88232

S/096/61/000/003/002/012
E194/E155

Interaction Between the Diffuser and the Spiral Chamber in a
Centrifugal Compressor Stage of the End Type

500 mm water under certain conditions. If the stage were operating
on condensed gas, so that the specific gravity is 35 times greater
than that of air, and if the peripheral velocity were 290 m/sec.
the maximum pressure difference would be 130 times greater than
before, namely, 6.5 kg/cm². During each revolution each of the
ducts in the runner would pass through one zone at minimum and
one at maximum pressure which would give rise to pulsation in the
runner. Cases are known in which effects of this kind have
occurred and have led to runner failures. It is concluded that
in certain circumstances the use of guide vanes of the type
described can offer considerable advantages.
There are 6 figures and 4 Soviet references.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut
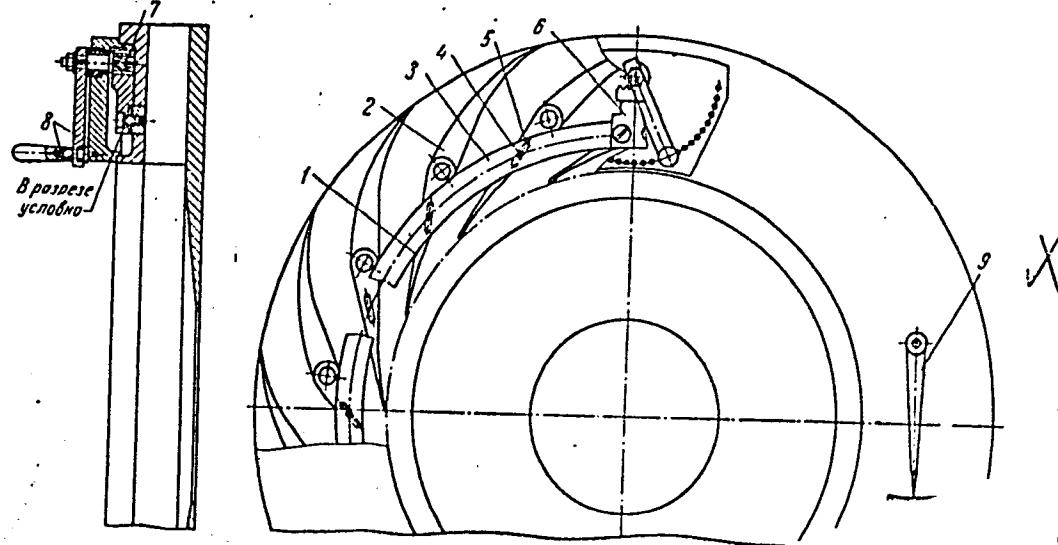(Central Boiler and Turbine Institute)

Card 4/5

88232

S/096/61/000/003/002/012

E194/E155

Interaction Between the Diffuser and the Spiral Chamber in a
Centrifugal Compressor Stage of the End Type

В разрезе
условно

Fig.
2

Card 5/5

26.2120

AUTHOR: Livshits, S.P., Candidate of Technical Sciences

TITLE: Width and angle of installation of the bladed diffuser of a centrifugal compressor stage

TEXT: For compressors to be efficient the blade installation angles should be nearly in line with the incident flow; this applies particularly to the bladed diffuser beyond the runner where the gas speed is highest. The ratio of the width b_3 of the diffuser to that of the runner discharge b_2 is important in this respect. Accordingly, correct design of the transitional part between the runner and the bladed diffuser in a centrifugal compressor stage requires correct selection of the breadth ratio and of the inlet angle of the diffuser blades. Little experimental data is available on this subject, so the TsKTI (Central Boiler and Turbine Institute) made an experimental study of stages with bladeless and bladed diffusers of various widths. For a bladeless diffuser the optimum ratio of the axial dimensions of diffuser and runner, b_3/b_2, is approximately unity. The effect of relative

Card 1/4

Width and angle of installation of the bladed diffuser of a centrifugal compressor stage

width is less marked when the diffuser is bladed. Tests were made on five stages with bladed diffusers of various relative widths. The rig used was described in an article in Teploenergetika No.10, 1955 (Ref.3) by the present author. Two groups of tests were made to measure the direction of flow in typical sections and to measure properties necessary for construction of general characteristics of the stages. The following formula is commonly used for the direction of flow at inlet to the diffuser:

$$\operatorname{tg} \alpha_3 = \operatorname{tg} \alpha_2 \frac{b_2}{b_3} \qquad (1)$$

where α_2 is the angle between the direction of the vector of the absolute velocity beyond the runner and the tangent to the runner periphery.   The results show that this formula cannot be used in designing a bladed diffuser when the width ratio is appreciably different from unity. The test results show that in stages with bladeless diffusers if the ratio b_3/b_2 is greater than unity the flow structure becomes less uniform over its whole path; the flow

Card 2/4

23951
S/096/61/000/008/002/005
E194/E155

Width and angle of installation of the bladed diffuser of a
centrifugal compressor stage

breaks away from the blade, and reverse currents occur which
reduce the head and efficiency under almost all conditions. When
the diffuser is bladed, the zone of markedly non-uniform flow
structure and reverse currents that results from increasing the
width ratio occurs only in the annular bladeless section beyond
the runner and in a small section of the inlet duct of the bladed
channels. At small flows and also under optimum conditions,
increasing the ratio b_3/b_2 above unity reduces the efficiency and
stage head. On the other hand, at high rates of flow, increase of
this ratio may somewhat increase the head and stage efficiency.
It follows that when the stage is intended to operate over a
narrow range of output it is best to have the ratio b_3/b_2 near to
unity. However, if high rates of flow will frequently be
encountered in service, it is advisable to make this ratio some-
what greater than unity. As previously mentioned, the formula
generally used to determine the direction of flow at inlet to the
diffuser is not confirmed experimentally. Therefore, when b_3/b_2

Card 3/4

23951
S/096/61/000/008/002/005
E194/E155

Width and angle of installation of the bladed diffuser of a centrifugal compressor stage

is greater than unity, the angle of installation of the inlet edges of the diffuser blades should be such that the angle α_3 differs little from the angle α_2 of the flow at discharge from the runner.

There are 7 figures and 3 Soviet references.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut
             (Central Boiler and Turbine Institute)

Card 4/4

34254
S/114/62/000/002/001/004
E194/E955

26.2120

AUTHOR: Livshits, S. P., Candidate of Technical Sciences

TITLE: The ratio of the dimensions of the runner to those of the diffuser in a centrifugal compressor stage

PERIODICAL: Energomashinostroyeniye, no.2, 1962, 4-8

TEXT: Selection of the optimum ratio of dimensions near the point of transition from the runner to the stationary part of compressors is an urgent problem. So is the selection of the best ratio of the axial dimensions of the diffuser to the discharge section of the runner. This problem has been little studied and there are differences of opinion about it among specialists. It is usually considered that the inlet angle of the diffuser blades α_3 is inversely proportional to the ratio b_3/b_2 (the suffix 1 refers to the inlet section of the runner, the suffix 2 to the discharge section of the runner and the suffix 3 to the diffuser). So that if the vector of the mean absolute speed at discharge to the runner forms an angle α_2 with the tangent to the periphery, the inlet angle of the diffuser blade is given by the following equation:

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34254
S/114/62/000/002/001/004
E194/E955

The ratio of the dimensions of ...

$$\operatorname{tg} \alpha_3 = \operatorname{tg} \alpha_2 \frac{b_2}{b_3} \qquad (1)$$

This equation is commonly used in design. It is very difficult to make theoretical calculations on these problems and this article gives some results of an experimental study carried out in the TsKTI in which tests were made on a stage with diffusers of different widths using a single runner. To avoid disturbing axial symmetry, intermediate-type stages were used. Here the flow beyond the diffuser enters reversing guide vanes and is then delivered to a central aperture which simulates the inlet to the next stage. A diagram of the experimental stage with location of the main measurement points is shown in Fig.1. The runner parameters are as follows: $D_1/D_2 = 0.535$; $b_1/D_2 = 0.096$; $b_2/D_2 = 0.0615$; $\beta_1 = 30°30'$; $\beta_2 = 48°$. Here, b - is the width in the axial direction, D - the diameter and β the angle between the tangent to the mean line of the blade and the tangent to the periphery at the centre of the runner. Tests were made on five

Card 2/4

The ratio of the dimensions of ...   34254

S/114/62/000/002/001/

E14/E995

stages with bladeless diffusers; the peripheral diameter of the diaphragm in all the diffusers was $D_4/D_2 = 1.74$. A study was first made of the influence of the breadth ratio b_3/b_2 on the flow structure in a bladeless diffuser. Flag-type angle indicators were installed across the entire height of the apparatus commencing from the diameter near discharge from the runner where $D/D_2 = 1.06$ and thence up to $D/D_2 = 1.75$ near the periphery of the diaphragm. The measurements were made at sixty points across the width of the apparatus under all conditions. Tests results are given and the following conclusions were drawn from them: the direction of flow remains approximately the same across the width of the apparatus only when the ratio $b_3/b_2 = 1$; as this ratio increases the flow becomes less uniform across the width. When $b_3/b_2 = 1.5$ the curves of $\alpha = f(b)$ have a clearly expressed maximum near the middle, and the difference between the angle at near the centre of the apparatus and at the walls may be 50° and more. Further increase in the ratio b_3/b_2 causes still greater irregularity of flow structure, both across the width of the apparatus and across the radius. It is evident that expression

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The ratio of the dimensions of ...   S/114/62/000/002/001/004
B194/B955

34254

(1), which is often used for design purposes, is very far from the truth. A study was then made of the influence of the relative width of the diffuser on the general characteristics of the stage. It was found that under all conditions, except at extremely high flow rates, increase in the relative width b_3/b_2 reduces the head developed and the adiabatic stage efficiency. It might have been expected that increase in the width of the diffuser would always increase the output, but this is not so. The optimum ratio for a bladeless diffuser is $b_3/b_2 = 1$; this gives the most uniform flow structure beyond the runner and the highest head and efficiency. There are 5 figures and 5 Soviet-bloc references.

AUTHOR: Livshits, S.P., Candidate of Technical Sciences

TITLE: The use of rotating diffusers in centrifugal compressors

TEXT: Industrial compressors which operate over a range of head or delivery are often required to operate at some other position on the characteristic than the optimum designed value. In such cases, the efficiency falls off because there is a change of direction of flow between leaving the runner and entering the diffuser. Conditions may be improved by altering the installation angle of the inlet edges of the diffuser and this article describes an experimental investigation of the problem. The arrangement used is illustrated diagrammatically in Fig.2, on which the right hand side shows the diffuser and the left hand the return arrangements. The rotating elements (1) are turned by the ring (2) acting on the pins (3) sliding in the slot (4). Unlike bladed diffusers here only the inlet section of the diffuser channel is adjusted. Tests were made with two runners

Card 1/3

The use of rotating ...

having different discharge angles. The inlet edge of one diffuser blade contained two small ducts which were used to measure the alignment between the blade and flow angles. The stage was tested both with a fixed diffuser angle and varying load and with the angle adjusted to line up with the flow. The results are plotted in the form of curves of head and efficiency. It is seen that adjusting the blade angle to align with the flow greatly improves the compressor characteristics; the head curves become flatter and the efficiency higher at discharges away from the optimum design point of the characteristics. The improvement is particularly noticeable at low rates of delivery. An integrated method of control in which the adjustable diffuser is used in conjunction with one of the usual methods of control (throttling the intake, causing the inlet flow to swirl, or altering the speed) can considerably improve the performance of the compressor. The forces that act on the inlet edges of the blade as a result of the change in flow direction during the process of change of compressor conditions can be used as a signal to operate an automatic hydraulic or electric control of the inlet

Card 2/4

The use of rotating ...

S/096/62/000/003/003/008
E194/E455

blade angle of the diffuser. There are 8 figures and
5 Soviet-bloc references.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut·
             (Central Boiler and Turbine Institute)

Card 3/4

LIVSHITS, S.P., kand.tekhn.nauk

Use of revolving diffusers in centrifugal compressing machines.
Teploenergetika 9 no.3:25-29 Mr '62.   (MIRA 15:2)

1. TSentral'nyy kotloturbinnyy institut.
                                (Compressors)

LIVSHITS, S.P., kand.tekhn.nauk

Relation between the dimensions of a working wheel and diffuser in
the centrifugal compressor stage. Energomashinostroenie 8 no.2:4-8
F '62.   (MIRA 15:2)

(Compressors)

44277

S/096/63/000/001/003/006
E194/E155

26.2120

AUTHOR: Livshits, S.P., Candidate of Technical Sciences

TITLE: Calculation of the characteristics of a multi-stage
            centrifugal compressor

PERIODICAL: Teploenergetika, no.1, 1963, 21-26

TEXT: At present, compressor characteristics can be
calculated only under the design conditions, but knowledge of
performance under other conditions is often required at an early
stage of design. Such calculations may be based on test results
obtained with individual stages or models thereof. The two
principal problems here are to select the best system of
coordinates for construction of the characteristics of the model
stages and to ensure the best agreement between the calculated and
experimental characteristics of the multi-stage compressor, with
determination of correction factors to allow for the mutual
influence of stages on one another. It is then recommended to
plot head and efficiency as functions of velocity ratio defined
as the ratio of the radial component of the absolute discharge
velocity to the mean peripheral speed. Factors allowing for

Card 1/3

Calculation of the characteristics... S/096/63/000/001/003/006
E194/E155

interaction between stages must be determined experimentally.
Three separate stages were tested on a rig and the results were
used to calculate the characteristics of a three-stage compressor
built up from these stages and also tested. Details are given of
the individual stage designs and test results and of the
calculation procedure. Calculations on the multi-stage compressor
should use as argument the inlet flow to the first stage, and
calculations are made stage by stage for each point on the
characteristics. The procedure for making the calculations for
each stage in turn is explained and after determining discharge
conditions from the last stage calculations are made of the over-
all compression ratio and the adiabatic head of the compressor.
The calculations can be simplified somewhat if the compressor is
intended to operate on the same medium as that in which the model
stages were tested. Calculated and experimental characteristics
of the three-stage compressor were plotted and showed good
agreement. For the particular type of stages tested, with blades
curving backwards ($\beta_2 = 20 - 50°$) the operating characteristics
of the stages considered as a group were practically the same as

Card 2/3

Calculation of the characteristics... S/096/63/000/001/003/006
E194/E155

their characteristics considered separately, at any rate under regions of stable operation. However, in the three-stage compressor, surging occurred at somewhat higher flow rates than in the individual stages. It is concluded that accurate results can be obtained by calculating the characteristics of multi-stage compressors from dimensionless static characteristics of the individual stages constructed in terms of head and efficiency as functions of velocity ratio.
There are 6 figures and 1 table.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut
(Central Boiler and Turbine Institute)

Card 3/3

GOFLIN, A.P., kand. tekhn. nauk; LIVSHITS, S.P., kand. tekhn. nauk

"Compressing machinery" by K.I. Strakhovich, M.I. Enkel, I.K. Kondriakov, and V.F.Ris. Reiviewed by A.P. Goflin, S.P. Livshits. Izv. vys. ucheb. zav.; energ. 6 no.9:119-121 S '63. (MIRA 16:12)

1. TSentral'nyy kotloturbinnyy institut imeni I.I. Polzunova.

L 22158-65   EPA/EAT(1)/EWP(f)/EWG(v)/T-2/EPA(bb)-2   Pe-5/Pw-4   AEDC(a)/ASD(f)-3
ASD(p)-3/AFTCA/AFETR/AFTC(p)   WW   S/0096/65/000/001/0054/0058

ACCESSION NR: AP5002203

AUTHOR: Livshits, S. P. (Candidate of technical sciences)

TITLE: Problem of designing reverse direction apparatus in a centrifugal compressor

SOURCE: Teploenergetika, no. 1, 1965, 54-58

TOPIC TAGS: centrifugal compressor, diffuser design, flow uniformity, flow structure, Bernoulli equation, centrifugal pump

ABSTRACT: To match the flow direction with the inlet region of a reverse direction apparatus, the flow in the circular elbow (see Fig. 1. on the Enclosure) of a centrifugal pump was studied theoretically and experimentally. In the meridion plane of the elbow, the diaphragm and diffuser curves were assumed concentric at O. Using the momentum conservation equation for circumferential (c_u) as well as meridional (c_m) velocity components, the expression $c_m r = $ constant is obtained. Combining this with the mass conservation equation, the following expression is obtained for $\tan \alpha = c_m/c_u$:

$$\operatorname{tg} \alpha = \frac{c_m}{c_u} = \frac{(R_0 + r \sin \vartheta) Q}{2\pi c_{u0} R_0 \left(R_0 \ln \frac{r_1}{r_i} + \Delta r \sin \vartheta \right)} \cdot \frac{1}{r}.$$

From a set of experimental data determined at TsKTI, it is found that the above

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L 22158-65
ACCESSION NR: AP5002203   /

formula agrees well with the data at the midsection 0-0 ($\theta = 90^\circ$). However, the
same data taken at the reverse apparatus inlet (section 5 in Fig. 1) show a
significant loss in the equilibrium structure of the flow. The curves agree in
general with the formula derived above at $\theta = 180^\circ$ for relative diffuser width
$b_3/b_2 = 1$ and $\alpha_{5L} = 42$ (optimum installment angle for the reversing vanes).
Averaging α_5 along the channel width and using the optimum α_5 curves from experi-
mental data, a new formula is arrived at for α_5 given by

$$\alpha_5 = \operatorname{arctg} \frac{Q_5\left(\frac{1}{r_1}-\frac{1}{r_5}\right)}{2\pi R_5\left(\ln\frac{r_5}{r_1}\right)^2 c_{u5}} + (2-3^\circ)$$ in better agreement with the experimental results.

Orig. art. has: 21 formulas and 7 figures.

ASSOCIATION: Tsentral'ny*y kotloturbinny*y institut (Central Steam Turbine
Institute)

SUBMITTED: 00   ENCL: 01

SUB CODE: PR, ME   NR REF SOV: 000   OTHER: 000
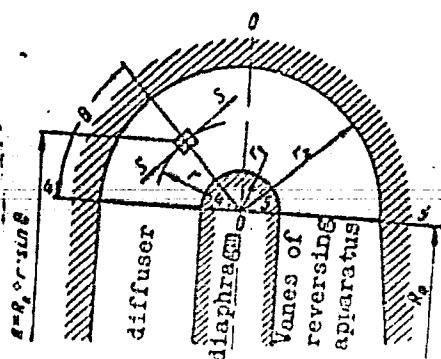
Card 2/3

L 22158-65
ACCESSION NR: AP5002203

Fig. 1.

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L 50544-65   EWT(d)   IJP(c)

ACCESSION NR: AP50 1774

UR/0096/65/000/005/0048/0054

AUTHOR: Livshits, S. P. (Candidate of technical sciences)

TITLE: On the circulation coefficients for centrifugal compressor wheels

SOURCE: Teploenergetika, no. 5, 1965, 48-54

TOPIC TAGS: centrifugal compressor, blade, Euler equation

ABSTRACT: Formulas for the computation of end coefficients for centrifugal compressor blades were analyzed. From the results of processing a large amount of experimental data, more accurate formulas are derived, taking into account the spatial character of the flow. The usual Euler equations are written in the form $H_r = \frac{H}{\eta_1} = \frac{1}{g}(u_2 c_{2u} - u_1 c_{1u})$, where c_{1u} and c_{2u} are the peripheral velocities at the inlet and outlet of the wheel and η_h is the delivery efficiency. Defining $\mu = \frac{c_{2u}}{c_{2u\infty}}$, where $c_{2u\infty}$ is the ideal value of the exit velocity, the following formula is obtained for μ

$$\mu = \frac{1}{1 + \frac{\pi}{2z(1 - r_1/r_2)}\sin\beta_2}.$$

The notation used here is the same as used by K. I. Strakhovich (Tsentrobezhnyye

Card 1/2

L 57544-65

ACCESSION NR: AP5011774

kompressornyye mashiny. GONTI, 1940). The end coefficient K is obtained as

$$K = \frac{(1 - \mu_{\bullet\bullet\bullet\bullet})(1 - \eta_{\bullet\bullet} \, ctg \, \beta_{\bullet\bullet}) - \frac{e}{\tau} \, sin \, \beta_{\bullet\bullet} + \delta}{\eta_{\bullet\bullet} \, ctg \, \beta_{\bullet\bullet}}$$

Orig. art. has: 19 equations, 8 figures, and 1 table.

ASSOCIATION: Tsentralnyy kotloturbinnyy institut (Central Reactor-Turbine Institute)

SUBMITTED: 00

NO REF SOV: 005

ENCL: 00

OTHER: 000

SUB CODE: ME

Card 2/2

L 45972-66   EWT(1)/EWP(f)/T-2   WW/GD/JXT(CZ)
ACC NR: AT6026434   (N)   SOURCE CODE: UR/0000/66/000/000/0083/0091

AUTHOR: Livshits, S. P.; Levinson, T. D.

ORG: None

TITLE: Results from a study of centrifugal compressor stages

SOURCE: Leningrad. Nauchno-issledovatel'skiy i konstruktorskiy institut khimicheskogo mashinostroyeniya. Tsentrobezhnyye kompressornyye mashiny (Centrifugal compressors). Moscow, Izd-vo Mashinostroyeniye, 1966, 83-91

TOPIC TAGS: centrifugal compressor, compressor stage, diffuser, Euler equation, compressor rotor

ABSTRACT: The authors present some of the results from the studies carried out at the Central Scientific Research Design and Planning Boiler and Turbine Institute im. I. I. Polzunov and by other organizations on centrifugal compressor stages. The authors consider the work done on the circulation factor, the optimum interrelationships of the dimensions in the transient region between the wheel and the diffuser and the use of rotatable diffusers in control systems. Expressions are given for calculating the circulation factor. The equation of Euler is used for calculating pressure, and other expressions are given for c_u and the correction factor μ. In the case of μ, several formulas are given which were proposed by various authors. The authors pro-

Card 1/2

L 45972-66
ACC NR: AT6026434

pose their own formula for calculating the correction factor μ. Three methods are described for controlling centrifugal compressors: throttling the flow at the intake; twisting the flow at the wheel intake; varying rotor rpm. Of all of these methods, the use of a rotatable diffuser is most economical and efficient for controlling centrifugal compressor operation. The rotatable diffuser uses rotatable intake elements which automatically adjust to the direction of the oncoming air stream. Orig. art. has: 5 figures, 9 formulas.

SUB CODE: 13/ SUBM DATE: 08Jan66

Card 2/2   blg

CA

Oxidizing toluene to benzaldehyde by pyrolusite. F. S. Shkndrkovich and S. S. Livshits. *J. Chem. Ind.* (Russia) 6, 1430–40(1929). Expts. were effected in a tinned kettle with a very rapidly propelled stirrer (400–500 r. p. m.). First H_2SO_4 and toluene were loaded into the kettle, then pyrolusite was added in small portions. The heating was effected by a small burner. The reaction product was steamed to ext. the mixt. of toluene, BzH and BzOH, the layer contg. toluene and BzH was sepd., washed with a Na_2CO_3 soln. for the removal of BzOH and treated with bisulfite to sep. the aldehyde.

The best concn. of H_2SO_4 to be used is 60%; with more dil. acid the reaction hardly takes place, whereas the more concd. acid contributes to tar formation. The increase of temp. favors tar formation, whereas its lowering below 35° slows down the reaction and increases the quantity of BzOH. Increased quantities of pyrolusite have almost no effect on the reaction, since the excess of MnO_2 remains unchanged, but this non-reacted MnO_2 may cause tar formation during the steam distn. Prolongation of the duration of the reaction tends to increase the relative quantity of BzOH and that of tar. Pyrolusite oxidizes about the same quantity of toluene as freshly pptd. MnO_2. Bernard Neuman

METALLURGICAL LITERATURE CLASSIFICATION

Bc

B-2-1

Preparation of butyl alcohol from by-products formed in the synthesis of butadiene by the method of S. V. Lebedev. M. I. Usomanov and S. S. Livsomitz (Sintet. Kauchuk, 1964, No. 2, 7—9).—The "butyl fraction" is hydrogenated (Ni catalyst) under pressure at various temp. A min. pressure of 5 atm. and a min. of 3% of catalyst are necessary. The product, b.p. 115—117°, has d⁴° 0·8160, n 1·3966. Cr. Abs. (r)
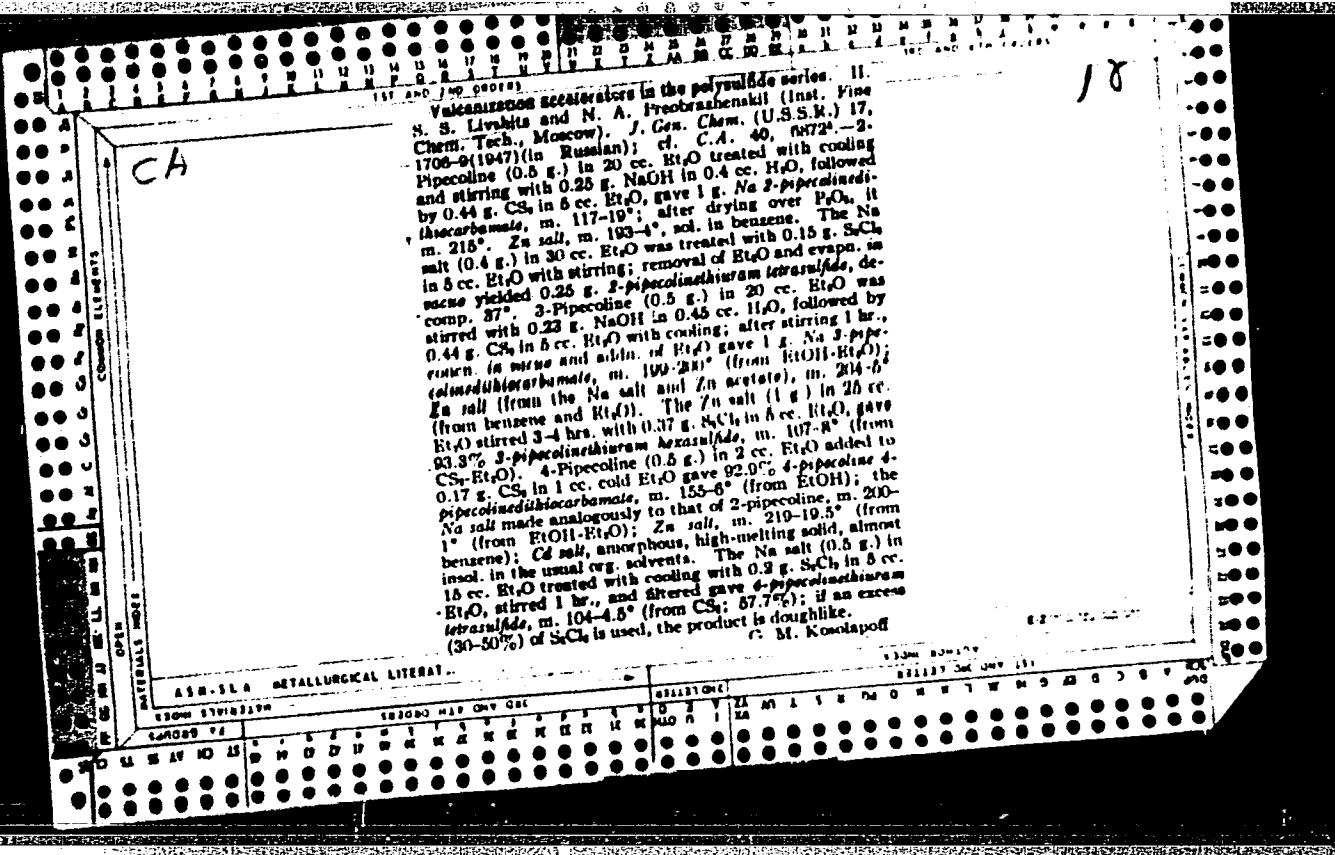
A I B · I L A   METALLURGICAL LITERATURE CLASSIFICATION

30

The synthesis of rubber-vulcanization accelerators in the field of polysulfide compounds. S. S. Lovdut and N. A. Preobrazhenskii (Moscow Inst. Fine Chem. Tech.). J. Gen. Chem. (U.S.S.R.) 15, 025-30(1945). Analasson (4 g.) in 20 cc. benzene was treated slowly with 1 g. NaOH in 2 cc. water at 15-20°, and 1.88 g. CS₂ and 5 cc. benzene; after stirring for 1 hr. there was filtered off 07°, yield of No amidsomethiomethicarbonate, as a very hygroscopic yellow solid. To 15° soln. of this salt in water was added a slight excess of Zn(OAc)₂ soln. to give 81.3% of the corresponding Zn salt as a yellowish amorphous solid, which can be crystd. from EtOH. Two g. of the Zn salt in 1 cc. dry benzene was treated with 2 g. S chloride in 1 cc. benzene to yield 54% of amidsomething thiuram tetrasulfide, yellow solid, insol. in most org. solvents, m. 102°, in aq. NaOH (1.1.5) were added mol. amts. of tetrahydroquinoline and CS₂, after shaking for 4 hrs. up to 95° Na tetrahydroquinolinedithiocarbonate was formed, a pale yellow solid, m. 76-7° (from water-benzene); this was converted in 80% yield into the Zn salt, m. 201° this was treated with 0.24 g. S chloride in 5 cc. dry Et₂O and stirred for 1 hr. to yield almost 100% tetrahydroquinolinethiuram tetrasulfide, m. 71-4°. Tetrahydroisoquinoline (0.5 g.) in 15 cc. benzene was treated with 0.15 g. NaOH in 0.3 cc. water and 0.3 g. CS₂ in 10 cc. benzene to yield 100% colorless Na tetrahydroisoquinolinedithiocarbonate, m. 100-202°. The yield is raised to 95% by the use of excess NaOH and CS₂. The Zn salt is colorless, amorphous, m. 251-2° (from benzene, CHCl₃). The Na salt (3 g.) in 30 cc. benzene was treated with 1 g. S chloride in 30 cc. benzene, after which removal of the benzene gave 75% tetrahydroisoquinolinethiuram tetrasulfide, m. 112-3° (from CS₂).   G. M. Kosolapoff

Vulcanization accelerators in the polysulfide series. II.
S. S. Livshits and N. A. Preobrazhenskii (Inst. Fine
Chem. Tech., Moscow). J. Gen. Chem. (U.S.S.R.) 17,
1706-9(1947)(in Russian); cf. C.A. 40, 6872.—2-
Pipecoline (0.5 g.) in 20 cc. Et₂O treated with cooling
and stirring with 0.25 g. NaOH in 0.4 cc. H₂O, followed
by 0.44 g. CS₂ in 5 cc. Et₂O, gave 1 g. Na 2-pipecolinedi-
thiocarbamate, m. 117-19°; after drying over P₂O₅, it
m. 215°. Zn salt, m. 193-4°, sol. in benzene. The Na
salt (0.4 g.) in 30 cc. Et₂O was treated with 0.15 g. S₂Cl₂
in 5 cc. Et₂O with stirring; removal of Et₂O and evapo. in
vacuo yielded 0.25 g. 2-pipecolinethiuram tetrasulfide, de-
comp. 87°. 3-Pipecoline (0.5 g.) in 20 cc. Et₂O was
stirred with 0.23 g. NaOH in 0.45 cc. H₂O, followed by
0.44 g. CS₂ in 5 cc. Et₂O with cooling; after stirring 1 hr.,
evapn. in vacuo and addn. of Et₂O gave 1 g. Na 3-pipe-
colinedithiocarbamate, m. 100-200° (from EtOH-Et₂O);
Zn salt (from the Na salt and Zn acetate), m. 204-6°
(from benzene and Et₂O). The Zn salt (1 g.) in 25 cc.
Et₂O stirred 3-4 hrs. with 0.17 g. S₂Cl₂ in 5 cc. Et₂O, gave
93.3% 3-pipecolinethiuram hexasulfide, m. 107-8° (from
CS₂-Et₂O). 4-Pipecoline (0.5 g.) in 2 cc. Et₂O added to
0.17 g. CS₂ in 1 cc. cold Et₂O gave 92.0% 4-pipecoline 4-
pipecolinedithiocarbamate, m. 155-6° (from EtOH); the
Na salt made analogously to that of 2-pipecoline, m. 200-
1° (from EtOH-Et₂O); Zn salt, m. 210-19.5° (from
benzene); Cd salt, amorphous, high-melting solid, almost
insol. in the usual org. solvents. The Na salt (0.5 g.) in
15 cc. Et₂O treated with cooling with 0.2 g. S₂Cl₂ in 5 cc.
Et₂O, stirred 1 hr., and filtered gave 4-pipecolinethiuram
tetrasulfide, m. 104-4.5° (from CS₂; 57.7%); if an excess
(30-50%) of S₂Cl₂ is used, the product is doughlike.
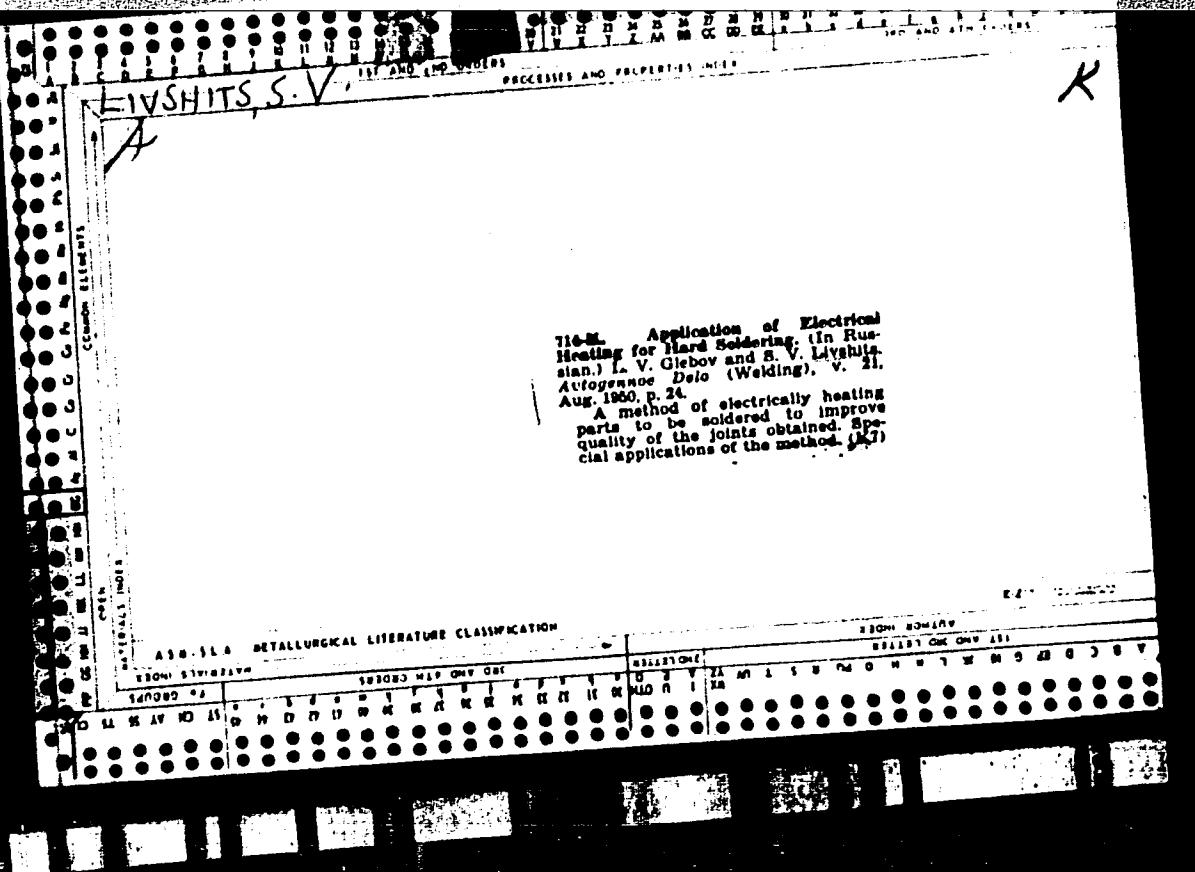G. M. Kosolapoff

LIVSHITS, S. S.

USSR/Chemistry - Quinoline Derivatives   Jul 51

"Research in the Field of Organic Polysulfide
Compounds. III," S. S. Livshits, N. A. Preobra-
zhenskiy, Moscow Inst Fine Chem Technol imeni
M. V. Lomonosov

"Zhur Obshch Khim" Vol XXI, No 7, pp 1303-1308

Worked out syntheses of various salts (including
Na, Zn,) and thiuramsulfides of γ-ethyl- and
γ-isopropylpiperidyl-dithiocarbamic acids,
γ-ethyl- and γ-isopropylpiperidine, trans- and
cis-decahydroquinolyl-dithiocarbamic acids, and
trans- and cis-decahydroquinolines.

191T29

LIVSHITS, S. V.

716-M.   Application of Electrical Heating for Hard Soldering. (In Russian.) I. V. Glebov and S. V. Livshits. *Autogennoe Delo* (Welding). v. 31. Aug. 1960. p. 24.

A method of electrically heating parts to be soldered to improve quality of the joints obtained. Special applications of the method. (N.T)

METALLURGICAL LITERATURE CLASSIFICATION

LIVSHITS, S.V.

Manufacturing and measuring precision lead screws used on lathes.
Stan.i instr. 27 no.10:1C-14 O '56.   (MLRA 9:12)
       (Screw cutting)   (Lathes)

LIVSHITS, S.V.

Mechanization of assembling operations. Stan.i instr. 32
no.9:16-20 S '61.   (MIRA 14:8)
        (Moscow—Assembly-line methods—Technological innovations)

LIVSHITS, S. YA.

Ferro-resonance voltage stabilizers. Moskva, Gos. energ. izd-vo, 1951. 47 p.
(Massovaia radiobiblioteka, vyp. 91) (51-17599)

TK2851.L5

ACC NR: AP6035726   (A)   SOURCE CODE: UR/0413/66/000/019/0086/0086

INVENTOR: Kasimov, R. G.; Kirichenko, I. D.; Livshits, S. Ya.; Mezheritskiy, A. M.; Fomichev, A. V.; Chirtsov, V. I.; Yudin, S. M.

ORG: none

TITLE: Method of extracting mercury from tailings. Class 40, No. 186706

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 86

TOPIC TAGS: mercury, mining engineering, metal extracting, electrolysis

ABSTRACT: To raise the yield and sanitary work conditions for mercury extraction by nitric acid and electrolysis, the electrolysis is carried out in a solution containing 230—260 gram/liter of mercury and 20—40 gram/liter of nitric acid and using a nonsoluble anode and a mercuric cathode; the anode and cathode current densities are 300—450 and 450—600 amp/m^2, respectively. [WA-96]

SUB CODE: 08, 11, 16/SUBM DATE: 30Dec64/

Card 1/1   UDC: 669.791.3:541.135.21

ACC NR: AP6035726   (A)   SOURCE CODE: UR/0413/66/000/019/0086/0086

INVENTOR: Kasimov, R. G.; Kirichenko, I. D.; Livshits, S. Ya.; Mezheritskiy, A. M.; Fomichev, A. V.; Chirtsov, V. I.; Yudin, S. M.

ORG: none

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TOPIC TAGS: mercury, mining engineering, metal extracting, electrolysis

ABSTRACT: To raise the yield and sanitary work conditions for mercury extraction by nitric acid and electrolysis, the electrolysis is carried out in a solution containing 230—260 gram/liter of mercury and 20—40 gram/liter of nitric acid and using a nonsoluble anode and a mercuric cathode; the anode and cathode current densities are 300—450 and 450—600 amp/m^2, respectively. [WA-96]

SUB CODE: 08,11,16/SUBM DATE: 30Dec64/

UDC: 669.791.3:541.135.21

Card 1/1

LIVSHITS, Sh.Ya., inzhener, redaktor; FOMIN, I.V., inzhener, redaktor
        Izdatel'stva; TIKHANOV, A.Ya., tekhnicheskiy redaktor

[Plans for the modernization of knee and column milling machines,
series DZFS models 680M, 610G and series GZFS moldels 680M, 610G,
680U, 610^B, 680D, 680, 610m, 610V, 610, 610D] Tipovoi proekt
modernizatsii konsol'no-frezernykh stankov vypuska DZFS modelei
680M, 610G i vypuska GZFS modelei 680M, 610G, 680U, 610B, 680D,
680, 610M, 610V, 610, 610D. Moskva, ^{G}os. nauchno-tekhn. izd-vo
mashinostroit. lit-ry 1957. 111 p.   (MLRA 10:6)

1. Dmitrovskiy zavod frezernykh stankov. 2. Otdel modernizatsii
i remonta stankov Eksperimental'nogo nauchno-issledovatel'skogo
instituta metallorezhushchikh stankov (for Livshits)
        (Milling machines)

LIVSHITS, Sh.Ya., inzh., red.; FOMIN, I.V., red.izdatel'stva; MODEL', B.I.,
    tekhn.red.

[Standard plan for the modernization of model 255 and 2A56 radial
drilling machines] Tipovoi proekt modernizatsii radial'no-sverlil'nykh
stankov modelei 255 i 2A56. Moskva, Gos.nauchno-tekhn.izd-vo mashino-
stroit.lit-ry, 1957. 142 p.   (MIRA 10:12)

1. Odesskiy zavod radial'no-sverlil'nykh stankov. 2. Otdel moderni-
zatsii i remonta stankov, Eksperimental'nogo nauchno-issledovatel'skogo
instituta metallorezhushchikh stankov (for Livshits).
                    (Drilling and boring machinery)

LIVSHITS, Sh.Ya., inzh., red.; IONOV, P.M., inzh., red.izd-va; TIKHANCV, A.Ya., tekhn.red.

[Model plans for the modernization of knee-type milling machines 6B82, 6B82G, 682, 682G, 6B12, 612] Tipovoi proekt modernizatsii konsol'no-frezernykh stankov modelei 6B82, 6B82G, 682, 682G, 6B12, 612. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 287 p.   (MIRA 11:1)

1. Eksperimental'nyy nauchno-issledovatel'skiy institut metalloreshushchikh stankov (ENIMS) (for Livshits). 2. Gor'kovskii zavod frezernykh stankov.
                    (Milling machines)

LIVSHITS, Sh.Ya., inzh., red.; DANILOV, L.N., red. izd-va; EL'KIND, V.D., tekhn. red.

[Standard plan for the modernization of model 532 and 5B32 gear-cutting machines] Tripovoi proekt modernizatsii zubofrezernykh stankov modelei 532 i 5B32. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 291 p.   (MIRA 11:9)

1.Yegor'yevskiyzavod "Komsomolets." 2. Otdel modernizatsii i remonta stankov eksperimental'nogo nauchno-issledovatel'skogo instituta metallorezhushchikh stankov (for Livshits).
(Gear-cutting machines)

LIVSHITS, Sh.Ya., inzh., red.; GOLUBOV, B.N., red. izd-va; TIKHANOV, A.Ya., tekhn. red.

[Standard plan for the modernization of model 1720(45) and 1730(44) semiautomatic multiple-spindle lathes] Tipovoi proekt modernizatsii mnogoreztsovykh tokarnykh poluavtomatov modelei 1720(45) i 1730(44). Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 369 p.   (MIRA 11:9)

1. Krasnyy Proletariy, Moscow. 2. Otdel modernizatsii i remonta stankov eksperimental'nogo nauchno-issledovatel'skogo instituta metallorezhushchikh stankov (for Livshits).
                              (Lathes)

VASIL'YEV, Vladimir Sergeyevich; KUTKO, Petr Stanislavovich;
    BOGUSLAVSKIY, B.L., prof., retsenzent; LIVSHITS, Sh.Ya.,
    inzh., red.; IVANOVA, N.A., red.izd-va; EL'KIND, V.D.,
    tekhn.red.

[Machines and instruments for dynamic balancing] Stanki i
pribory dlia dinamicheskoi balansirovki. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 166 p.
                                                    (MIRA 12:8)

            (Balancing of machinery)

FOMIN, Sergey Fedorovich; LIVSHITS, Sh.Ya., inzh., red.; SOKOLOVA, T.F., tekhn.red.

[Adjustment of the 1112-1136 and 1A112-1A136-type automatic lathes] Naladka odnoshpindel'nykh tokarnykh aviomatov mod. 1112-1136 i 1A112-1A136. Izd.2., perer. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959.   280 p.   (MIRA 13:2)

(Lathes)

SYSOYEV, Vladimir Ivanovich; LIVSHITS, Sh.Ya., nauchnyy red.;
BOBROVA, T.L., red.; PERSON, M.N., tekhn. red.

[Handbook for a young drilling machine operator]Spravochnik
molodogo sverlovshchika. Moskva, Proftekhizdat, 1962. 270 p.
(MIRA 16:2)

(Drilling and boring)

MELAMED, G.I.; TSVETKOV, V.D.; AYZMAN, D.S.; ZOTOV, G.I., inzh.,
    retsenzent; LIVSHITS, Sh.Ya., inzh., red.

[Machine-tool units] Agregatnye stanki. Moskva, Izd-vo
"Mashinostroenie," 1964.   422 p.   (MIRA 17:6)

SOROKOV, N.M.; MAKHAPETYAN, L.A.; FOMICHEV, A.V.; LIVSHITS, S.Yu..
CHIRTSOV, V.I.; KASIROV, R.G.; LUKINA, M.Yu.; ZHAVORONKOV, N.M.

Experimental industrial production of pharmacopeial cyclopropane.
Khim. prom. 42 no.9:662-663 S '65.
(MIRA 18:9)

(A) L 12140-66   EWT(m)   RM

ACC NR: AP6000455   SOURCE CODE: UR/0064/65/000/009/0022/0023

AUTHOR: Sokolov, N. M.; Nakhapetyan, L. A.; Fomichev, A. V.; Livshits, S. Ya.;
Chirtsov, V. I.; Kasimov, R. G.; Lukina, M. Yu.; Zhavoronkov, N. M.
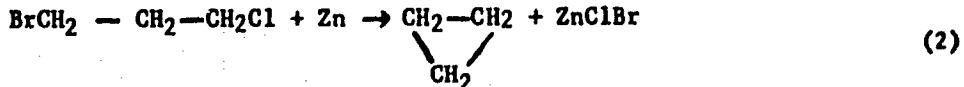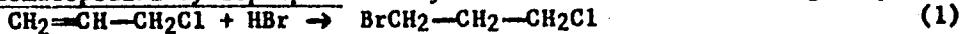
ORG: None

TITLE: Experimental industrial preparation of pharmacopoeial cyclopropane

SOURCE: Khimicheskaya promyshlennost', no. 9, 1965, 22-23

TOPIC TAGS: cyclopropane, organic synthetic process, cyclic group, pharmaceutical,
propane

ABSTRACT: Pharmacopoeial cyclopropane was synthesized via the following steps:

$$CH_2=CH-CH_2Cl + HBr \rightarrow BrCH_2-CH_2-CH_2Cl \qquad (1)$$

$$BrCH_2 - CH_2-CH_2Cl + Zn \rightarrow CH_2-CH_2 + ZnClBr \qquad (2)$$
$$\underset{CH_2}{\diagdown\diagup}$$

In the third step, propylene and other impurities are removed by distillation in a
packed tower. The operation of the experimental industrial assembly used in this
process is described and its diagram is given. The reactor for the synthesis of
cyclopropane is also illustrated. The propylene content of cyclopropane was
Card 1/2   UDC: 661.715.4:547.512

L 12140-66
ACC NR: AP6000455   C

determined by gas-liquid chromatography with a thermal conductivity detector, and
the cyclopropane obtained was found to meet the specified requirements. The study
permitted the refinement of certain parameters of the process by which cyclo-
propane is produced at the various stages, and improved the flowsheet
of the synthesis considerably. Orig. art. has: 3 figures.

SUB CODE: 07 / SUBM DATE: 00 / ORIG REF: 005

Card 2/2

VOROB'YEV, A.I.; LIVSHITS, Sh.Ya.

Development of the production of machine-tool units and
automatic lines. Standartizatsiia 29 no.6:9-12 Je '65.
(MIRA 18:12)

1. Eksperimental'nyy nauchno-issledovatel'skiy institut metallore-
zhushchikh stankov.

LIVSHITS, S.Ye.

Roundoff errors in the solution of economic problems using
electronic digital computers. Trudy LIEI no.55:72-78 '65.
                                                    (MIRA 18:11)

LIVSHITS, S.Ye., red.

[Container recovery of metal; story about progressive practices] Konteinernyi s"em metalla; rasskaz o peredovom opyte. Magadan, Magadanskoe knizhnoe izd-vo, 1963. 14 p.
(MIRA 17:9)

LIVSHITS, S.Ye.; BREKHOV, A.M.; SMIRNOVA, T.I.

Problems of coding initial information in network planning
and administration. Trudy LIEI no.55:89-95 '65.

(MIRA 18:11)

LIVSHITS, Ts. A.

Ca

Ascorbic acid content of blood and Rotter's test. Ts.
A. Livshits. *Pediatriya* 1940, No. 10, 25 N. —In healthy
children (6-12 years old) upon daily administration of 300
mg. ascorbic acid, the blood level rises on the 2nd day and
remains at a high level. Scarlet fever patients of the
same age show a low ascorbic acid blood figure during the
entire duration of the disease; daily administration of it
fails to raise the blood level, if the doses are 100-300 mg.
day. If after the 11th day, the dose is 400-500 mg., the
blood level may be brought up to high figures (av. 1.5
mg. %). In scarlet fever there is a progressive increase
of the length of time of the Rotter Test (cf. C. A. 31,
8577), which shows a drop of vitamin C in the blood as
the disease progresses.   G. M. Kosolapoff

LIVSHITS, TS.A. [Livshyts, TS.A.], kand.med.nauk; ZEMTSOVA, N.O. ; FRANZHOLI,
N.N.; SHVABOVSKIY, V.A. [Shvabovs'kyi, V.A.]

Intraosseous drip infusion of saline solutions for infants. Ped.,
akush. i gin.   19 no.3:28-29 '57.   (MIRA 13:1)

1. L'vovskiy nauchno-issledovatel'skiy institut okhrany materinstva
i detstva (direktor - I.D. Yashchuk) na baze Oblastnoy klinicheskoy
bol'nitsy (glavnyy vrach - I.A. Karagodin).
                        (INJECTIONS, SALINE)

LIVSHITS, T.G.

AKSMAN, N.M.; VILENSKIY, L.I.; GORBUNOV, N.G.; GUBSKIY, V.N.; GURVICH,
M.D.; LATYSHEV, Yu.M.; LEVONTIN, L.I.; LIVSHITS, T.G.; LOGI-
NOVA, M.K.; LUR'YE, D.A.; LYANDRES, O.D.; MIROSHNICHENKO, G.K.;
MOGILEVSKIY, B.Ya.; NEMKOVSKIY, M.I.; ORLEANSKIY, Ya.P.; SA-
VITSKIY, A.N.; SIMMA, S.F.; SURKOV, G.Z.; SHMYGUL', B.P.; SHUBIN,
V.P.; DONSKOY, Ye.Ye., red.izd-va; KAL'NITSKIY, R.Ya., red.izd-va;
ZAMAKHOVSKIY, L.S., tekhn.red.

[Mechanization and automation in the machinery industry] Mekhani-
zatsiia i avtomatizatsiia v stankostroenii. Khar'kov, Khar'kovskoe
obl.izd-vo, 1958. 119 p.   (MIRA 13:2)

1. Kharkov. Institut "Giprostanok." 2. Direktor instituta "Gipro-
stanok" (for Orleanskiy).
        (Machinery industry--Technological innovations)
                (Automation)

LIVSHITS, T.P., prepodavatel' detskikh bolezney

Conducting a practical conference for the students at Moscow Medical
School No.3. Fel'd. i akush. 26 no.9:60-62 S '61.   (MIRA 14:10)
          (MOSCOW—MEDICAL COLLEGES)   (PNEUMONIA)

ACCESSION NR: AT5010603   UR/3147/64/003/000/0087/0090

AUTHOR: Livshits, V. A.

TITLE: Simple mathematical models of tissue

SOURCE: AN SSSR. Institut evolyutsionnoy fiziologii. Funktsii organizma v usloviyakh izmenennoy gazovoy sredy, v. 3, 1964, 87-90

TOPIC TAGS: simulation test, tissue, mathematical model

ABSTRACT: The Haldane mathematical model of tissue defined by equation

$$\frac{dp}{dt} = \frac{1}{\tau} \cdot (P_a - P)$$

which states that the rate of tissue saturation with inert gas is directly proportional to the difference between the partial pressure of gas in the lungs and its tension in tissue has been used to develop a method for computing continuous stat of decompression associated with the treatment of caisson disease. An electri analog operating with trapezoidal pulses was used as the basis for a device to simulate and observe on an oscilloscope the saturation and desaturation of a diver's tissues. Simulation can also be achieved by using a simple hydraulic model

Card 1/2

L 43106-65

ACCESSION NR: AT5010603   0

consisting of two vessels filled with a viscous fluid and connected at the bottom
with a capillary tube. One vessel simulates the lungs, the other simulates the
tissue while the viscous fluid simulates the inert gas. The hydraulic model is
simpler than the electric model but is less convenient to use and requires more
time. Orig. art. has: 3 equations, 1 figure.

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00   SUB CODE: LS

NO REF SOV: 009   OTHER: 002

Card 2/2

RABKIN, Yu.I., inzh.; LIVSHITS, V.A., inzh.

Installation of the boiler of a 1,000 Mw. block in the Ravenswood electric power plant in the U.S.A. Teploenergetika 10 no.9: 85-87 S '63.   (MIRA 16:10)

(New York—Electric power plants)

S/12?/60/000/011/010/01?
AC04/AC01

AUTHOR: Livshits, V. B.

TITLE: The Effects of Built-Up Edge on the Quality of the Surface Finish
            of Aluminum Alloys

PERIODICAL: Stanki i Instrument, 1960, No. 11, pp. 28-29

TEXT: The Laboratory of Cutting Processes of the Tomskiy politekhnicheskiy
institut (Tomsk Polytechnic Institute) carried out investigations of the effects
of a built-up tool edge on the surface finish of a number of aluminum alloys,
viz. АЛ4 (AL4), АЛ4Т (AL4T), АЛ8 (AL8) and АЛ10В (AL10V). The tests were
carried out with ВК8 (VK8) tungsten-carbide-tipped tools, with a rake angle
$\gamma = 25°$, an end cutting edge angle $\varphi_1 = 20°$, a nose radius $r = 0.15 - 0.2$ mm
(tool No. 1) and $r = 1.5$ mm (tool No. 2). The cutting operations were effected
without cooling in a speed range of 2 - 750 m/min and feeds from 0.07 to 0.3 mm/
revolution. The surface finish was rated by the height of microroughness on the
machined surface, which was measured with the model МИС-11 (MIS-11) double
microscope with a magnification of 81 and 145.5. In the course of the cutting
process the built-up edge formation was studied and the height of growth h_g was

Card 1/4

S/121/60/000/011/013/013
A004/A001

The Effects of Built-Up Edge on the Quality of the Surface Finish of Aluminum Alloys

measured with an inclinometer-indicator of the A. V. Yeremin design. As a result of the investigations it was found that the intensity of built-up edge or its absence depended on a certain cutting temperature range of the given alloy (see Table 2):

Temperature	Alloy Grade			
	Al 4	Al 4 m	Al 8	Al 10 V
Corresponding to the formation of built-up edge and the greatest height of inequalities (±°)	30 – 50	30 – 50	55 – 80	45 – 75
At which no built-up edge is formed	290	290 – 320	230 – 270	260 – 290

Card 2/4

S/121/60/000/011/010/013
A004/A001

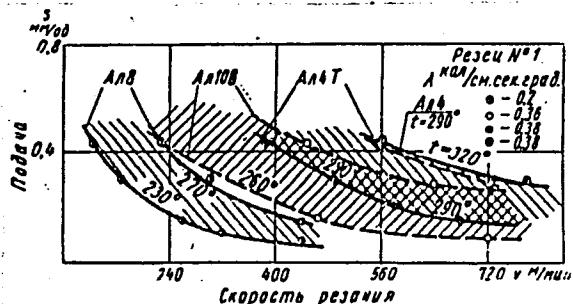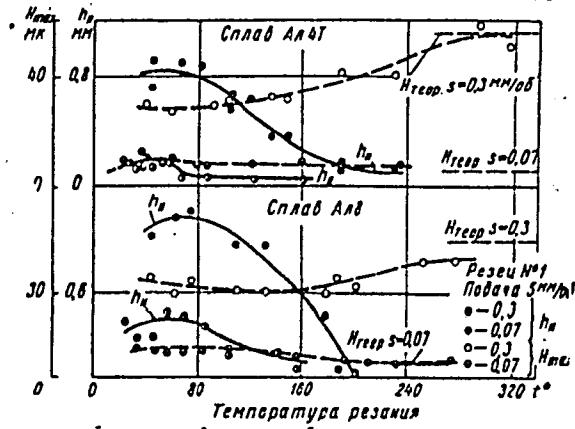The Effects of Built-Up Edge on the Quality of the Surface Finish of Aluminum
Alloys

Figure 1:   Figure 2:

Figure 1 shows the range of cutting
speeds at which growth did not origi-
nate. The higher the heat conduction
coefficiency λ of the alloy, the higher
the cutting speeds at which no built-up

Card 3/4

S/121/60/000/011/010/013
A004/A001

The Effects of Built-Up Edge on the Quality of the Surface Finish of Aluminum Alloys

edge forms, other conditions being equal. Figure 2 shows that the activity of built-up edge formation at given temperature conditions can be reduced by decreasing the feed and by increasing the rake angle of the tool. To determine the effects of growth on the surface microgeometry, the height of the residual crests H_{max} was compared with the theoretical microroughness H_{theor} for the tool of the given geometry. Based on the investigation results obtained, the author draws the following conclusions: When selecting the feed and magnitude of tool radius for finish operations, the condition $s \leqslant 2r \sin \varphi_1$ should be observed, which ensures a microroughness profile approximating the theoretical one in a wide speed range, except for the zone of the most active built-up edge formation. In that way the necessary class of surface finish can be attained. When cutting is carried out in the zone of active built-up edge formation (in the case of $s \leqslant 2r \varphi_1$) a reduced feed will result in a better finish of the machined surface. Optimum results are obtained at cutting conditions which exclude the built-up edge formation, i. e. those conditions given in Figure 1. The lower the thermal conductivity of the aluminum alloy, the narrower is the zone of the built-up edge formation and the lower are the speeds at which no built-up edge forms. There are 5 figures, 2 tables and 3 references.

Card 4/4

LIVSHITS, V.B.

Problems in the economic substantiation of standards. Standartizatsiia
29 no.1:39-42 Ja '65.   (MIRA 18:4)

KOKOREV, V.A.; LIVSHITS, V.B.

         Types and dimensional series of reeling and warping machines.
         Standartizatsiia   26   no.1:35-39   Ja   '62.   (MIRA 15:1)
                        (Textile machinery--Standards)

KURENKOV, Yu.V., kand.ekonom.nauk; KOKOREV, V.A., inzh.; LIVSHITS, V.B., inzh.

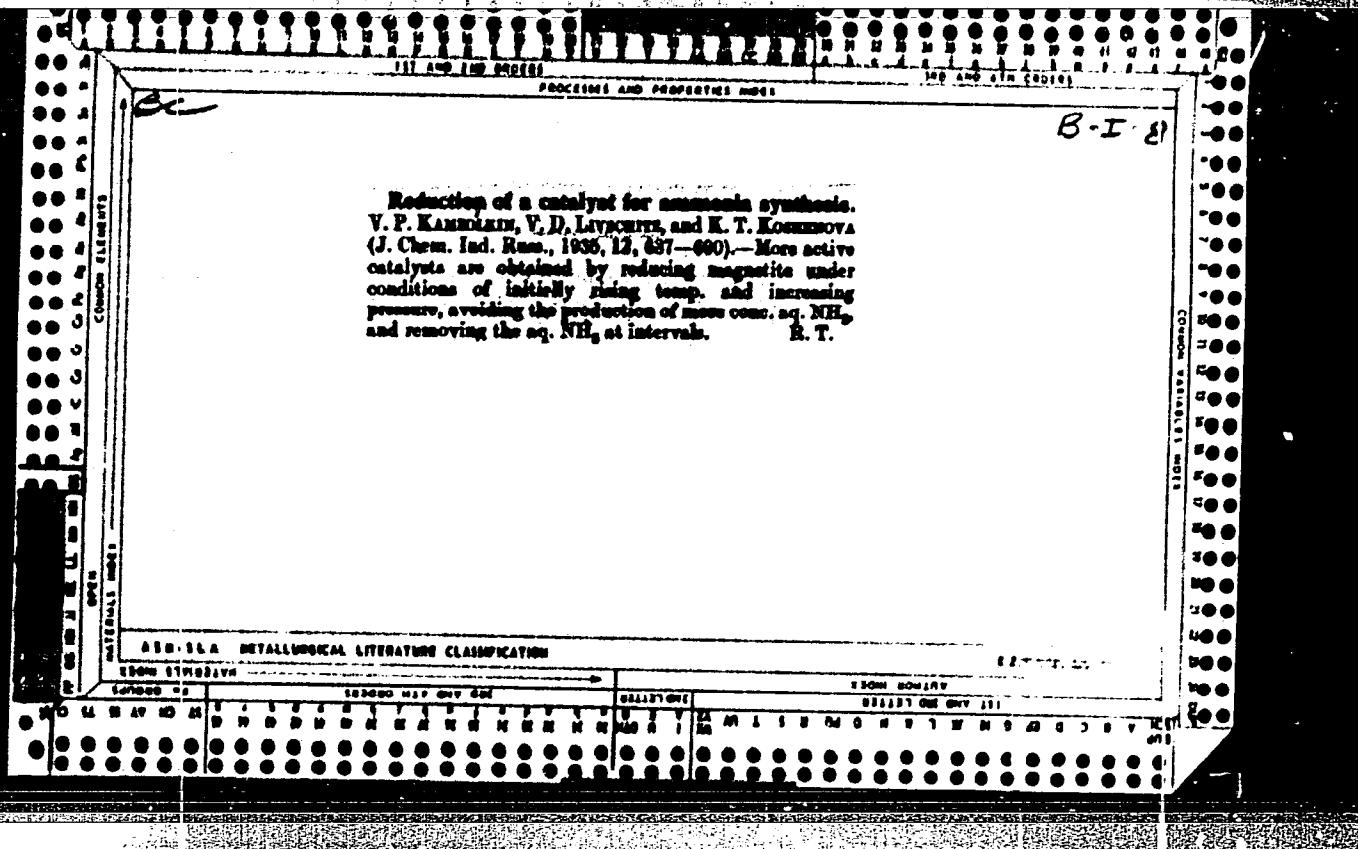   Standard types of weaving equipment. Mekh.i avtom.proizv. 16
   no.12:39-45 D '62.   (MIRA 16:1)
                              (Textile machinery)

LIVSHITS, V.B., starshiy prepodavatel'

Some characteristics of the process of aluminum alloy cutting. Izv.
vys.ucheb.zav.;mashinostr.no.1:140-144 '63.

(MIRA 16:5)

1. Krasnoyarskiy politekhnicheskiy institut.
    (Metal cutting)   (Aluminum alloys)

B-I-81

Reduction of a catalyst for ammonia synthesis.
V. P. KARZHAVIN, V. D. LIVSHITS, and K. T. KOSMINOVA
(J. Chem. Ind. Russ., 1935, 12, 687—690).—More active
catalysts are obtained by reducing magnetite under
conditions of initially rising temp. and increasing
pressure, avoiding the production of mass conc. aq. NH_3,
and removing the aq. NH_3 at intervals.   R. T.

METALLURGICAL LITERATURE CLASSIFICATION

8C

B-1-8

PREPARATION OF CATALYST FOR AMMONIA SYNTHESIS
FROM URAL MAGNETITE. V. P. Kemselkin and V. D.
Lirschits. (J. Chem. Ind. Russ., 1936, 13, 398—401).—
The wet, finely-powdered magnetite, containing 2.5%
of SiO_2, is subjected to magnetic concn., thereby reducing
the SiO_2 content to 1.1%; the product is dried, fused
with 1.5% of K_2O_3 and 2% of Al_2O_3, the mass powdered,
and separation from SiO_2 in a magnetic field repeated.
The dried product is mixed with sufficient Fe to corre-
spond with the composition Fe_3O_4, and again fused. The
mass, containing 0.26—0.52% of SiO_2, is broken up
and used for NH_3 synthesis.   R. T.

CA LIVSHITS, V. D.

The effect of different conditions of reduction on the activity and structure of iron ammonia... P. Komsostkin and V. D. Livshits. J. Chem. Ind. (U. S. S. R.) 14, 93-8(1937).—The time required for reduction is very important. A natural magnetite should be reduced for 46 hrs., an artificial one for 32 hrs. These reductions are best run at 400°, 150 atm. and not too high a rate of gas flow.
Leicester

METALLURGICAL LITERATURE CLASSIFICATION

BC

B - I - &

Inactivation of iron catalysts for ammonia synthesis by steam. V. P. KARBOLKIN and V. D. LIVENTS (J. Chem. Ind. Russ., 1937, 14, 244–246).—The inactivating effect of H_2O on Fe catalysts rises with $[H_2O]$ and pressure, and is greater for catalysts of low than of high activity. The optimum temp. rises with the $[H_2O]$ of the gas, but the yields of NH_3 from gas containing $>0.01\%$ of H_2O are at all temp. $<$ from dry gas.   R. T.

BC

B-I-P

Inactivation of ammonia catalysts by lubricating oils. V. P. KAMBOLSKIN and V. D. LAVROKITS (J. Chem. Ind. Russ., 1937, 14, 1225—1229).—Inactivation of magnetite catalyst by lubricating oil in the gas varies parallel with oil concn. and pressure, and inversely with temp. The effect is due to the action of the products of decomp. of the oil, and the velocity of inactivation is ∝ the rate of penetration of these products into the catalyst granules; for this reason the use of large granules is recommended when the gas is grossly contaminated with oil. R. T.

LIVSHITS, V.D.

SIDOROV, I.P.; LIVSHITS, V.D.

Kinetics of ammonia synthesis in isothermal conditions. Zhur.fiz.khim.
21 no.10:1177-1181 O '47.   (MLRA 7:1)

1. Gosudarstvennyy institut azotnoy promyshlennosti, Moskva.
                            (Ammonia)

USSR/Chemistry - Ammonia Synthesis   Apr 52

"Kinetics of the Synthesis of Ammonia Under
Isothermic Conditions," V. D. Livshits, I. P.
Sidorov, Moscow

"Zhur Fiz Khim" Vol XXVI, No 4, pp 538-541

Investigated kinetics of ammonia synthesis at
pressures of 10, 100, 200, 300, 400, 500 atm and
vol velocities of 30,000, 60,000, 90,000, 120,000
hr -1 at 500° under strictly isothermic conditions.
Demonstrated that the velocity consts k. calcd
by means of M. I. Temkin and V. M. Pyzhev's eq

(using the form which is applicable to low
pressures) drop as the pressure is increased. The
dependence of k on pressure is in agreement with
M. I. Temkin's theoretical eqs of the kinetics of
ammonia synthesis at high pressures. Values of k
recalcd under consideration of the pressure effect
show a satisfactory constancy at changing pressures.

217T27

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LIVSHITS, V. D.

L 17438-63
BW/RM/WW/JD

EPR/EPF(c)/EWP(q)/EWT(m)/BDS   AFFTC/ASD· Ps-4/Pr-4

ACCESSION NR: AP3004299   S/0064/63/000/005/0024/0025 70

AUTHORS: Livshits, V. D. (Candidate of technical sciences); Sidorov, I. P. (Candidate of technical sciences); Beskova, A. P.

TITLE: Effect of methane and its admixtures upon ammonia synthesis

SOURCE: Khimicheskaya promy*shlennost', no. 5, 1963, 24-25

TOPIC TAGS: methane, ammonia, ammonia synthesis

ABSTRACT: Authors studied the effect of methane and some of its admixtures which are contained in a nitrogen-hydrogen mixture upon ammonia synthesis. Natural gas from the Saratov and Dashansk beds was tested. The effect of methane in the gases from each of these fields was studied with one and the same catalyst in three series of tests. The ammonia yield in a pure nitrogen-hydrogen mixture of stoichiometric composition was determined in the first series. The same mixture with an admixture of methane was analyzed in the second series. The pure mixture of stoichiometric

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ACCESSION NR:AP3004299   O

composition was tested again in the third series. The effect of
pure methane was tested at a pressure of 300 atm., temperatures of
450, 475 and 500C, space velocities of 15,000-90,000 hour⁻¹
and concentrations of 5, 16 and 30% by volume. Authors found that
even a maximum methane content (30% by volume) does not have a
negative effect upon the performance of the ammonia catalyst
(ammonia yield in first and third series of tests was identical).
When methane is added to the nitrogen-hydrogen mixture, the
ammonia yield is noticeably reduced. The assumption that this is
caused by a reduction in the mixture's partial pressure on account
of methane rarefaction was not justified. Authors conclude that
presence of methane inhibits ammonia synthesis. Orig. art. has:
3 tables.

ASSOCIATION: none

SUBMITTED: 00   DATE ACQ: 15Aug63   ENCL: 00

SUB CODE: CH   NO REF SOV: 002   OTHER: 00

     2/2
Card

LIVSHITS, V.D., kand. tekhn. nauk; SIDOROV, I.P., kand. tekhn. nauk; BESKOVA, A.P.

Effect of methane and its impurities on the process of ammonia synthesis. Khim. prom. no.5:344-345 My '63.

(MIRA 16:8)

ROZENBERG, A.M.; KHOVAKH, N.I.; LIVSHITS, V.I.

Dynamometer for measuring cutting forces up to two tons. Stan.i instr.
35 no.9:30-31 S '64.
(MIRA 17:10)

ACC NR: AP6019933   SOURCE CODE: UR/0122/66/000/006/0073/0074

AUTHOR: Kufarev, G. L. (Candidate of technical sciences); Livshits, Y. I. (Engineer)

ORG: None

TITLE: Workability of deformable high-manganese steel 18

SOURCE: Vestnik mashinostroyeniya, no. 6, 1966, 73-74

TOPIC TAGS: manganese steel, tool steel, cutting steel, honing, metal machining, microscope, vibration, cast alloy

ABSTRACT: Data are given from a study on the machining properties of various grades of tool steel used for planing 54G17Yu3Kh and 45P17Yu3 steel. These grades of steel were machined on the 7M37 planer. Cutting edges were mechanically attached to the cutters being tested. These cutters were ground on the K346SM2K abrasive disc and honed on a cast iron disc. The "Mir" microscope was used for measuring cutter wear. The following grades of tool steel were tested as cutters: R18, R9K5, R9K10, R18F2, R14F4, hard alloys type TK (T5K10, T15K6, T14K8) and VK (VK4, VK6m, VK8), and other hard alloys. The cutters tested had various shapes and cutting angles. The tests show that cutter shapes with negative angles are not stable. Negative angles cause cutting stresses and vibration. The most stable cutters were those made of A type cast alloy with the following chemical composition: 45-50% Co, 27-32% Cr, 14-19% W, 2-4% C, 2-7%

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L 40061-60

ACC NR: AP6019933

Ta+Nb, 1-3% Mn and 2-5% Fe. Cutter stability as a function of cutting speed is given in the form of a diagram for all tool materials used. Orig. art. has: 1 figure, 2 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 002

Card 2/2 MLP

VORONOY, Yu.Yu., prof. [deceased]; RUDYKH, O.D.; LIVSHITS,V.L.

Skin preservation by deepfreezing; preliminary report.
Probl. gemat. i perel krovi 8 no.5:30-32 My'63.   (MIRA 16:8)

1. Iz laboratorii konservatsii organov i tkaney Kiyevskogo
nauchno-issledovatel'skogo instituta perelivaniya krovi i
neotlozhnoy khirurgii (direktor - dotsent S.S.Lavrik).
        (TISSUES—PRESERVATION)   (SKIN)

LIVSHITS, V.L., inzh.; SIMAKOV, I.K., inzh.

The SKB-2 loaders. Stroi. i dor. mash. 10 no.3:22-25 Mr '65.
(MIRA 18:5)

LIVSHITS, V.M.

Self-contained buoy stations in the United States.   Meteor.i gidrol.
no.8:51-53 Jl [i.e.Ag.] '62.   (MIRA 15:7)

1. TSentral'nyy institut prognozov.
     (United States--Oceanographic research--Buoys)

LIVSHITS, V.M.; YEFIMOV, V.M.; SUURKIVI, E.R.; DOYLOV, S.K.

Results of a balance test of the remodeled gas generators of the
shale-chemical Kivioli Combine. Khim. i tekh. gor. slan. i prod.
ikh perer. no.11:126-135 '62.
(MIRA 17:3)

KHEIFETS, L.B.; LIVSHITS, V.M.

Utilization of some methods of statistical evaluation of unit morbidity index. Zhur.mikrobiol., epid. i immun. 42 no.9:86-91 S '65.
(MIRA 18:12)

1. Moskovskiy institut vaktsin i syvorotok imeni Mechnikova.
Submitted September 8, 1964.

L 46051-66   EWT(d)   GD
ACC NR: AT6022346   SOURCE CODE: UR/0000/66/000/000/0057/0066

56
B+1

AUTHOR: Livshits, V. M.

ORG: None   a

TITLE: A receiver for differentiating binary random signals

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio. 22d, 1966.
Sektsiya teorii i tekhniki peredachi diskretnykh signalov. Doklady. Moscow, 1966,
57-66

TOPIC TAGS: binary code, signal reception, random noise signal, radio receiver, random
function, binary random signal

ABSTRACT: The author considers a radio receiver with an input voltage which is a ran-
dom function of time and belongs to one of two sets having identical Gaussian distri-
bution and different correlation functions. It is shown that a receiver for differen-
tiating the set to which a signal $x(t)$ belongs must calculate the expression

$$U = \int_0^T \int_0^T x(s)\, x(t)\, h(s,\, t)\, ds\, dt$$

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ACC NR: AT6022346

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where the weight function $h(s,t)$ is given by the integral equation

$$\int_0^T \int_0^T r_0(s,\ u)\ [r_1(v,\ t) + N r_0(v,t)]\ h(u,\ v)\ du\,dv = \frac{1}{N+1}\ [r_1(s,t) - r_0(s,t)].$$

A block diagram is given for the optimum receiver capable of calculating the quantity U consisting of a filter with variable parameters $h(s,t)$, a multiplier and an integrator where the voltage at the output at time T is proportional to the quantity U. Formulas are derived for calculating the specific parameters of this type of receiver. Orig. art. has: 4 figures, 22 formulas.

SUB CODE: 09/12/ SUBM DATE: 09Apr66/ ORIG REF: 003/ OTH REF: 002

Card 2/2 $\mathcal{IC}$

SOV/105-59-8-9/28

8 (3)
AUTHORS: Livshits, V. N., Matveyeva, N. K.

TITLE: The Consideration of Resonance Phenomena in the Overhead Contact
               System During the Performance of Rectifier Engines

PERIODICAL: Elektrichestvo, 1959, Nr 8, pp 41 - 45 (USSR)

ABSTRACT: This is an investigation of the distribution of the non-sinuso-
               idal feed current of a rectifier engine in the overhead contact
               system based upon the following articles. The theoretical and
               experimental investigations presented in reference 1 resulted
               in the determination of the amplitudes of the harmonics in the
               primary current of the engine, not accounting for the capacity
               of the contact wire. Other investigations (Refs 2,3) showed
               that the distributed capacity of the contact wire modifies the
               amplitudes of the primary current harmonics only to some extent,
               but effects considerable changes in the harmonics spectrum of
               the traction substation current. It was shown that in the sub-
               station the amplitudes of the harmonics are much greater than
               those of the primary engine current, which can be explained by
               the resonance phenomena occurring due to the distributed capaci
               ty of the contact wire. The method devised by M. P. Kostenko
               (Ref 4) may serve as a basis of theoretical investigation of

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The Consideration of Resonance Phenomena in the   SOV/105-59-8-9/28
Overhead Contact System During the Performance of
Rectifier Engines

resonance phenomena. According to this theory, the rectifier
installation is considered a hypothetical generator of higher
harmonics electromotive forces. By applying this principle,
Jotten and Lebrecht (Ref 5) have found the harmonics spectrum
of the substation for two cases: the engine is close to the sub-
station or at the end of the line. In this article, the more
general case is investigated in which the engine is at any distance
l from the substation, that is $0 < l < l_{end}$. The equivalent cir-
cuit shown by figure 2 is the starting point of a calculation
of the distribution of the n-th harmonic of the current over the
line. Formulas (9) are derived for the equivalent disturbance
current, formula (10) for the amplification coefficient k_{ampl} of
the n-th harmonic, and formula (11) for the calculation of the
resonance frequency of an existing line. It is shown that the
results derived from formulas (10) and (11) differ considerably from
those obtained from formulas (12), (13), and (14) set up by Jotten
and Lebrecht. This is ascribed to mathematical inaccuracy in
the derivation of formulas (12) and (13) by Jotten and Lebrecht.

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The Consideration of Resonance Phenomena in the   SOV/105-59-8-9/28
Overhead Contact System During the Performance of Rectifier Engines

Finally, the general method is specialized to the cases of the
engine being either near the substation or at the far end of
the section which is fed from one end. The calculations showed
for the first case that the mean amplification factor can be
determined approximately from formula (16) for existing traction
systems, the mean error not exceeding 1.5%. There are 3 figures,
1 table, and 8 references, 7 of which are Soviet.

ASSOCIATION: Institut kompleksnykh transportnykh problem AN SSSR (Institute
of Complex Transportation Problems of the AS USSR)

SUBMITTED: October 20, 1958

Card 3/3

LIVSHITS, V.I.

Principles for computing the engineering-efficiency of various
types of a.c. electric locomotives. Elek. i tepl. tiaga no. 2:11-
18 '60.   (MIRA 14:2)
                        (Electric locomotives)

LIVSHITS, V.H.

Some problems of the theory of speed control and power utilization
of a.c. electric locomotives operating on commercial frequency.
Elek. zhel dor. no. 2:105-140 '60.   (MIRA 14:5)
                     (Electric locomotives)

LIVSHITS, V.N., inzh. (Moskva)

Consideration of the service life of equipment in cost
calculations of power engineering systems. Elektrichestvo
no.9:18-23 S '60.   (MIRA 13:10)
        (Eledtric power distribution--Equipment and supplies)

LIVSHITS, V. N., Cand Tech Sci -- "Results of the study of certain problems of electrical voltage in the single-phase current of commercial frequency." Mos, 1961. (Min of Higher and Sec Spec Ed RSFSR. Mos Order of Lenin Power Eng Inst) (KL, 8-61, 245)

- 263 -

LIVSHITS, V.N., inzh.; POZAMANTIR, E.I., inzh.

Economic comparison of variants in planning railroad lines.
Transp. stroi. 10 no. 12:50-51 D '60.   (MIRA 13:12)
                    (Railroads--Estimates)

SI SHEN-LYAN; LIVSHITS, V.N.

Effect of longitudinal compensation devices on the characteristics of
rectifying locomotives at normal operating conditions of the traction
power supply system. Elek.zhel.dor. no.3:119-158 '61. (MIRA 14:7)
(Electric locomotives) (Electric railroads—Current supply)

LIVSHITS, V.N.

Resonance effects in the contact network and methods for considering
them in evaluating the effect of electric traction systems using
single-phase current on wire communication systems. Elek.zhel.dor.
no.3:187-222 '61.   (MIRA 14:7)
                    (Electric railroads—Wires and wiring)
                              (Telecommunication)

LIVSHITS, V.N., kand.tekhn.nauk

Using electronic calculating machines for analyzing the effect
of the overhead system current on communication lines. Vest.
TSNII MPS 20 no.5:54-58 '62.   (MIRA 15:8)

1. Institut kompleksynkh transportnykh problem Gosudarstvennogo
nauchno-ekonomicheskogo soveta Soveta Ministrov SSSR.
  (Railroads--Communication systems) (Electronic digital computers)

PETROV, A.P., doktor tekhn. nauk, prof.; TULUPOV, L.P., kand. tekhn.
nauk; KRYUKOV, N.D., kand. tekhn.nauk; GUNDOBIN, V.N., inzh.;
VASIL'YEV, G.S., kand. tekhn. nauk; GRISHIN, M.S., kand.
tekhn. nauk; MOROZOVA, K.N., inzh.; ROZE, V.A., inzh.; LEVSHIN,
G.L., inzh.; BERNGARD, K.A., doktor tekhn. nauk, prof.;
BIKCHENTAY, M.A., inzh.; BUYANOV, V.A., inzh.; ILOVAYSKIY,
N.D., inzh.; MUKHAMEDOV. G.A., kand. tekhn.nauk; MIROSHNICHENKO,
A.P., inzh.; ANDRIANOV, V.P., inzh.; BUTS, V.D., inzh.; KAZIMOV,
A.A., inzh.; KIREYEV, O.P., inzh.; DYUFUR, S.L., kand. tekhn.
nauk; USTINSKIY, A.A., kand. tekhn. nauk; MIKHAYLOV, S.M., inzh.;
NESTEROV, Ye.P., kand. tekhn. nauk, retsenzent; LIVSHITS, V.N.,
inzh., retsenzent; PREDE, V.Yu., inzh., red.; VORONIKOVA, L.F.,
tekhn. red.

[Control of transportation processes using electronic digital
computers] Upravlenie perevozochnym protsessom s primeneniem
elektronnykh tsifrovykh vychislitel'nykh mashin. Pod obshchei
red. A.P.Petrova. Moskva, Transzheldorizdat, 1963. 207 p.
                                              (MIRA 16:8)
1. Chlen-korrespondent AN SSSR (for Petrov).
   (Railroads--Management) (Electronic digital computers)

GORINOV, A.V., prof.; KANTOR, I.I., dots.; KONDRATCHENKO, A.P., dots.; REPREV, A.I., dots.; TURBIN, I.V., dots.; LIVSHITS, V.N., kand. tekhn. nauk; AKIMOV, V.I., kand. tekhn. nauk, retsenzent; GURSKIY, P.A., prof., retsenzent; ZAYTSEV, P.F., kand. tekhn.nauk, retsenzent; LISHTVAN, L.L., inzh., retsenzent; PRUSAKOV, M.B., inzh., retsenzent; SHINKAREV, F.S., inzh., retsenzent; SHUL'PENKOV, V.M., inzh., retsenzent; MEDVEDEVA, M.A., tekhn. red.

[Design and planning of railroads] Proektirovanie zheleznykh dorog. [By] A.V.Gorinov i dr. Moskva, Transzheldorizdat, 1963. 308 p.   (MIRA 16:9)

1. Chlen-korrespondent AN SSSR (for Gorinov).
                (Railroad engineering)

LIVSHITS, V.S., inzh.

Determination of an effective number of electrical power recipients in the calculation of electrical loads. Izv. vys. ucheb. zav.; energ. 6 no.10:36-43 O '63.   (MIRA 16:12)

1. Institut "Belpromproyekt".

LIVSHITS, V.S., inzh.

Determination of peak current in designing electrical net-
works for shops. Prom. energ. 18 no.12:30-34 D '63.
(MIRA 17:1)