyeva; Managing Ed. for Literature on Metalworking and Instrument Making (Mashgiz): V.V. Rzhavinskiy, Engineer.

PURPOSE: This book is intended as a textbook for students in mechanical and higher machine-building schools taking the course "Fundamentals of Interchangeability and Engineering Measurements." It may also be of use to designers, technicians, and workers in product quality control (OTK).

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Fundamentals of Interchangeability (Cont.)

SOV/3553

COVERAGE: The book presents general principles of interchangeability and the fundamentals of engineering measurements used in machine building. The Soviet standardized system of fits and tolerances in machine building is presented. A description is given of commonly applied means and methods of inspection and measurement of linear and angular dimensions. Also listed are instructions for dimensioning drawings and for the erection of dimensional chains. The author mentions Professor, Doctor of Technical Sciences, I. Ye. Gerodetskiy (deceased) who helped prepare the general plan of the book. There are 35 references, all Soviet.

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YAKUSHEV, A.I.; NIKIFOROV, A.D.

Investigating the precision and strength of screw threads having
a diameter up to 1 mm. Nauch. dokl. vys. shkoly; mash. i prib.
no.159-170 '59. (MIRA 12:12)

(Screw thread)

25(5)

AUTHOR:
TITLE:

SOV/28-59-2-4/26

Yakushev, A. I., Dr. of Tech. Sciences, Professor
~~Statistical Methods of Production Quality Control Must Have~~
Wider Application (Shire vnedryat' statisticheskkiye metody
kontrolya kachestva produktsii)

PERIODICAL: Standartizatsiya, 1959, Nr 2, pp 15-17 (USSR)

ABSTRACT: At a joint meeting of the Committee on the Technology of Machine Building at the Institut mashinovedeniya AN SSSR (the Institute for Engineering Science of the AS USSR) and the inter-vuz seminar on interchangeability, precision and technical measurements, the main subjects discussed were the present situation and the prospects for developing the theory and practice of utilizing statistical methods for analyzing the accuracy of technological processes and the quality control of machine building output. Reports were read by: Doctor of Technical Sciences, Professor I.D. Faynerman, Candidates of Technical Sciences A.A. Kutay and I.V. Dunin-Barkovskiy, and Engineer V.V. Golovinskiy. Serious shortcomings in introducing these methods into the machine building industry were pointed out. These methods were used in the Soviet machine building industry from 1947 to 1952 and gave excellent results. Nevertheless there has

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Statistical Methods of Production Quality Control Must Have Wider Application

been less application of these methods in recent years. The workers are not personally interested and preventive controls are too complicated. Moreover, the factories have failed to make use of statistical analysis data in evaluating the precision of their machinery and instruments. The absence of GOST also hindered the nation-wide application of these methods. As far back as 1956, the Academy of Sciences of the Uzbek SSR was commissioned to develop the GOST project "Statistical Acceptance Control". The Committee of Standards, Measures and Measuring Equipment attached to the Council of Ministers of the USSR, under the direction of Academician A.N. Kolmogorov, again considered the project in April 1957 and decided to complete all preparatory work on it by the end of that year; 2 years later the GOST project is still not ready. The joint meeting recommended that Institutes for Engineering Science and Mathematics of the AS USSR, the Committee of Standards, Measures and Measuring Equipment and the State Scientific-Technical

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Statistical Methods of Production Quality Control Must Have Wider Application

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Committee develop and introduce necessary measures for wider application of statistical methods of production process analysis and of production quality control in the machine building industry.

ASSOCIATION: MVTU im. Baumana (The Moscow Higher Technical School imeni Bauman)

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SOV/115-59-6-2/33

25(5), 28(1)

AUTHOR: Yakushev, A.I.

TITLE: The Future Development of Methods and Means of Technological Control Automation in Machine-building

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 6, pp 5-9 (USSR)

ABSTRACT: The present state and ways for future development of automation control were considered at a special section of the Third All-Union Conference of Production Process Automation which was convened from May 12 to 16, 1959. In this section, 120 scientists and engineers participated. They came from Moscow, Leningrad, Khar'kov, Gor'kiy, Sverdlovsk, Chelyabinsk, Riga and other USSR cities. Here, 23 papers were read and discussed, dealing with problems of planning, manufacturing and introducing automatic control devices at machine-building plants. Ye. R. Dvoret'skiy from the Byuro vzaimozamenyayemosti -BV- Komiteta standartov mer i izmeritel'nykh priborov (Bureau of Interchangeability of the Committee of Standards, Measures and Measuring Instruments) stated that the BV has created and tested under shop conditions models of operative control devices for round, plane, internal and centerless

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The Future Development of Methods and Means of Technological Control Automation in Machine Building

grinding machines. However, in spite of their advanced design, these devices did not find the wide-spread application which they deserved. The BV will continue its work on the improvement of existing transducers and on the development of new types, providing a control with an error of not more than 0.2 microns, not only for grinding, but also for gear cutting and other operations. The BV works also on the development of automatic control devices, measuring devices for controlling kinematic shifts, and on methods for rapid readjustment of automatic control devices to other dimensions. Ya. I. Tseytlin stated that during the past 10 years the Leningradskiy instrumental'nyy zavod -LIZ- (Leningrad Instrument Plant) produced hundreds of automatic control and sorting devices for ball and roller bearings, bolts, cylindrical and tapered rollers and similar parts. These devices function on mechanical, electro-mechanical, photoelectric, photoelectronic, pneumatic and other principles. The automatic devices manufactured by LIZ work at all ball bearing factories and at a number of other industrial installations in the USSR and in countries of the Peoples Demo-

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cracies. Ya. I. Tseytlin mentioned the automatic sorting machines 25AK and 26AK, which were shown at the Brussels World Fair and at the Soviet Exhibition in New York in 1959. LIZ constantly increases its output of automatic control devices. In 1958, LIZ doubled its output compared to 1952. I. N. Khaskin and A. Ya. Peliks from the OKB of the Moscow City Sovnarkhoz reported on the experience in developing and introducing automatic control devices for large-size parts that are to be processed on automatic lines. They mentioned devices for automatic measuring of angles. Using the example of an automatic control device for RR car axles on an automatic line which will be used at the Uralvagonzavod was used for showing the suitability of automatic control of parts having a weight of up to 400 kg, a diameter of 200 mm and a length of 1,800 mm with 25-30 parameters to be controlled. The productivity of controlling such parts may amount to 400-1,200 parts per shift at the measuring error not exceeding 8-10% of the magnitude of tolerance of the dimensions to be controlled. For obtaining a high control accuracy of large-size parts, automatic compensation systems for measurement

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temperature errors must be used. The OKB arrived at the conclusion that the principal direction for designing automatic control devices must consist in development of typed designs composed of standard units and parts, facilitating by means of special adjustments control of different products. The work performed by OKB on the development of automatic angle measurement were considered with great interest. Inductance dial transducer was designed and tested upon a suggestion of G.M. Brodskiy and S.S. Podlazov. This device provides a control of angular measurements with an error of 4 - 2 seconds or lower where the measuring processes may be automated. Yu.M. Reznikov reported on the experience of introducing automatic controls at the first GPZ. Presently, at this plant more than 200 different automatic control and sorting machines and over 800 operative control devices are used. Application of automatic control devices at this plant replaced the work of more than 2,000 inspectors, saving about 15 million rubles annually. The report of G.G. Baranov was devoted to problems of automatic precision control of centerless grinding machines.

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The Future Development of Methods and Means of Technological Control Automation in Machine Building

M.I. Kochenov discussed basic problems of the accuracy of automatic dimension control in machine building. The paper of A.K. Kutay contained the mathematical foundations of sampling with feedback of the automatic operative control. The author explained a method of determining statistic characteristics of different feedback systems. The calculation method was based on the theory of probability and was corrected by statistical data collected by the operation of 14 high-capacity automatic lines. The paper of Kh.B. Kordonskiy dealt with theoretical premises of tuning and adjusting automatic measuring equipment. S.N. Sokolov discussed in his paper the practicability of using automatic sampling controls on automatic lines. O.B. Balakshin reported on the problem of calculating pneumatic measuring devices of automatic control equipment. The reports of V.S. Vikhman (NIEL), N.M. Rodigin, I.Ye. Korobeynikova, J.K. Grigulis, A.V. Atkarskiy and other authors were devoted to the application of new methods of converting measuring pulses. The work of NIEL in creating automatic dimension control devices by application of television in combination with a high-

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speed electronic computer found great interest at the conference. The work of NIEL showed that this method is especially effective for the automatic control of parts with a complicated configuration and enables the design of highly productive universal automatic precision control devices which may be easily readjusted. One of automatic control devices which was designed and experimentally tested by V.S. Vikhman is based on the utilization of a kinescope in combination with a photoelement and an electronic computer. The product to be controlled is placed between the screen of an electron ray tube (kinescope) and a photoelement. The electron beam of the kinescope performs a back-and-forth motion in vertical direction at a frequency of 15 cycles and moves simultaneously in horizontal direction with a frequency of cycle. On the kinescope screen a flying light dot is generated which is used in this case as a light source. Between the kinescope screen and the part, a lens system is placed by means of which the beam coming out of the kinescope is focused as a light dot in a plane passing through the profile of the part to be controlled. This

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light dot performs a motion geometrically similar to the motion of the light dot on the luminophore of the screen. Moving vertically from the top to bottom in the plane to be controlled, the light dot initially is located outside of the part and the light falls on a photoelement. At the moment when the light is interrupted by the outline of the part, a current jump is generated which is transmitted to the input of a pulse shaping circuit. From the outlet of the pulse shaping circuit the pulse is transmitted to the binary two-digit electronic computer. A thin, transparent plate is installed close to the kinescope screen, on which two thin, opaque, curved lines are drawn, indicating the upper and the lower tolerance limit of the part. The light beam coming from the kinescope must be interrupted twice during its travel producing two pulses at the output of the electronic counter. For a serviceable part, the number 10 will be shown. If the upper tolerance limit is exceeded in one section of the part, then the number 10 will be selected. If, in the same section, the dimension of the part is below the lower tolerance limit, number 11 appears.

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At the Institut mashinovedeniya AN Latvyskoy SSR (Institute of Mechanical Engineering of the AS Latvian SSR), a number of employees under the guidance of J.K. Grigulis developed devices for controlling different processes of surface-layer machining. The report of N.M. Rodigin and I.Ye. Korobeynikova from the Institut fiziki metallov AN SSR (Institute of Metal Physics AS, USSR) in Sverdlovsk, reported on different types of measuring instruments based on applying eddy currents. Such devices were successfully used for controlling the quality of heat treatment, case hardening, etc. The resolution approved by the Conference participants after the debate of different papers contained recommendations for the further development of automatic control of dimensions, improved quality of automatic devices, coordination in planning and design, application of standardized sub-assemblies and increased effort in scientific research.

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7(6)

SOV/119-59-7-3/18

AUTHOR:

Yakushev, A. I., Professor, Doctor of Technical Sciences

TITLE:

The Present Stage and the Prospects of Developing Instruments and Automatic Devices for Dimension Control In-

PERIODICAL:

Priborostroyeniye, 1959, Nr 7, pp 6 - 10 (USSR)

ABSTRACT:

This problem formed the subject of a scientific conference of universities which took place at Moscow from April 21 to April 23 of this year. 22 lectures were delivered at the conference which was attended by specialists from the German Democratic Republic (Professor K. N. Kuehler and Dr. Ing. Lippert and Engineer Eckerkuenst) and from the Polish People's Republic (Engineer Bobowicz). The first part deals with instruments for dimension measurement, and the vertical interferometer of the type PIU-2 and the horizontal interferometer of the type PIU-3 are discussed first. The vertical length-measuring instrument of the type IZV-21 supplements the UIM-21 microscope. After several further similar instruments have been mentioned, it is said that great endeavors are being made in the Soviet Union for the purpose of developing instruments for the investigation of surfaces, in which connection

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The Present Stage and the Prospects of Developing
Instruments and Automatic Devices for Dimension Control

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the instrument "Kalibr-VEI" is mentioned. The two-beam micro-interferometer of the type MII-4 by V. P. Linnik (GOI) has found use not only in the USSR. The interferometers which were awarded the Grand Prix at Brussels World Exposition are also mentioned, after which the new instrument developed by V. P. Linnik, the microprofilometer, is discussed in detail. Further, several test instruments, so-called macroprofilographs, which were developed in the NII-Avtoproma and in the MVTU imeni Bauman, were discussed. At the Byuro vzaimozamenyemosti Komiteta standartov (BV) (Bureau for the Exchangeability of the Committee for Standardization) (BV) several instruments for profile control were developed, of which the instrument BV-608K is being produced in series at the Moskovskiy instrumental'nyy zavod (MIZ) (Moscow Instrument Factory (MIZ)). General work of development performed at the TsNIITMASHye, the BV, at the GOI, and at the LITMO for gear-measuring instruments as well as for measuring instruments of large dimensions, are then discussed. The second part deals with instruments for automatic measurement control. It is said that at the 1 GPZ 800 instruments are being used for

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active control in working processes, and that at the GNTK such instruments are being used for grinding machines. The electronic automatic needle sorter of the type EK-8 developed by V. S. Vikhman (NIEL, VPTI), as well as the electro-contact transmitter of the type I-29 are dealt with. At the Leningradskiy zavod (Leningrad Plant) several types of automatic ring sorters were developed as well as some photoelectric automatic devices for the determination of surface errors. At present automatic control devices for automatic production lines are being developed at the BV, OKB Mosgorsovnarkhoz (OKB of Moscow Municipal Sovnarkhoz), NIEL, and at the VPTI. In some cases television sets are being used in connection with quick-acting electronic amplifiers. The basic scheme of such a device by V. S. Vikhman is shown by figure 4. Similar work is being carried out at the OKB Mosgorsovnarkhoz (OKB of Moscow Municipal Sovnarkhoz), at the Institut mashinovedeniya AN Latviyskaya SSR (Institute of Machine Science of the AS Latvian SSR), and at the Sverdlovskiy institut fiziki metallov AN SSSR (Sverdlovsk Institute of the Physics of

Card 3/4

Metals AS USSR

YAKUSHEV, A.I., prof., doktor tekhn.nauk

Precision of metric threads of watch mechanisms. Izv.vys.ucheb.
zav.; mashinostr. no.7:84-88. 159. (MIRA 13:6)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.
(Clockmaking and watchmaking)

28(1)
25(6)

S/028/60/000/05/003/027
D044/D006

AUTHORS: Yakushev, A.I., and Pan Chzhun-Chzhen

TITLE: Standardization of the Dynamic Characteristics of Precision in Pickups and Size-Checking Devices

PERIODICAL: Standartizatsiya, 1960, Nr 5, pp 10-15 (USSR)

ABSTRACT: The article is concerned with the discrepancy between static precision characteristics when checking and sorting automatic devices, pickups, and other automatic units and their dynamic precision characteristics. Thus, according to the GOST 3899-58 standard, an electric contact pickup with a measuring range of 0-0.2 mm has a maximum permissible error of ± 0.5 mc. The instructions of the Komitet standartov, mer i izmeritel'nykh priborov (Committee of Standards, Measures, and Measuring Instruments) state that this error can be ascertained by a wedge-shaped device attached to a tool microscope or an optical indicator. However, the same electric contact pickup has an error of as much as ± 3 microns and even higher when it comes to measuring parts moving along at about 4 m/min. The article then analyzes this problem

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Standardization of the Dynamic Characteristics of Precision in Pickups and Size-Checking Devices

by a series of equations and concludes with five subarticles with the following captions: 1) Amplitude-Frequency Characteristics of Precision $\Delta A(\omega)$ of Units and Pickups; 2) Transitory Precision Function $\Delta S(t)$ of a Measuring Device and Contactless-Type Pick-up; 3) Characteristics of Critical Frequencies and Amplitudes; 4) Critical Linear Feed Speed of a Part Measured; 5) Maximum Dynamic Error. There are 2 graphs, 1 circuit diagram, and 2 diagrams.



Card 2/2

KOROTKOV, Vladimir Petrovich; TAYTS, Boris Arkad'yevich, prof., doktor tekhn. nauk; YAKUSHEV, A.I., doktor tekhn. nauk, prof., retsenzent; LESNICHENKO, I.I., red. izd-va; BL'KIND, V.D., tekhn. red.

[Fundamentals of mensuration and the precision of measuring instruments] Osnovy metrologii i tochnosti mekhanizmov priborov. Pod obshchei red. B.A.Taitsa. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 400 p. (MIRA 14:8)
(Mensuration)

YAKUSHEV, A. I.

JAKUSEVS, A., prof., doktor tekhn. nauk; PROKOF'YEVA, B., red.;
SOPRANE, V., tekhn. red.

[Principles of interchangeability and technical measurements] Savstarpejas apmainamibas pamati un tehniska merisana.
Riga, Latvijas Valsts izdevnieciba, 1962. 368 p.

(MIRA 16:4)

(Measuring instruments)

S/028/62/000/007/001/001
D411/D308

Yakushev, A.I.

Problems of the development of interchangeability
in machine and instrument construction

Standartizatsiya, no. 7, 1962, 3 - 6

AUTHOR:

TITLE:

PERIODICAL:

TEXT:

The author describes generally the method of finding the permissible deviations securing functional interchangeability, giving some examples. Functional interchangeability includes the standardization of gear teeth, chain sizes, thread sizes, and surface finish, for which a wider investigation into manufacturing tolerances, a prerequisite. When specifying limits and fits, manufacturing tolerances, as also wear in components due to severe operating conditions, must be considered. Examples are given where clearances are calculated and compared with those given in standard tables. In experimental work on an air compressor a practical clearance between the piston and cylinder, which allowed for the expansion of the components due to heat, was

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Problems of the development ...

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calculated. Using this clearance the working period between overhauls was extended from 3 - 4 years to 6 - 7. The manufacturing finish of components is important in achieving interchangeability. Improved control over dimensional alterations during stages in manufacture particularly when working with polymeric materials, is required.

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GAVRILOV, A.N., doktor tekhn. nauk, prof., otv. red.; YAKUSHEV,
A.I., doktor tekhn. nauk, prof., otv. red.; BURDUN, G.D.,
doktor tekhn. nauk, prof., otv. red.; DIKUSHIN, V.I.,
akademik, red.

[Precision, interchangeability and industrial measurements
in the manufacture of machinery; transactions] 'Tochnost',
vzaimozameniaemost' i tekhnicheskie izmereniia v mashino-
stroenii; trudy. Moskva, Izd-vo "Nauka," 1964. 386 p.
(MIRA 17:6)

1. Soveshchaniye po tochnosti, vzaimozamenyayomosti i tekhnicheskim izmereniyam v mashinostroyenii. 2d, 1962.

BEZHELUKOVA, Ye.F., inzh.; VOROB'YEV, Yu.A., kand. tekhn. nauk;
VORONTSOV, L.N., kand. tekhn. nauk; ZYABREVA, N.N., kand.
tekhn. nauk; LYANDON, Yu.N., kand. tekhn. nauk; TISHCHENKO,
O.F., doktor tekhn. nauk, prof.; FEDOROV, A.D., kand. tekhn.
nauk; YAKUSHEV, A.I., doktor tekhn. nauk, prof.; GOSTEV, V.I.,
inzh., retsenzent; KUBAREV, V.I., inzh., red.; GARANKINA,
S.P., red.izd-va; UVAROVA, A.F., tekhn. red.

[Handbook on allowances, fits, and linear measurements for
inspectors at machinery plants] Spravochnik kontrolera ma-
shinostroitel'nykh zavodov; po dopuskam, posadkam, i lineinym
izmereniam. Pod red. A.I.Iakusheva. Leningrad, Mashgiz,
1963. 723 p. (MIRA 16:5)

(Production control) (Measuring instruments)
(Interchangeable mechanisms)

BALAKSHIN, O.B., kand. tekhn. nauk; BYKHOVSKIY, M.L., prof., doktor tekhn. nauk; VOLODIN, Ye.I., kand. tekhn. nauk; GRIGOR'YEV, I.A., kand. tekhn.nauk; DRAUDIN-KRYLENKO, A.T., inzh.; IVANOV, A.G., kand. tekhn.nauk; KOZLOV, M.P., kand. tekhn. nauk; KOROTKOV, V.P., prof.; KOCHENOV, M.I., kand. tekhn.nauk; KUTAY, A.K., kand. tekhn. nauk; MARKOV N.N.,kand. tekhn. nauk; PALEY, M.A., inzh.; RAYBMAN, N.S., kand. tekhn.nauk; ROSTOVYKH, A.Ya., kand. tekn. nauk; RUMYANTSEV, A.V., kand. tekhn.nauk; SARKIN, I.G., prof.; SMIRNOV, A.S., inzh.; TAYTS, B.A., prof., doktor tekhn. nauk; YAKUSHEV, A.I., prof., doktor tekhn. nauk; NESTEROV, V.D., inzh., nauchnyy red.; CHUDOV, V.A., inzh., nauchnyy red.; GAVRILOV, A.N., doktor tekhn.nauk, prof., red.; BLACOSKLONOVA, N.Yu., inzh., red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Manufacture of instruments and means of automatic control: a manual in five volumes] Priborostroenie i sredstva avtomatiki; spravochnik v piati tomakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.1.[Interchangeability and engineering measurements] Vzaimozameniaemost' i tekhnicheskie izmereniia. 1963. 568 p. (MIRA 16:8)
(Electronic measurements) (Automatic control)

YAKUSHEV, A.I., doktor tekhn. nauk, prof.; DUNIN-BARKOVSKIY, I.V.,
doktor tekhn. nauk, dots., releszent; ZYABREVA, N.H., kand.
tekhn. nauk, dots., red.

[Interchangeability in the manufacture of machinery] Vzaimo-
zameniaemost' v mashinostroenii. Moskva, Mashinostroenie,
1964. 285 p. (MIRA 17:4)

YAKUSHEV, A.I.

Functional interchangeability as a basic principle for the design
and manufacture of machinery. Vozm. i tekhn. izm. v mashinostro.
nauch.-tekh. stor. no.4:5-29 '84 (MIRA 1831)

L 27416-65 EWP(d)/EWP(v)/EWA(d)/EWP(c)/T/EWP(h)/EWP(k)/EWP(l) Pp-1

ACCESSION NR: AP5007519

S/0122/64/000/010/0009/0013

AUTHOR: Yakushev, A. I. (Doctor of technical sciences, Professor)

18
15
B

TITLE: Possibilities for improving the quality of machinery 14

SOURCE: Vestnik mashinostroyeniya, no. 10, 1964, 9-13

TOPIC TAGS: machine industry

Abstract: The thesis of this article is that, along with optimal design, the use of newly developed materials, and other such measures, an important part in improving the quality of machines and mechanisms must be played by up-to-date methods of computing tolerances and fit, by the correct choice of geometric parameters, and by the correct organization of control during the technological process of manufacturing parts.

Essentially, improvement in current methods of computing tolerances can be achieved by taking into account the predictable life history of a machine or part (for example, the strains put upon a piston in a compressor as opposed to those experienced by a piston in use in some other type of machine). The author makes several practical calculations to show how clearances as currently computed are out of line with the facts of industrial use.

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