POLIKARPOVA, Ye. F.

"The Role of Environment in the Reproduction of Fish, Birds, and Mammals." Dr Biol Sci, Inst of Animal Morphology imeni Severtsov, Acad Sci USSR, Moscow, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: SUM No. 556, 24 Jun 55

POLIKARPOVA, Ye.F.

Effect of vitamin A and D preparations on the reproduction of domestic animals. Vit.res. i ikh isp. no.2:174-186 '54.
(MLRA 8:10)

1. Institut morfologii zhivotnykh im. A.N.Severtsova Akademii nauk SSSR.
(Vitamins-A) (Reproduction) (Vitamins-D)

POLIKARPOVA, Yekaterina Filipovna.

Academic degree of Doctor of Biological Sciences, based on her defense, 10 February 1955, in the Council of Inst of Morphology of Animals imeni Severtsov, Acad Sci USSR, of her dissertation entitled: "Role of the Medium in the Reproduction of Fish, Birds, and Mammals."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 13, 4 June 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

POLIKARPOVA, Ye.F.

Ovary development in Soviet merino ewes in the intrauterine period. Dokl. AN SSSR. 109 no.4:885-888 Ag 1956. (MLRA 9:10)

1. Predstavleno akademikom Ye. N. Pavlovskim.
(OVARIES) (EMBRYOLOGY—MAMMALS) (SHEEP)

POLIKARPOVA, Ye.F.

Study of ovaries and thyproid glands in the prenatal development of the Soviet merino sheep. Trudy Inst.morf.zhiv. no.23:250-276 '59. (MIRA 13:2)
(Merino sheep) (Fetus) (Ovaries) (Thyroid gland)

17(1,4)

AUTHOR: Polikarpova, Ye. F. SOV/20-124-5-59/62

TITLE: Ovariogenesis in Lambs of the Sovietskiy Merino Breed (Ovariogenez yagnyat porody sovetskiy merinos)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, pp 1167-1170 (USSR)

ABSTRACT: There is an increased interest in the investigation of the reproductive glands of domestic farm animals in consequence of the demands of practice in the course of the last years (Refs 1-6). Inspite of this fact there still exist many disagreements concerning the ovariogenesis, ovogenesis, and the origin of sex cells in the ovaries of mammals. Besides the opinion that the formation of these cells takes place only during the embryogenesis (Refs 7-11) there exists also the opinion (Refs 12-18) according to which the sex cells in ovaries may form also after the birth. In the course of the investigations carried out by the author it was found that in lambs of an age of 2.5 months young sex cells are found in large quantities which could be formed only after the birth. They can be clearly distinguished from older ovocytes according to several characteristics (Fig 1).

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Ovariogenesis in Lambs of the Sovietskiy Merino Breed SOV/20-124-5-59/62

In a 2.5 month old lamb even a corpus luteum was found. Thus, it may be concluded that already at this age an ovulation may take place. There are 2 figures and 18 references, 11 of which are Soviet.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR)

PRESENTED: October 14, 1958, by A. N. Bakulev, Academician

SUBMITTED: October 9, 1958

Card 2/2

POLIKARPOVA, Ye.F.

Biological features of the propagation of livestock. Trudy Inst. morf.zhiv. no.31:26-34 '60. (MIRA 13:6)

1. Institut morfologii zhivotnykh im. A.N. Severtsova AN SSSR.
(Stock and stockbreeding) (Reproduction)

POLIKARPOVA, Ye.F.

Characteristics of the development of ovaries in lambs of the Soviet Merino and Daghestan mountain sheep. Trudy Inst. morf. zhiv. no.35:170-185 '61. (MIRA 14:6)
(Lambs) (Ovaries)

POLIKARPOVA, Ye.F.; NEVZGODINA, M.V.

Breed-related characteristics of the development of ovaries in newborn lambs. Trudy Inst. morf. zhiv. no.35:186-207 '61. (MIRA 14:6)

(Lambs) (Ovaries)

POLIKARPOVA, Ye.F.; NEVZGODINA, M.V.

Specific features of the development of ovaries in newborn Romanov ewe lambs. Dokl.AN SSSR 136 no.5:1252-1255 F '61. (MIRA 14:5)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR. Predstavleno akad. K.I.Skryabinym.
(Lambs) (Ovaries)

POLIKARPOVA, Ye.F.; NEVZGODINA, M.V.

Degree of the development of thyroid glands in newborn Romanov ewe lambs. Dokl. AN SSSR 141 no.3:758-761 N '61. (MIRA 14:11)

1. Institut morfologii zhivotnykh im. A.V. Severtsova AN SSSR. Predstavleno akademikom Yu.A. Orlovym.
(Lambs) (Thyroid gland)

POLIKARPOVA, YE. YE.

USSR/Metallurgy - Cast Ironm Structure May 52

"Influence of Certain Factors on Formation of Globular Graphite," S. G. Guterman, Cand Tech Sci, G. A. Pisarenko, Engr, Laureate of Stalin Prize, Ye. Ye. Polikarpova, Engr, Ural Sci Res Inst of Ferrous Metals.

"Litey Proizvod" No 5, pp 19-21

Studies effect of treating molten cast iron with Mg and ferrosilicon. Notes that globular graphite forms in eutectic temp range. States that Mg decreases O and N content in cast iron and increases stability of cementite in solid metal. Investigates effect of S on graphite shape. Establishes that treatment of cast iron with Mg increases its tendency toward chilling. Addnl treatment with ferrosilicon reduces this tendency, article states.

PA 228T92

POLINAROVA, Z.F.

Importance of a tonal audiogram in topical diagnosis of diseases of the acoustic nerve. Nauch. trudy Kaz. gos. med. inst. 14:521-522 '64. (MIRA 18:9)

1. Kafedra bolezney ukha, gorla i nosa (zav. - prof. N.N.Lozanov) Kazanskogo meditsinskogo instituta i otorinolaringologicheskoye otdeleniye respublikanskoy klinicheskoy bol'nitsy (glavnyy vrach - K.I.Svechnikov) Ministerstva zdravookhraneniya Tatarskoy ASSR.

POLIKARPOVICH, M.; ZHELEZNOV, V., prepodavatel'; IVANOV, V., nauchnyy sotr.

Serious lesson. Sov.profsoiuzy 18 no.14:15-16 Jl '62. (MIRA 15:7)

1. Starshiy instruktor Organizatsionno-instruktorskogo otdela Vsesoyuznogo tsentral'nogo soveta profsoyuzov (for Polikarpovich).
2. Moskovskaya vysshaya zaochnaya shkola profesional'nogo dvizheniya (for Zheleznov, Ivanov).
(Stavropol Territory--Trade unions--Officers)

POLIKASHEV, N. M.

SIZOV, V.A., inzhener.; POLIKASHEV, N.M., inzhener.

Furniture made by the method of bending and kerfing. Der prom. 6 no.2:3-4 F '57. (MLRA 10:4)

1. TSentral'noye proyektno-konstruktorskoye byuro Glavmebel' proma. (Furniture industry) (Veneers and veneering)

POLYASHEV, N.L., inzhener; [illegible], [illegible], inzhener.

Furniture with duralumin tube frames. Der.prom. 6 no.7:3-4 Jl '57. (MIRA 10:8)

1.TSentral'noye proyektno-konstruktorskoye byuro Ministerstva promyshlennosti RSFSR.

(Furniture) (Duralumin)

POLIKASHEV, N.M., inzh.; FIL'KIN, A.I., inzh.

Manufacture of bent and kerfed back legs of chairs. Der. prom. 6 no.9:5-7 S '57. (MIRA 10:11)

1. TSentral'noye proyektno-konstruktorskoye byuro Minbumdrevproma RSFSR.

(Chairs)

POLIKASHEV, N.M., inzh.; FIL'KIN, A.I., inzh.

Bent and glued tables and chairs. Der. prom. 7 no. 5:6-8 My '58.
(MIRA 11:7)

1. TSentral'noye proyektno-konstruktorskoye byuro Upravleniya mebel'noy promyshlennosti Mosgorsovnarkhoza.
(Furniture)

POLIKASHEV, N.M.; IVANOV, N.A.

Use of polymer materials in the manufacture of furniture. Der. prom. 13 no.6:1-3 Je '64. (MIRA 17:6)

1. Vsesoyuznyy proyektno-konstruktorskiy i tekhnologicheskiy institut mebeli.

POLIKASHEV, N.M., inzh.

Using high-frequency heating in gluing wood. Der. prom. 8 no.5: 17-18 My '59. (MIRA 12:7)

1.TSentral'noye proyektno-konstruktorskoye byuro Upravleniya mebel'noy promyshlennosti Mosgorsovnarkhoza.
(Gluing) (Induction heating)

POLIKASHEV, N.M., inzh.; MISHCHENKO, G.L.; MOISEYEVA, N.A.

Varnishing of furniture sections by the flow-coating method.
Der. prom. 8 no.9:21-22 S '59. (MIRA 12:12)

1.TSentral'noye proyektno-konstruktorskoye byuro Upravleniya mebel'-noy promyshlennosti Mosgorsovnarkhoza.
(Varnishes and varnishing) (Furniture)

POLIKASHEV, N.M., inzh.

Manufacture of furniture with metal frames in France. Der.prom. 10 no.1:30 Ja '61. (MIRA 14:2)
(France--Furniture)

POLIKASHIN, Aleksei Il'ich

POLIKASHIN, Aleksei Il'ich, Sovetskaia Pechora; putevye ocherki. Izd. 2., ispr. Arkhangel'sk, Sevkraigiz, 1935. 181 p.

DLC: DK511.P17:6 1935

SO: LC, Soviet Geography, Part I, 1951, Uncl.

POLIKER, B.Ye.; MURSKIY, G.I.; KARIMOV, A.A.

Rational design of a vertical-spindle cotton-picking drum with frictional drive. Izv. AN Uz. SSR. Ser. tekh. nauk 7 no.1: 39-46 '63. (MIRA 17:6)

1. Institut mekhaniki AN UzSSR.

ORLOV, Yu.I.; POLIKASHIN, L.V.

Methods of collecting, transporting and completing the incubation of the eggs of the Atka fish. Trudy Inst. okean. 59:183-190 '62. (MIRA 16:11)

1. TSentral'naya proizvodstvenno-akklimatizatsionnaya stantsiya Glavnogo upravleniye po razvedeniyu ryb i okhrane rybolovstva i Glavnoye upravleniye po razvedeniyu ryb i okhrane rybolovstva pri Sovete Ministrov RSFSR.

POLIKER, B.Ye.; MURSHIY, G.I.

Cotton-picking machine with planetary frictional double-satellite gear. Izv. AN Us.SSR.Ser.tekh.nauk 6 no.2:27-34 '62. (MIRA 15:7)

1. Institut mekhaniki AN UzSSR.
(Cotton-picking machinery)

POLIKER, B.Ye.

New friction drive for the working members of a vertical spindel cotton picker. Izv.AN Uz.SSR Ser.tekh.nauk no.5:79-82 '60. (MIRA 14:9)

1. Institut mekhaniki AN UzSSR.
(Cotton picking machinery—Transmission devices)

AUTHORS: Sidorova, N. G., Poliker, I. A. 79-28-5-36/69

TITLE: Cycloalkylation of Aromatic Compounds (Tsikloalkilirovaniye aromaticheskikh soyedineniy) XIV. Condensations of Cyclohexanol With Some Aromatic Hydrocarbons (XIV. Kondensatsii tsiklogeksanola s nekotorymi aromaticheskimi uglevodorodami)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1276 - 1279 (USSR)

ABSTRACT: In continuation of the earlier investigations by the authors on the alkylation of aromatic compounds with cyclic alcohols (Reference 1) they investigated the condensations of the xylols, of mesytilene, of naphthalene and fluorene with cyclohexanol in the presence of aluminum chloride. In order to avoid side processes they carried out the alkylation of the above-mentioned compounds with cyclohexanol with a small, just necessary, amount of aluminum chloride, as well as a great excess of hydrocarbon at low temperature. From o-xylol 4-cyclohexyl-1,2--dimethylbenzene (71,5%) was obtained. Somewhat worse was the course of the reaction with p-xylol; on the same conditions the yield was 68,6%. Especially easy to synthesize was the

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Cycloalkylation of Aromatic Compounds. XIV. Condensations of Cyclohexanol With Some Aromatic Hydrocarbons

m-xylol(86%), with 5-cyclohexyl-1,3-dimethylbenzene resulting in this case. Its structure was proved by the oxidation into trimesic acid (trimezinovaya kislota) (final product trimethylether !),which had already been discovered earlier by other scientists. However, lately a work was published (Reference 15) in which the structure of 4-cyclohexyl-1,3-dimethylbenzene is attributed to the condensation product of m-xylol with cyclohexene in the presence of aluminum chloride. The condensation of mesytilene with cyclohexanol yielded the 2-cyclohexyl-1,3, 5-trimethylbenzene (35,9%). In the alkylation of naphthalene 59% of monocyclohexylnaphthalene fraction were obtained which mainly consisted of the β-isomer, and 40% of the dicyclohexylnaphthalene fraction in which the presence of the 2,6-isomer could be proved. The condensations of fluorene with cyclohexanol did not take place easily (greatest yield in raw cyclohexylfluorene was 37%), with part of the fluorene remaining unchanged, which may be re-used. There are 1

79-28-5-36/69

Cycloalkylation of Aromatic Compounds. XIV. Condensations of Cyclohexanol With Some Aromatic Hydrocarbons

table and 16 references, 4 of which are Soviet.

ASSOCIATION: Sredneaziatskiy gosudarstvennyy universitet (Central Asian State University)

SUBMITTED: April 22, 1957

Card 3/3

POLIKHANOV, S. M.

FLEROV, G. N. and POLIKHANOV, S. M.

"Nuclear Reactions Induced by Heavy Ions."

paper to be presented at 2nd UN Intl.' Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 58.

BREDEL', V.V.; MIKHEYEV, V.L.; POLIKHANOV, S.M.

Silicon detectors of heavy charged particles. Prib. i tekh.eksp. 6 no.6:44-48 N-D '61. (MIRA 14:11)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Nuclear counters)

POLIKHAT, Z.S.; KRUPEY, S.A.

Developing the well-bottom zone by the implosion method.
Neft. khoz. 43 no.2:41-45 F '65. (MIRA 18:4)

NIKOLAYENKO, N.A.; POLYAKOV, A.S.

Clay-acid treatment of wells in the Carpathian Mountain region.
Neft. i gaz. prom. no.2:43-45 Ap-Je '65. (MIRA 18:6)

POLIKHRONOV, Dobri

Some problems in the breeding biology of water buffaloes.
Selskostop nauka [2] no. 2: 234-242 '63.

1. POLIKOV, V. G.

2. USSR (600)

4. Ambary Hemp

7. Microflora in retting ambary hemp. Trudy Vses.inst.sel'khoz.mikrobiol. 11 No. 2 1951

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

POLIKOVA, V.N.; SAKHAROV, P.P.

Study of the converting properties of allergens. Biul. eksp. biol. i med. 56 no.11:104-106 O [i.e. N] '63. (MIRA 17:11)

1. Iz allergologicheskoy laboratorii Nauchno-issledovatel'skogo instituta ukha, gorla i nosa Ministerstva zdravookhraneniya RSFSR. Predstavlena deystvitel'nym chlenom AMN SSSR N.N. Zhukovym-Verezhnikovym.

ROZENGART, M.I.; POLKOVNIKOV, B.D.; POLININ, V.L.; TABER, A.M.; GITIS, K.M.

Aromatizing capacity of boride catalysts of platinum group metals. Izv. AN SSSR. Ser. khim. no.5:919-922 '65. (MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

POLIKOVSKIY, M. V., Cand Tech Sci -- (diss) "~~Evaluation~~ Calculation of pressure and cavitation characteristics of liquid ejectors." Mos, 1957. 16 pp (Min of Higher Education USSR, Mos Order of Lenin Power Engineering Inst), 100 copies (KL, 1-58, 118)

PA - 2155

AUTHOR POLIKOVSKIY, M.V.

TITLE For the Computativa of an Input-Sector of an Ejector (K raschetu vkhodnogo uchastka ezhektora).

PERIODICAL Izvestiia Akad.Nauk SSSR, Otdel.Tekhn., 1957, Nr 1, pp 61-69 (U.S.S.R.)

Received 3/1957 Reviewed 4/1957

ABSTRACT

It was the task of this paper to find a computation method for the input-sector of an ejector which takes the influence of its shape on the pressure- and cavitation-characteristics of the apparatus into account. The mixing liquids are assumed to be incompressible and of equal weights. The active jet develops within the range of variable pressures and the velocities of the accompanying current. The curvature of the current boundaries is neglected. Equation for the modification of the current motion mass $\Delta K$, and for its relation to the modification of the velocity $\mu$ on the occasion of transition of the input-sector from the cross-section (i - 1) to the cross-section i are established. The equations for the untearability and for the mass of motion are derived. Now such values are found for the accompanying velocity $\mu$, for the nuclear radius, and for the velocity at the point of the jet in order that these equations be satisfied. The computation method is explained. The obtained system of equations facilitates the determination of the total flux in the input-sector of the jet. It is shown how the decrease of static pressure caused by flux acceleration can be determined.

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For the Computativa of an Input-Sector of an Ejector.

Finally, a scheme for the investigated working methods is given. According to it, relations are derived which facilitate the determination of the cavitation-character of the apparatus.
(8 illustrations)

ASSOCIATION Not given
PRESENTED BY
SUBMITTED 12. 3. 1956
AVAILABLE Library of Congress

Card 2/2

SOV/96-58-5-3/27

AUTHORS: Polikovskiy, M.V. and Tamarchin, A.L., Engineers

TITLE: Tests on a Sonic Regulating Stage by the Kaluga Turbine Works with Partial Steam Supply (Ispytaniya okolozvukovoy reguliruyushchey stupeni KTZ s partsial'nym podvodom para)

PERIODICAL: Teploenergetika, 1958, Nr 5, pp 17 - 21 (USSR).

ABSTRACT: Experimental work by the Kaluga Turbine Works in co-operation with the MEI (Moscow Power Institute) the BITM and other institutes has resulted in a marked increase in the efficiency of the works turbines. In particular, it was possible to raise the efficiency of sonic two-row regulating stages from 56.5% in 1954 to 72.7% in 1957. This has been accomplished mainly by using aero-dynamic blade shapes developed in the Moscow Power Institute. Work on sonic regulating stages for the high-pressure cylinder of 3,000 rpm turbines has proceeded in the works laboratory since 1953 on experimental steam turbine, type ET-300.
During the tests, the initial pressure is held to within 0.01 atm. and the temperature to within 2 - 4 °C. The turbine is loaded by a two-disc hydraulic brake, illustrated in Figure 2. The brake load is regulated by adjusting the flow of water and covers the range 60 - 350 kW at 3,000 rpm. The method of

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Tests on a Sonic Regulating Stage by the Kaluga Turbine Works with Partial Steam Supply

applying load is described and the test procedure for determining the no-load power and the efficiency is indicated. The tests established the numerical influence of the area-ratio on the efficiency of regulating stage, type KS-1A. At present, The Kaluga Turbine Works employs this stage in nine types of turbine with outputs of 2,500 - 12,000 kW. Three stages were tested and the corresponding area-ratios are given in Table 1. The mean diameter of the stages was 800 mm and the main characteristics of the blading were as given in Table 2. The values of the various gaps are recorded in Figure 3 and the associated table. All the tests were made with super-heated steam, with initial conditions of 3.5 atm. and 200 °C with sonic pressure ratios on the stage. The test results are given in Figures 4 - 6, showing that the most efficient of the three stages is Nr 2.
Graphs of the loss with outlet velocity are given in Figure 7 which shows that in stage 2, the least loss, of 2%, occurs with a velocity ratio of 0.22. The use of the i/s diagram to calculate the outlet velocity loss is demonstrated in Figure 8. Stages Nrs 2 and 3 were tested with various axial gaps; the

adjustments were generally made by displacing the rotor whilst leaving the nozzles and guide vanes in position. Efficiency curves for stage Nr 2 are given in Figure 10 and for stage Nr 3 in Figure 11. Stages 2A and 3A differ from 2 and 3 in that they have a smaller front axial gap; the corresponding curves from Figures 5 and 6 are shown in dotted lines. It will be seen that the influence of gap distribution is very considerable.
It is concluded that the variants of stage, type KS-1A, are very efficient when tested with partial steam supply and short blades. The tests show that the blading is of high aero-dynamic quality over a wide range of flow conditions. Quite a small reduction in the forward axial gap increases the stage efficiency by 2 - 2 1/2 %. There are 11 figures and 2 tables.

ASSOCIATION: Kaluzhskiy turbinnyy zavod (Kaluga Turbine Works)

 1. Turbines--Test methods 2. Turbine blades--Design

SOV/96-58-9-8/21

AUTHORS: Polikovskiy, M.V. (Candidate of Technical Science) and Shklover, G.G. (Engineer)

TITLE: An Experimental Investigation of Steam-jet Ejectors (Eksperimental'noye issledovaniye parostruynykh ezhektorov)

PERIODICAL: Teploenergetika, 1958, Nr 9, pp 46 - 51 (USSR)

ABSTRACT: Between 1954 and 1957 the laboratory of the Kaluga Turbine Works has made detailed tests on a number of two-stage steam-jet ejectors used on the condensers of low- and medium-power turbine sets. As a result of the tests and of improvements in the design of the coolers a series of very efficient ejectors was developed. The tests were made whilst extracting dry air and steam/water mixture over a wide range of working conditions. The profile of the flow part of the ejectors is illustrated schematically in Fig 1 and the leading dimensions are given in Table 1. Throughout the tests the steam delivered to the nozzles was at a pressure of 16 atm and a temperature of 220 - 250°C. The tests showed that the shape and length of the inlet section have a most important influence on the performance of the ejector, as indicated by the characteristics plotted in Fig 2. The best ratio of the length of inlet section

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to thrcat diameter is about six, as will be seen from Fig 3; if this ratio is reduced to about 3.6 the performance is appreciably impaired. In the ejectors tested, the ratio of the length of the cylindrical part to its diameter was 3 - 4.5, and the diffuser angle was 8 - 10 degrees. The influence of the ratio of the area of the throat to that of the nozzle was also studied. The best values of this ratio and of the corresponding ejection factor are plotted in Fig 4. Test results for the second stages were presented in the form of a family of such curves for constant values of inlet pressure. Experimental curves of the kind given in Fig 4 are valid only if the conditions are very close to those used in the tests, but they can be expected to apply well enough to ejectors similar to those tested. The amount by which the output of the second stage should be greater than that of the first is discussed. With each stage tested, determinations were made of the limiting back-pressure as a function of the area ratio; and the results are graphed in Fig 5. The main dimensions of the flow parts which were used in the design of the new ejector

type EO-30 are recorded in Table 1 line 11 (first stage) and line 14 (second stage). Their characteristics are given in Fig 7. The efficiencies are appreciably greater than those of other ejectors, for example type EP-2-400 of the Leningrad Metal works. The main reason for the improvement is the greater length of the inlet section and the reduced angle of it. In addition to the above considerations the efficiency of an ejector depends very much on the performance of the coolers. The screw-type heat-exchangers used by the Kaluga Turbine works are very efficient and, as will be seen from Fig 8, this makes the new-type ejector still more efficient than the old. The heat-transfer coefficient of the screw-type heat-exchangers is up to 1500 kcal/$m^2$hour/$^oC$, which is between three and five times higher than usual, so that the equipment can be made small and light. Ejector type EO-30 is intended for use with turbine set type AP-6 of 6000 kW. A cross-sectional drawing of the complete assembly appears in Fig 9 and the construction is described. The main characteristics are given in Table 2. Although the output is much the same as that of ejectors types E-1-B

An Experimental Investigation of Steam-jet Ejectors

and EP-2-400 it is only half the weight, as will be seen from Table 3. The steam consumption of the new ejector is also much less than that of other types, as indicated by the data in Table 4. It is hoped to improve still further the performance of ejector type EO-30 by modifying the areas of the flow parts.

There are 9 figures, 4 tables, 4 literature references (Soviet)

ASSOCIATION: Kaluzhskiy turbinnyy zavod (Kaluga Turbine Works)

1. Air ejectors--Test methods

SOV/96-58-11-9/21

AUTHOR: Polikovskiy, M.V., Candidate of Technical Science
Shcheboldin, A.V., Engineer

TITLE: The Choice of Nozzle Apparatus Construction for a Supersonic Regulating Stage (O vybore konstruktsii soplovogo apparata dlya sverkhzvukovoy reguliruyushchey stupeni)

PERIODICAL: Teploenergetika, 1958, Nr 11, pp 56-60 (USSR)

ABSTRACT: The efficiency of small high-speed turbines depends, to a considerable extent, on the efficiency of the regulating wheel. In 1955, in order to study the characteristics of regulating stages of high-speed turbines (6,000 - 12,000 rpm) under practical conditions, the Kaluga Turbine Works designed and made an experimental steam turbine type ET-100, which is illustrated diagrammatically in Fig.1. A special feature of this turbine is the use of hydrostatically unloaded plain bearings with water lubrication. Water at a pressure of 10 atm is delivered by a special pump; the rotor positioning arrangements are described. The advantages of water-lubricated bearings that have been observed in

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The Choice of Nozzle Apparatus Construction for a Supersonic Regulating Stage

practice are described. The loading device used on the turbine is a two-disc hydraulic brake, details of which are given. The procedure for making the various measurements required is described. The tests carried out on the turbine type ET-100 were used to determine the influence of some design features of the nozzle apparatus on the efficiency of a double-row supersonic partial regulating stage. Five variants of stage were tested with the same fixed and moving blades, the principal dimensions of which are given in Fig.2. The mean stage diameter is 550 mm and the nozzle height 12 - 13 mm. The main test conditions are tabulated. Stage 1 is illustrated in Fig.3a. The nozzle segment of this stage is welded and the shrouding is cylindrical. The test results, given in Fig.4, show that the maximum stage efficiency with these nozzles is only 63.5%; the reasons for this are discussed. Stage 2, illustrated

The Choice of Nozzle Apparatus Construction for a Supersonic Regulating Stage

in Fig.3b, has a nozzle segment with plane inter-blade channels. Test results given in Fig.5 show that the efficiency of this stage is about the same as stage No.1; again the reasons are discussed. Stage No.3. is illustrated in Fig.3c. The nozzle segment of this stage has the same profiles as in the previous stages but the shrouding is specially profiled; the construction will be seen from Fig.6. Test results on stage 3, given in Fig.7, show that it is of comparatively high efficiency, being 2 - 4% more efficient at the important part of the range than the previous stages. Stages 4 and 5 are illustrated in Fig.3d. The nozzle segments of these stages contain drilled channels and differ in other constructional features. The test results for both variants, given in Fig.8, show that both are efficient; the highest stage efficiency, 68.5% was obtained with stage 5. An important advantage of nozzle segments of this construction is the ease of manufacture, so that it is easier to make the channel

The Choice of Nozzle Apparatus Construction for a Supersonic Regulating Stage

dimensions accurate and their surfaces clean than it is with welded constructions. Tests with blade profiles of the Moscow Power Institute showed that these were more efficient than the profiles previously used; the results are plotted as dotted lines in Fig.9. The results of these investigations were used by the factory in designing a series of low-power turbines. The use of the new experimentally developed regulating stages (types 4 and 5) facilitated improvement of the efficiency of the flow path of these turbines whilst reducing the number of stages and the size and weight of the installation as a whole. There are 9 figures and 1 table.

ASSOCIATION: Kaluzhskiy turbinnyy zavod (Kaluga Turbine Works)

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AUTHOR: Polikovskiy, M.V. (Moscow)

TITLE: One Stability Criterion of the Characteristics of Blade Machines

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 1, pp 149-151 (USSR)

ABSTRACT: The paper is a continuation of previous work (Ref 2). The working of bladed machines (pumps, compressors) in the region where the derivative of pressure by supply is positive $(dH/dQ > 0)$ is usually regarded as unstable and frequently leads to surges and self-generated vibrations in the system. This criterion, however, determines static instability and dynamic instability may still exist. In analysing the acoustic vibrations in the system it is convenient to use the classical theory of hydraulic shock and particularly the graphic-analytical methods of this theory (Ref 1). Figure 2 represents part of the dimensionless characteristics of the pump $c - c$ and of the circuit piping $0 - a$ in coordinates $\bar{H} = H/H_o$ and $\bar{V} = V/V_o$. The point A determines the steady working regime of the system at which

Card1/3

One Stability Criterion of the Characteristics of Blade Machines

the pressure of the machine is $H_{OM}$ and the flow velocity in the pipeline $V = V_o$ m/sec. Suppose that during a time interval $0 < t < \mu = 2L/a$ ($\mu$ = duration of the shock phase, $a$ = velocity of wave propagation in the pipeline) disturbances arise on discharge from the pipeline at the point A which can be represented as an increase in the net resistance of small magnitude. The characteristics of the net (piping) are then determined by the curve 0 - b and the steady working regime of the machine corresponds to point B. On the basis of this representation, curves can be constructed (Figure 3) showing the effect of the angles $\theta \left[= \text{arctg}(d\bar{H}/d\bar{V})_{\text{piping}}\right]$, $\gamma \left[= \text{arctg}(d\bar{H}/d\bar{V})_{\text{machine}}\right]$ and $\alpha \left[= \text{arctg}(aV_o/gH_o)\right]$. The condition for stability in terms of these angles is Eq (5). This condition is

Card 2/3

POLIKOVSKIY, V.I.

K voprosu o raschete tsentrobezhnykh ventiliatorov i nasosov. Chast' I. Raschet rabochego kolesa. Moskva, 1934. 60 p., diagrs. (TSAGI. Trudy, no. 154)

Summary in English.

Title tr.: On the design of centrifugal fans and pumps. Part I. Working wheel design.

Part II and III see under 959 and 948.

QA 911.M65 no. 154

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

POLIKOVSKIY, V. I. and M. I. NEVEL'SON

Rabota ventiliatora s bezlopatochnym diffuzorom. Moskva, 1935. 32 p., illus., diagrs. (TSAGI. Trudy, no. 224)

Summary in English.

Title tr.: Performance of vaneless diffuser fan.

QA911.M65 no.224

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

Polikovskiy, V.I.

DOVZHIK, S. A., and V. I. POLIKOVSKIY.

Eksperimental'noe issledovanie modeli dvukhstupenchatoi turbovozdukhoduvki. Moskva, 1935. 59 p., diagrs. (TSAGI. Tridy, no.191)

Summary in English.

Title tr.: Experimental investigation of a model of a two-stage turboblower.

QA911.M65 no.191

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1951

POLIKOVSKIY, V.I., and M. I. NAZEL'SON

Statisticheskii metod issledovaniia tsentrobezhnogo ventiliatora. Moskva, 1935. 76 p., tables, diagrs. (TSAGI. Trudy, no.227)

Summary in English

Title tr.: Statistical method of investigation of centrifugal fans.

QA911.M65 no.227

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

Polikovskiy, V.I.

OVCHINNIKOV, V.I., and V.I. POLIKOVSKIY.

Ustoichivost' parallel'noi raboty ventiliatorov. (TSAGI. Trudy, 1935, no. 211, P.203-215, diagrs.)

Summary in English: p.289.

Title tr.: Steady performance of fans working parallel.

QA911.M65 no.211

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

POLIKOVSKIY, V.I., and V. N. OVCHINNIKOV.

Izuchenie vliianiia razlichnykh konstruktivnykh izmenenii na rabotu tsentrobezhnykh ventiliatorov tipa "Sirokko." (TSAGI. Trudy, 1/35, no.211, p.241-250, diagrs.)

Summary in English: p. 290

Title tr.: The influence of varying design elements on the performance of "Sirocco" type of centrifugal fans.

QA911.M45 no.211

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

POLIKOVSKIY, V.I.

Vliianie zazora mezhdu kryl'chatkoi i kozhukhom na rabotu tsentrobezhnogo nagnetatelia. Moskva, 1936. 20 p., diagrs. (TSAGI Trudy, no. 263)

Summary in English.

Bibliography: p. 20.

Title tr.: Effect of clearance between the impeller and casing on the performance of a centrifugal supercharger.

QA911.M65 no. 263

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

POLIKOVSKIY, V.I., and M.I. NEVEL'SON

K voprosu o raschete tsentrobezhnykh ventiliatorov i nasosov. Chast'II. Moskva, 1936. 16 p., diagrs. (TSAGI. Trudy, no. 272)

Summary in English.

Title tr.: On the design of centrifugal fans and pumps. Part II.

Part I and III see under 965 and 948

QA911.M65 no.272

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

POLIKOVSKIY, V.I., and G.N. ABRAMOVICH.

Eksperimental'naia proverka osnovnykh dopushchenii rascheta spiral'nykh kozhukhov tsentrobezhnykh nagnetateleĭ i ventiliatorov. Moskva, 1937. 53 p., diagrs. (TSAGI. Trudy, no. 328)

Title tr.: Experimental verification of basic assumption in the design of volute casings of centrifugal fans and superchargers.

QA911.M65 no. 328

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

POLIKOVSKIY, V.I.

Opredelenie optimal'noi skorosti vykhoda vykhlopnykh gazov dlia skorostnogo samoleta. Moskva, 1939. 12 p., diagrs. (TSAGI. Trudy, no. 430)

Title tr.: Determination of the optimum velocity of exhaust gases in high speed aircraft.

QA 911.M65 no.430

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

POLIKOVSKIY, V. I. and Tikhonov, N.I.

"The Effect of a Tank's Vibration on Its Rate of Discharge (O Vlianii Vibratsii Baka na Skorost Yego Oporozhnenia)", Military Aviation Technology, No 7-8, 1939

POLIKOVSKII, V.

POLIKOVSKII, V., and M. I. NEVEL'SON.

The performance of a vaneless diffuser fan. Washington, 1942. p. 37, plates, tables. (U. S. NACA TM no. 1038)

Trans. of Rabota ventiliatora s bezlopatochnym diffuzorom.

TL507.U57 no. 1038

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

POLIKOVSKIĬ, V.I., and A.I. TOLSTOV.

Gazoturbinnyi reaktivnyi dvigatel' "TKRD-004". (Tekhnika vozdushnogo flota, 1945, no.10, p.1-15, illus, diagrs.)

TL505.T4 1945

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

POLIKOVSKIY, V. I., Prof. ; LEVIN, V. R.

On the Question of Balancing the Output of Scavenging and Pressure Oil Pumps of Aviation Engines. [redacted] 1946.

Stalin Prize. Doctor of Technical Sciences. Member of the Department of Aircraft Engine Design at the Moscow Aviation Institute. From 1933 to 1937, conducted experimental research on centrifugal superchargers, the findings of which served as a basis for analysis of centrifugal compressors.

POLIKOVSKIY, V. I. and V. R. LEVIN.

K voprosu o balanse proizvoditel'nosti otkachivaiushchei i nagnetaiushchei maslianykh pomp aviatsionnykh motorov. Moskva, Oborongiz, 1940.

Title tr.: Efficiency balance of exhaust and pressure pumps of aircraft engines.

NCF

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

POLIKOVSKIY, V. L.

G. L. Volkov. Silovye ustanovki samoletov. (Sovetskaia kniga, 1948, no. 10, p.55-60)

Review of the book by G. L. Volkov: "Air-craft power plants."

Z2495.S67 1948

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

PALEKOVSKIY, V. I.

D. A. Novak, Rabota motornykh agregatov no bol'shikh vysotakh. (Sovetskaia kniga, 1948, no. 12, p.58-60)

Review of the book by D. A. Novak: "Performance of engine accessory units at high altitudes."

Z2495.S67 1948

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

POLIKOVSKIY, V.I.

N.E. Zhovinskii. Silovye aviatsionnye ustanovki. (Sovetskai kniga, 1949, no.7, p.55-58)

Review of the book by n.e. Zhovinskii: "Aircraft power plants."

Z2495.S67 1949

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

POLIKOVSKII, V.I.

POLIKOVSKIY, V.I.

PHASE I

BOOK

Call No.: TL701.P59

Author: Polikovskii, V.I.

Full Title: AIRCRAFT POWER PLANTS

Transliterated Title: Samoletnye silovye ustanovki.

Publishing Data

Originating Agency: None.

Publishing House: State Publishing House of Defense Industry (Oborongiz)

Date: 1952. No. pp.: 600. No. of copies: Not given.

Editorial Staff:

Editor: None. Tech. Ed.: G.E. Lozino-Lozinskii

Editor-in-Chief: Not given. Appraiser: None.

Others: Gratitude for valuable assistance expressed to V.V. Kostochkin and N.E. Zhovinskii.

Text Data

Coverage: Basic principles of designing aircraft power plants with piston engines and gas turbine engines are considered in detail. Contents: Pt. 1: Fuel systems. Pt. 2: Lubrication systems. Pt. 3: Internal aerodynamics. Suction and exhaust systems. Pt. 4: Engine cooling systems. Pt. 5: Control and starting systems. Pt. 6: General problems of designing aircraft power plants.

Purpose: A textbook for students of aeronautical institutions of higher learning.

( 1/2)

Samoletnye silovye ustanovki.

Call No.: TL701.P59

Facilities (personalities and institutions with location): Moscow Aviation Institute (im. Sergo Ordzhonokidze), Faculty head: G.S. Skubachevskii.

No. Russian and Slavic References: 107.
Available: Library of Congress.

Limited phase III exploitation available - D-37144

SOV/124-57-4-4151

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 43 (USSR)

AUTHORS: Polikovskiy, V. I., Levin, A. A.

TITLE: Some Refinements of the TsAGI Method of Fan Design Calculation (Nekotoryye utochneniya metoda TsAGI, primenyayemogo pri raschete ventilyatorov)

PERIODICAL: Tr. MAI, 1955, Nr 50, pp 57-67

ABSTRACT: Two analytical formulas are given. The first formula serves to determine uniquely the size of the inflow port of the pump; the second formula permits a determination of the pitch setting of the impeller vanes of the fan. Bibliography: 3 references.

I. A. Shepelev

Card 1/1

SOV/124-57-9-10349

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 9, p 66 (USSR)

AUTHORS: Polikovskiy, V. I., Perel'man, R. G.

TITLE: The Evaluation of Loads on Water Gates Due to Floating Solid Bodies Sucked Into Whirlpools (Otsenka nagruzok na zatvory pri podsasyvanii voronkami tverdykh plavayushchikh tel)

PERIODICAL: Tr. MAI, 1955, Nr 50, pp 216-230

ABSTRACT: The paper submits the results of investigations on the evaluation of possible additional loads on water gates due to solid floating bodies (logs) sucked under by whirlpools. The investigations were conducted in the hydraulic flume on a model of the spillway dam of the Kuybyshev Hydraulic Power Plant built to a scale of 1:50. Whirlpools were created in the corners between the gate and the pier by means of a tangential delivery of water through an eddy stimulator. The basic laboratory tests were made with two values of the opening of the gate $a/H=0.25 \div 0.30$ and 0.5. The Reynolds number was expressed as $R = rC_u/\gamma$, where $C_u$ was the peripheral velocity at a radius r. Round wooden logs were used as models of the floating bodies. A high-speed motion-picture film was made at 80 frames per second. The

Card 1/3

The Evaluation of Loads on Water Gates Due to Floating Solid Bodies (cont.)

tests were analyzed by the consecutive projection onto a screen of the single motion-picture frames and the positioning of the moving body upon a coordinate grid every 1/80 of a second. Floats entering in the hollow of a vortex and observed by means of a stroboscope, as well as on the coordinate grid, made possible an evaluation of the intensity of the whirlpool. The authors also conducted full-scale observations on the suction of floating objects into the whirlpool under the water gates of the Ivan'kovskaya dam. On the basis of the investigations made, as well as of investigations made by other authors, two typical cases of the motion of a log before a gate were established: A) When the whirlpool does not have the intensity required for sucking a body under the gate, and B) when the whirlpool sucks the body under and carries it out under the gate. In the first case (direct impact of the log against the gate), assuming that the impact is absolutely inelastic, the impulse of the force is determined as equal to $N = 0.8mv$ with $\alpha = 45^{\circ}$ and $N = mv$ with $\alpha = 0^{\circ}$ and $90^{\circ}$, where $\alpha$ is the angle between the direction of the log and the normal to the gate. Since the greatest specific impact loads occur with $\alpha = 0^{\circ}$ (head-on longitudinal impact by the log), this impact condition is the most dangerous. In this load condition the mean value of the force during the time of the impact is

$$P = \frac{N}{\tau} = \frac{mv}{2l\sqrt{3\gamma_T/E_g}}$$

SOV/124-57-9-10349

The Evaluation of Loads on Water Gates Due to Floating Solid Bodies (cont.)

In the second case, if the log, because of its large size and an insufficient intensity of the whirlpool, is not carried away by the latter at once, but rotates vertically, goes down along the gate, and accomplishes a turn around the bottom edge of the gate, then the force acting upon that edge is determined by the expression

$$N = 0.5 c_x \rho s v^2 = 0.5 c_x \rho (\ell - h) D v^2$$

At the end of the article two examples of design calculations are given. The authors did not analyze the significance of the described load on the gate in comparison with the design load (hydrostatic pressure). Bibliography: 9 references.

A. P. Berezinskiy

Card 3/3

POLIKOVSKIY, V.I., doktor tekhnicheskikh nauk; PERMEL'MAN, R.G., kandidat tekhnicheskikh nauk.

Determining the load on sluice gates during the inflow at the funnels of solid floating bodies. Gidr.stroi.25 no.5:31-35 Je '56. (MLRA 9:9)
(Sluice gates)

POLIKOVSKIY, V.I., doktor tekhnicheskikh nauk; SERGIYEVSKAYA, T.G., inzhener; AL'PER, T.I., inzhener; MACHEKHINA, G.N., inzhener.

Aerodynamics of the cooling systems of large hydraulic generators. Vest.elektroprom.27 no.1:9-16 Ja '56. (MLRA 9:6)

1.Nauchno-issledovatel'skiy institut Ministerstva elektropromyshlennosti.
(Electric generators--Cooling) (Fans, Mechanical)

POLIKOVSKIY, V.I., doktor tekhnicheskikh nauk; PICHUGIN, D.F., inzhener.

Development of foreign turbojet engines. Trudy MAI no.74:63-74 '56.
(MLRA 10:5)

(Airplanes--Turbojet engines)

POLIKOVSKIY, V.I., doktor tekhnicheskikh nauk; PEREL'MAN, R.G., kandidat tekhnicheskikh nauk; IVANOV, Yu.A., inzhener.

On the possibility of reducing the length of an injector.
Teploenergetika 4 no.9:23-26 S '57. (MIRA 10:8)

1. Moskovskiy aviatsionnyy institut.
(Injectors)

AUTHOR: POLIKOVSKIY, V.I., PEREL'MAN, R.G. PA - 3086

TITLE: On the Localizing of Local Hydraulic Resistances during an Enforced Pressure Equalization of the Velocity Field. (O lokalizatsii mestnykh gidravlicheskikh soprotivleniy pri prinuditel'nom vyravnivanii polya skorostey, Russian)

PERIODICAL: Izvestiia Akad.Nauk SSSR, Otdel.Tekhn., 1957, Vol 21, Nr 3, pp 168-170 (U.S.S.R.)

Received: 6 / 1957 Reviewed: 7 / 1957

ABSTRACT: All hydraulic losses are, in the final analysis, friction- or impact losses. The special property of the latter is that it arises from a sufficiently long area after an element( such as a joint, sudden cross section enlargement, etc.)On this occasion considerable changes of the velocities in the immediate vicinity of this area take place, but this is accompanied by no noticeable pressure losses in the active part of the current. It can be asserted that the impact losses are localised in the mixing area in those cases also when the length is considerably reduced in proportion to the length of the area with a free dispersion.
In order to corroborate this experimental assertion special investigations were carried out in the Laboratory of the MAI, on which

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POLIKOVSKIY V I

110-10-7/18

AUTHOR: Polikovskiy, V.I., Doctor of Technical Sciences, Professor, and Sergiyevskaya, T.G., Al'per, T.I., Engineers.

TITLE: An investigation of systems of cooling a hydro-alternator using a ventilatic1 model. (Issledovaniya sistemy okhlazhdeniya gidrogeneratora na ventilyatsionnoy modeli.)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.10, pp. 35 - 44 (USSR)

ABSTRACT: The problem of modelling the cooling system of a large hydro-alternator arose in connection with the design of machines for the Kuybyshev and Stalingrad Power Stations which were of considerably greater output than the largest generators previously built. It is difficult to make investigations on existing hydro-alternators because the important parts are inaccessible and it is not possible to change the operating conditions of the cooling system or to alter the design of the systems. On models these limitations are easily overcome. Complete modelling of a machine is a complicated task but it is much simpler to model only the cooling. In order to model thermal processes it is generally necessary to model electromagnetic processes. However, the method of calculation of thermal losses of electro-magnetic origin is sufficiently accurate and therefore modelling of electro-magnetic processes can be avoided. When considering the problem to a first

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110-10-7/18

An investigation of Systems of Cooling a Hydro-alternator Using a Ventilation Model.

actual generator. The complete cooling system of the generator was modelled on the assumption that auto-modelling of the system was possible, that is that the resistance coefficient is independent of the Reynolds number. Investigations on the model fully confirm the validity of this assumption: for all tests on the model Euler's parameter remained independent of the speed of rotation of the model. In auto-modelling systems, to ensure physical similarity between the hydraulic processes in the model and in the actual machine it is sufficient that they should be geometrically and kinematically similar. The results of measurements of pressure and rate of air flow on the model recalculated to full scale are in good agreement with the results of tests on the actual generators. The results are compared in Table 1.

The model investigated is a ventilation model of a large generator made to a scale of one-fifth, geometrical similarity being maintained in the main parts. A picture of the model is given in Fig. 1, a diagram in Fig. 2 and illustrations of the stator and rotor in Figs. 3 and 4. The model was driven by a wound rotor induction motor of 55 kW. The model is described in detail; the arrangement of the fan blades is shown in Fig.5.

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An Investigation of Systems of Cooling a Hydro-alternator Using a ventilation Model.

of the fan is 20 mm of water. Most of the hydraulic losses consist of loss at the inlet of flow to the wheel. They result from the large angles of attack of the blades and the large inlet diameters. The curves in Fig. 7a show the relationship between the relative rate of flow at the inlet to the wheel and the inlet diameter at a given flow. It is shown that to increase the useful static head of the fan the blades should be bent round at inlet and the inlet diameter of the wheel should be reduced to the optimum value. The investigations on the model show that the static pressure beyond the centrifugal wheel continues to increase in the end winding chamber as shown in Fig. 8. This part of the system is then working as a guide vane apparatus in which the dynamic head of the rotating flow is partially converted into a static head. The greater the static pressure in the end winding chambers the greater the flow delivered to the inter-pole space of the model from the ends of the poles. Experimental characteristics of the rotor pole are shown in Fig. 10 which demonstrate the use of guide pieces to direct the air flow.

The operation of the rotor as a fan is then considered. The Card 5/9 rotor may be considered as a combination of fans operating in

An Investigation of Systems of Cooling a Hydro-alternator Using a ventilation Model.

series and parallel. A diagram of the ventilating channels in the rim is shown in Fig. 11 which gives the experimental characteristics of the rotor with mean static head and flow through the screens. The characteristics which are obtained, together with visual observations, make it possible to analyse the operation of the rotor as a whole and of its component parts. At small rates of flow the rotor pressure is high and the quantity of air that flows out through the ends of the inter-pole faces is greater than the quantity flowing in, which corresponds to points to the left of the intersection of the curve on Fig. 11. At high rates of flow the quantity of air flowing out of the ends decreases which corresponds to that part of the rotor characteristic in Fig. 11 to the right of the intersection of the curves. These parasitic circulations cause additional power losses in ventilation and since it is hot air that is circulated they must impair the removal of heat from the machine. The distribution of static pressure in the gap along the model with combined operation of the rim channels and the ends of the pole is shown in Fig. 12. Investigations of pressure distribution in the gap show that it is non-uniform because of

Card 6/9 the delivery of air through the stator ducts in the presence of

An Investigation of Systems of Cooling a Hydro-alternator Using a Ventilation Model.

a flow from the ends. The causes of this phenomenon are discussed.

Data about the flow of air through the model with various components of the rotor in operation are given in Table 2. The figures show that the greatest flow of air through the model is obtained when all the rotor slots and channels are in operation; the flow through the rim ducts gives much less air through the model when the inlets to the inter-pole space are closed at the end.

Combined operation of the fans and rotor is then considered in much the same way. The main results are given in Fig. 11. The values for the total flows of air with combined and separate operation of the fans and the rotor are given in Fig.3, which shows that the quantity of air that flows when the rotor or two fans work alone are little different from one another. When the rotor and fan work together the total flow is somewhat greater.

The stator characteristics are then discussed. The stator ducts form the main resistance in the generator cooling system (excluding the internal resistance of the pressure generating elements). It was found that the rate of rotation of air in the

Card 7/9 gaps is 0.65 times the linear velocity of the poles. Curves of

An Investigation of Systems of Cooling a Hydro-alternator Using a Ventilation Model.

the change of resistance coefficients of the stator as a function of the ratio of the mean speed of the air in the stator ducts to the speed of rotation of the air in the gap are given in Fig.13. The problem of reducing the resistance of the stator by altering the construction of the ducts is of interest. Curves of the mean velocity distribution at the outlet from the stator ducts are given in Fig.14. The curves show that the flow distribution through the stator ducts is not uniform around the model and moreover it is asymmetrical.

Special tests show that distribution of flow round the stator is determined, to a first approximation, by the distribution of static pressures in the gap and the asymmetry of flow around the stator is associated with differences between the characteristics of the upper and lower fans of the model and also with the asymmetry of the air ducts of the system.

As a result of the investigations it is possible to obtain a physical picture of the operation of the cooling systems of large hydro-alternators. The material obtained can serve as a basis for systematic work on the improvement of existing systems and for the development of design procedures for them.

Card 8/9 The following are the most promising directions of work:

An Investigation of Systems of Cooling a Hydro-alternator Using a Ventilation Model. 110-10-7/18

a reduction in the losses of fans and rotor by choosing the best internal dimensions of the wheels and inlet diameter to the rotor yoke and also the best shapes of inlet parts of the ducts in the rim and the use of bent blades on the fan; reduction in the inlet loss to the inter-pole space; the use of stationary guide vanes beyond the fans to convert dynamic heads to static; reduction of internal losses of the rotor rim by increasing the duct sections; reducing the resistance coefficient of the stator ducts by appropriate design developments; reduction in the ventilation losses in the machine and improvement of heat transfer conditions by overcoming parasitic circulation of hot air; development of procedures for making hydraulic and thermal calculations on the system. At the present time, these problems are being investigated and the results show that there is a real possibility of providing adequate cooling for hydro-alternators with outputs up to 250 - 300 MW. There are 14 figures, 4 tables and 3 Slavic references.

ASSOCIATION: NII EP

SUBMITTED: April 29, 1957.

AVAILABLE: Library of Congress

Card 9/9

POLIKOVSKIY, V. I.

AUTHORS: Polikovskiy, V.I., Doctor of Technical Sciences, Professor, Al'per, T.I., Engineer, Zemlyanoy, M.S., and Sergiyevskaya, T.G., Candidates of Technical Sciences. 110-4-1/25

TITLE: A New Method of Cooling Large Hydro-alternators(Novaya skhema okhlazhdeniya krupnykh gidrogeneratorov)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, No. 4, pp. 1 - 5 (USSR).

ABSTRACT: In designing hydro-alternators for 200 - 300 MW, improved cooling methods became necessary. At present, the fan effect of the rotor spider is not effectively used, nor are the centrifugal fans well designed.

The article describes a new construction in which the spaces between the arms of the rotor spider are partly enclosed, but apertures are left near the hub to entrain cooling air. Near the extremities of the arms, the shrouding stands away in the form of an inclined flange, leaving a circumferential space. This is divided by radial vanes and the passages so formed assist in drawing the cooling air centrifugally outwards and direct some of it across the ends of the rotor and stator coils. With this design the air-flow through the hydro-alternator is about 40% greater than that given by the usual type of fan. Performance characteristics of the old and new cooling arrangements are graphed in Fig.2.

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The new system is more effective because the lower relative air-speed at the air inlet (to the rotor) reduces the losses, so that the discharge pressure is greater. The effectiveness of the system depends on the position of the intake aperture; the position is chosen to give the minimum air velocity at the inlet for a given flow. Values are plotted in Fig.3. A design procedure for the new type of fan is given, with appropriate formulae. The flow round the ends of the winding is depicted in Fig.5.

Variants of the new system were tested. In particular, experiments were made with air entering the generator from only one side. Test results for this case, plotted in Fig.6, show that the performance is about the same as when entry is from both sides. It follows that when the inlet area is of the optimum value it does not matter whether intake is from one side or two. The main defect of existing ventilating systems is the large inlet diameters of the fans, which cause high losses. Other ways of overcoming this difficulty besides the one described are possible and are briefly mentioned.

The new method of ventilation was tried on one of the hydro-alternators of the Gor'kiy Hydroelectric Power Station (Gor'kovskaya GES) and comparative tests confirmed the correctness of the

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A New Method of Cooling Large Hydro-alternators

results of tests on models. The air-flow in the generator with the new type ventilation is 40% greater than that obtained with the old. Further improvements are possible. There are 6 figures.

ASSOCIATION: Scientific Research Institute of the Electro-technical Industry (NII EP)

SUBMITTED: August 2, 1957

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SOV/24-58-10-30/34

AUTHORS: Perel'man, R. G., Polikovskiy, V. I. (Moscow)

TITLE: Hydraulic Impedance of Rectilinear Channels in the Field of Centrifugal Forces (Gidravlicheskoye soprotivleniye pryamolineynykh kanalov v pole tsentrobezhnykh sil)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 10, pp 150-153 (USSR).

ABSTRACT: A determination was carried out of the hydraulic impedance of smooth brass tubes whose internal diameter was 10, 20 and 28 mm. The tubes were placed radially in a plane which was at right angles to the axis of rotation. Experiments were carried out in air up to Reynolds numbers $R = 7 \times 10^{-5}$. The experimental results are shown in Fig.1, in which the frictional loss coefficient $\lambda$ is plotted as a function of $R$ and the angular speed $n$. An expression is derived which gives the hydraulic impedance as a function of the parameters of the tube and the rate of revolution (Eq.6). There are 4 figures and 7 references of which 3 are German and 4 Soviet.

SUBMITTED: July 27, 1957.

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10(2)(4); 14(6)(10) PHASE I BOOK EXPLOITATION SOV/3427

Polikovskiy, Vladimir Isaakovich and Roman Grigor'yevich Perel'man

Voronkoobrazovaniye v zhidkosti s otkrytoy poverkhnost'yu (Formation of Funnel-Shaped Depressions in Liquid with a Free Surface) Moscow, Gosenergoizdat, 1959. 190 p. 1,750 copies printed.

Ed.: P.G. Kiselev; Tech. Ed.: G.Ye. Larionov.

PURPOSE: This book is intended for specialists and students of hydrotechnics, as well as for engineers designing various kinds of industrial and transportation hydraulic system.

COVERAGE: This book presents the results of theoretical and experimental studies devoted to the problem of vortex formation in the flow of a liquid with a free surface. The book is divided into two main parts. The first part discusses the physical nature of vortices and the method of evaluating phenomena which arise when a liquid has a vortex. Among the topics considered are: theory of vortex formation, experimental study of physical

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existence of vortex formation, and calculation and construction of vortex profiles. Part two discusses vortex formation in the upper water of hydrotechnical installations. Among the topics considered are: vortex formation in front of locks of hydrotechnical installations, determination of lock stresses in draining off solid floating objects by means of vortices, evaluation of permeability capacity of hydroturbine spiral chambers, prevention of vortex formation, and the use of vortices in cleaning foreign objects from the surface of reservoir waters. There are 130 references: 113 Soviet, 6 German, 5 English, 3 French, 1 Hungarian, 1 Italian, and 1 Rumanian.

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