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The authors present a simplified method for approximating the temperature fields and stresses in a drum-type turbine rotor. The method does not take axial variation of temperature into account but considers each section of the rotor as part of an infinitely long hollow cylinder with boundary conditions corresponsing to those for the particular section under consideration. Results calculated by the approximate method are compared with those determined by more accurate calculations. An analysis of the discrepancies leads to the conclusion that the simplified method is sufficiently accurate for most engineering purposes. The following personalities are mentioned: V.I. Fedorov, V.M. Agranovich, and N.N. Shel'menko, all of the Heat-Engine Laboratory, Institut teploenergetiki AN UkrSSR (Institute of Heat-Power Engineering, Academy of Sciences UkrSSR).

Dorfman, A.Sh. Simple Calculation Method for a Laval Nozzle 26

The author presents the results of an experimental study of the process of heat transfer during the condensation of steam. A detailed description of the experimental apparatus and the methods employed is given, as well as a qualitative description of the physical phenomena involved in the process of condensation on the basis of the results obtained.

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Yeremenko, A.S., and A.P. Fedosenko. Losses in Turbine Guide Vanes of the Cascade Type 167

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The above two papers deal with an investigation of the losses in turbine guide vanes of the cascade type. The efficiency of the cascade is determined as a function of the inflow angle, blade-incidence angle, blade pitch, and other parameters.

Shvets, I.T., V.M. Sidun, and L.I. Romanyuk (Deceased). Experimental Investigation of the Heat Conductivity of Soils Used in Greenhouses and Hotbeds 186

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SHVETS, I.T., akademik; KHRISTICH, V.A., kand.tekhn.nauk; STRADOMSKIY, [redacted] inzh.

Studying the gas-turbine combustion chamber using natural gas by means of a working-process model. Energomashinostroenie 4 no.11:26-30 N '58. (MIRA 11:11)

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(Combustion research) (Gas turbines)

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SHCHERBAN', Aleksandr Nazarovich [Shcherban', O.N.], akademik; SHVETS, I.T., akademik, glavnyy red.; KOVALEVSKIY, V.V., red.

[Prospects of the development of atomic power] Perspektyvy rozvytku atomnoi energetyky. Kyiv, 1959. 49 p. (Tovarystvo dlia poshyrennia polityczhnykh i naukovykh znan' URSR. Ser.5, no.9). (MIRA 12:9)

1. Akademiya nauk USSR (for Shcherban', Shvets).
(Atomic power)

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PHASE I BOOK EXPLOITATION SOV/5376

Akademiya nauk Ukrayins'koyi RSR. Kyyiv. Instytut teploenerhetyky.

Teploobmin ta hidrodynamika (Heat Exchange and Hydrodynamics) Kyyiv, Vydavnytstvo AN UkrSSR, 1959. 76 p. (Series: Its: Zbirnyk prats', vyp. 16) 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrayins'koyi RSR. Instytut teploenerhetyky.

Editorial Board: Resp. Secretary: A. Sh. Dorfman, Candidate of Technical Sciences, O. S. Yeremenko, Candidate of Technical Sciences, O. O. Kremn'ov, Candidate of Technical Sciences, V. I. Kuznetsov, Candidate of Technical Sciences, P. I. Lavrov, Candidate of Technical Sciences, M. M. Nazarchuk, Candidate of Technical Sciences, V. I. Tolubyns'kyy, Corresponding Member, Academy of Sciences UkrSSR, I. T. Shvets', Academician, Academy of Sciences UkrSSR. Resp. Ed.: H. M. Shchoholev, Candidate of Technical Sciences; Ed.: I. V. Kisina; Tech. Ed.: V. I. Yurchyshyn.

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Heat Exchange (Cont.) SOV/5376

PURPOSE : This collection of articles is intended for scientific workers and engineers concerned with the construction of turbines.

COVERAGE: The booklet, published in Ukrainian, contains 10 articles dealing with problems of improving gas turbines. Results of investigations of processes in the combustion chamber and of heat-exchange processes taking place in turbine components are given. Aerodynamic problems of cascades of turbine blades and of tubes are discussed and theoretical research in boundary-layer problems is considered. Each article is follow by a brief résumé in Russian. No personalities are mentioned. There are no references.

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Shvets', I. T., and V. O. Khrystych. Experimental Investigations of Basic Characteristics of the Evaporation-Type Combustion Chambers of Gas Turbines 3

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26(1) PHASE I BOOK EXPLOITATION SOV/2684

Shvets, Ivan Trofimovich, and Yevgeniy Pavlovich Dyban

Vozdushnoye okhlazhdeniye rotorov gazovykh turbin (Air Cooling of Gas-turbine Rotors) Kiyev, Izd-vo Kiyevskogo universiteta, 1959. 349 p. 5,000 copies printed.

Sponsoring Agency: Kiyevskiy gosudarstvennyy universitet.

Ed.: Ye. L. Orlik; Tech. Ed.: T. I. Khokhanovskaya.

PURPOSE: This book is intended for engineers and scientific workers in the field of steam-and gas-turbine construction. It may also be used by students of advanced courses related to this field.

COVERAGE: The book contains results of experimental and theoretical investigation of air cooling of gas turbines, and gives engineering methods of calculating the most frequently used systems of air cooling of gas-turbine rotors. Results of work on the determination of boundary conditions of heat transfer in bladed

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rotors and approximate solutions of the equation of heat conductivity for blades and disks are discussed. This research was conducted by the authors at the Heat Power Institute of the USSR Academy of Sciences, and at the Kiyev State University imeni T. G. Shevchenko. The authors also used results of other investigations reported in Soviet and foreign literature. Chapter One was written by Candidate of Technical Sciences G. F. Selyavin; Chapter Twelve was written by Candidate of Physical and Mathematic Sciences I. A. Motovilovets. The authors thank Engineers Ye. A. Zyukov and K. A. Bogachuk-Kozachuk. There are 140 references: 84 Soviet, 35 English, 19 German and 2 French.

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PHASE I BOOK EXPLOITATION SOV/3407

Akademiya nauk SSSR. Energeticheskiy institut im. G.M. Krzhizhanovskogo

Problemy energetiki; sbornik posvyashchayetsya akademiku G.M. Krzhizhanovskomu (Problems of Power Engineering; Collection of Articles Dedicated to Academician G.M. Krzhizhanovskiy) Moscow, 1959. 851 p. Errata slip inserted. 2,500 copies printed.

Eds. of Publishing House: B.D. Antrushin, P.V. Dubkov, P.I. Zubkov, and S.M. Moyzhes; Tech. Ed.: T.A. Prusakova; Editorial Board: A.V. Vinter, Academician (Deceased), V.I. Popkov (Resp. Ed.) Corresponding Member, Academy of Sciences USSR, V.I. Veyts, A.S. Predvoditelev, M.A. Styrikovich, E.F. Chukhanov, N.B. Bogdanova, Candidate of Technical Sciences, B.K. Kozlov, Candidate of Technical Sciences, M.M. Lebedev, Candidate of Technical Sciences, and I.N. Sundukov.

PURPOSE: This collection of articles is intended as a tribute to the memory of Academician G.M. Krzhizhanovskiy.

COVERAGE: The collection contains sixty articles by former students and coworkers of the deceased Academician. The articles deal with problems of a wide range of subjects in the field of power engineering: problems of the regional development of electrical and thermal power engineering,

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power engineering technology, and the physics of combustion. No personalities are mentioned. References are given after most articles.

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...And the electrification of the whole country. Nauka i zhyttia 9 no.4:33-37 Ap '59. (MIRA 12:7)

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(Electrification)

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SHVETS, Ivan Trofimovich; LANDSMAN, Solomon Usherovich; PISARENKO, M., red.; MATUSEVICH, S., tekhn.red.

[Electric power resources of the Ukrainian S.S.R.] Energeticheskaia baza Ukrainskoi SSR. Kiev, Gos.izd-vo tekhn.lit-ry USSR, 1960. 29 p. (MIRA 13:11)
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MINYAYLENKO, Nikolay Afanas'yevich; SHVETS, I.T., akademik, otv.red.; PECHKOVSKAYA, O.M., red.izd-va; LIBERMAN, T.R., tekhn.red.

[Determination of the temperature field and thermal stresses in turbine disks] Opredelenie temperaturnogo polia i teplovykh napriazhenii v turbinnykh diskakh. Kiev, Izd-vo Akad.nauk USSR, 1960. 68 p. (MIRA 14:3)

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DORFMAN, Abram Shlemovich; NAZARCHUK, Mikhail Mikhaylovich; POL'SKIY, Naftul Iosifovich; SAYKOVSKIY, Mikhail Il'ich; SHVETS, I.T., akademik, red.; KISINA, I.V., red.izd-va; RAKHLINA, N.P., tekhn.red.

[Aerodynamics of diffusors and exhaust nozzles of turbomachines] Aerodinamika diffuzorov i vykhlopnykh patrubkov turbomashin. Pod red. I.T.Shvetsa. Kiev, Izd-vo Akad.nauk USSR, 1960. 187 p. (MIRA 13:6)

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SHVETS, Ivan Trofimovich, prof.; KONDAK, Mikhail Andrianovich, prof.; KIRAKOVSKIY, Nikolay Feliksovich, dotsent; NEDUZHIY, Ivan Afanas'yevich, dotsent; SHEVTSOV, Dmitriy Semenovich, dotsent; SHELUD'KO, Ivan Mikhaylovich, dotsent; PETRENKO, S.I., dotsent, kand.tekhn.nauk, retsenzent; SERDYUKOV, P.T., inzh., red.; ONISHCHENKO, N.P., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

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AUTHORS: Shvets, I.T., Academician of the AS UkrSSR; Dyban, Ye.P., Selyavin, G.F., Stradomskiy, K.V., Candidates of Technical Sciences

TITLE: Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy: Energetika, 1960, Nr 1, pp 89 - 99 (USSR)

ABSTRACT: This is a description of a series of experiments carried out on special apparatus (Figure 1) in the Thermal Power Engineering Institute AS UkrSSR to determine the influence of rotation on the hydraulic resistance of separate parts of the cooling system in gas turbine rotors. A series of formulae is used to determine coefficients; the consumption coefficient, i.e. the ratio of the actual gas rate through the aperture G to the rate with isoentropic flow G_0, is expressed by

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Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

$$\mu = \frac{G}{G_0} \qquad (1)$$

The cylindrical apertures used in the first series of experiments had sharp inlet and outlet edges, constant length of 24.15 mm and the following diameters: 4; 5.3; 6.5; 8; 10; 11.5; 13.3; 14.3; 20 and 25 mm, which corresponds to a change in the relative depth l/d from 6.04 to 0.96 and embraces the whole potential range of aperture sizes for supplying cooling air in gas turbines. The formulae for determining the coefficient of inlet and outlet resistance are

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SOV/143-60-1-12/21

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

$$\zeta = \frac{1}{\zeta_0}\left(1+0.32K_0+0.89K_0^2+0.037K_0^3+0.17K_0^4-0.043K_0^5+0.025K_0^6\right) \quad (12)$$

and

$$\zeta = \frac{1}{\zeta_0}\left(1+0.8K+0.081K^2-0.0024K^3+0.000016K^4\right) \quad (12a)$$

The parameter K characterizes change in the conditions governing the flow of the current through apertures in the disc during rotation.

$$K = tg\varphi = \frac{u}{c} \quad (6)$$

Card 3/5 where u is the peripheral speed on the axis of the

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67815

SOV/143-60-1-12/21

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

apertures; c - mean outlet speed in the aperture.

$$K_o = \mu \cdot K \qquad (10)$$

The authors conclude that, when the ratio of the speed of rotation to the mean outlet speed in the aperture is large (u/c = 2.5 app.), the consumption coefficient for apertures with sharp inlet edges diminishes by about 6 times. When the ratio u/c is above 4 the influence of the shape of the inlet edges may be disregarded. Rounding off the outlet edges has no practical effect on conditions governing air flow through the apertures in rotating discs. The consumption coefficient for square apertures is near that for cylindrical channels (given similar hydraulic radii). The relative depth of the aperture, if the ratio is between

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67815

SOV/143-60-1-12/21

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

$0.96 < \frac{1}{d} < 6.04$, has no practical effect on the relationship of the consumption coefficient to rotation. With the aid of experimental data the authors established the empirical relationships of the consumption and hydraulic resistance coefficients to K and K_0 parameters. These are true for a disc rotating in a housing where the relative axial clearance between the disc and the housing is greater than 1.5. Much detailed information on the experiments is included. A correction slip at the end of the volume states that the readings along the axis of the ordinates in Figure 5 should be 0.2; 0.3; 0.4; 0.5; 0.6; 0.7. There are 5 graphs, 1 diagram, 1 set of a graph and a diagram and 2 Soviet references.

ASSOCIATION: Institut teploenergetiki AN USSR (Thermal Power Engineering Institute AS UkrSSR)

SUBMITTED: September 4, 1959

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

30247

S/145/60/000/002/016/020
D221/D302

26.2124

AUTHORS: Shvets, I.T., Academician, AS UkrSSR, Doctor of Technical Sciences, Professor, and Dyban Ye. P., Candidate of Technical Sciences

TITLE: Some results of studying the air cooling of gas turbine rotors

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 2, 1960, 167 - 176

TEXT: The authors describe some results of work performed on the efficient cooling of gas turbines. For this, the analytical relationship between maximum temperature of rotor and the flow of cooling air in the case of different cooling methods had to be worked out. The solution of differential equations on heat transfer for the cooled disc is not difficult, but the characteristic of boundary conditions of heat exchange are insufficiently studied. Recently, grid integrators of ЭИ-12 (EI-12) type are employed for electrical analogy method measurements of temperature fields. In

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S/145/60/000/002/016/020
D221/D302

Some results of studying the air ...

applying a hydraulic analogy, the integrator system of Luk'yanov is adopted. The most extensive research concerned disc rotor, although the results can be extended to drum type rotors. Investigations demonstrate that the cooling effect of the root does not cover more than 20 - 25 % of blade length, and therefore, the latter must be manufactured from heat resisting alloys. Experiments and theoretical investigations were carried out on cooling gas turbine rotors by air blowing through the roots of blades and also by blowing in the direction of air flow around the radius. The first stage of this work determined the qualitative characteristics of heat transfer and the flow resistance in assembly clearances as well as in the equivalent cylindrical capillaries. The results permit the following conclusions to be reached. There is no densification of laminary flow towards large coefficients of Reynolds in the case of fir tree roots. Consequently, intensive heat transfer can be achieved. Flow resistance of cooling channels is governed by the usual relationships. At the same time, the coefficient of heat transfer was assessed in the forced cooling of the disc which varies with the temperature. The latter fluctuates along the radius due to

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30247

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D221/D302

Some results of studying the air ...

aerodynamic features of flow. The cumbersome differential equation for the above can be simplified by some assumptions, and then Bessel functions are obtained. Data reveal that root cooling is more effective than forced radial blowing. With the admissible temperatures, it is necessary to use austenitic steels, or in the case of pearlitic steel - to use root cooling. During 1956 - 1957, the Institute of Thermal Power AS UkrSSR carried out experiments on the reliability of these methods. The results demonstrated the stability of temperature when the flow of cooling air was maintained, and therefore, it is possible to assume that in a conventional locomotive gas turbine this is even more reliable, on account of rigorous test conditions. Methods of electro-thermal analogy were used for solving the problem of computation for the above. The integrator, ЭГ ДА (EG DA) 6/53 with a special current conducting paper was applied. Results of experiments are in good agreement with the computed data, and consequently, the proposed calculation method can be used during design work. The Institute is at present engaged in working out a similar method for multistage disc and drum rotors. The authors believe that further accumulation of data concerning the laws of heat transfer in cooled rotors is of prime im-

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

30247

Some results of studying the air ... S/145/60/000/002/016/020
D221/D302

portance. There are 9 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut teploenergetiki, AN UkrSSR (Institute of Thermal Power, AS UkrSSR)

SUBMITTED: December 15, 1959

Card 4/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

84164

10.2000 2615, 2115 only

11.9200

S/021/60/000/002/006/010
A133/A029

AUTHORS: Shvets, I.T., Academician of the AS UkrSSR, Dyban, Ye.P., Selyavin, G.F.; Stradoms'kyy, M.V.; Rudkin, S.K.; Mel'nyk, V.P.

TITLE: Influence of Initial Disturbances on the Development of Turbulent Stream Conditions When Air Moves Through Tubes

PERIODICAL: Dopovidi Akademiyi nauk Ukrayinskoyi Radyans'koyi Sotsialistychnoyi Respubliky, 1960, No. 2, pp. 173 - 176

TEXT: This paper presents the results of experiments studying the nature of velocity pulsations in a tube with various rates of artificially-created turbulences of the air stream and their effect on the hydraulic resistance. The following conclusions were drawn: allowances should be made for the initial turbulences of stream when calculating heat transfer and hydraulic resistance for a fluid moving through relatively short tubes. Effects of artificial turbulences are particularly great at the transition stage. Initial disturbances die away within relatively short length of tubes, these lengths being dependent on the magnitude of initial turbulence and the Reynolds number. Initial disturbances do effect the value of the coefficient of hydraulic resistance within the range

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

84164

S/021/60/000/002/006/010
A158/A029

Influence of Initial Disturbances on the Development of Turbulent Stream Conditions When Air Moves Through Tubes

of Reynolds numbers from 2,000 - 5,000; at higher values thereof their effect on the stream passing through a tube (having a length of 80 diameters) is within the limits of the measurement error. The experimental stand included a 4,000 mm long round tube having a 51 mm inner diameter. Initial disturbances were created with the help of perforated disks of of 3 - 5 and 10 mm in diameter, installed in the intake tube section. Pulsations were measured and recorded by an ЭТА-5А (ETA-5A) electric thermoanemometer, at Reynolds numbers from 700 to 10,000. Figure 1 shows oscillograms giving the dependence of velocity pulsations in the intake area on the Reynolds numbers (disk with 3 mm perforations, coefficient of clogging $\beta = 0.18$). Figure 2 gives the range of critical Reynolds numbers, Figure 3 shows the dependence of the relative axial pulsation on the coefficient of clogging. Figure 4 shows how the average relative velocity pulsations change along the length of a tube with a 10 mm perforated disk. There are 4 figures.

ASSOCIATION: Instytut teploenergetyky AN UkrRSR (Institute of Heat Power Engineering of the AS UkrSSR)

SUBMITTED: October 1, 1959

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

83237

S/143/60/000/008/004/005
A189/A029

10.2000

AUTHORS: Shvets, I. T., Academician of the AS UkrSSR; Dyban, Ye. P.; Selyavin, G. F.; Stradomskiy, M. V.; Candidates of Technical Sciences

TITLE: Experimental Investigation of the Influence of Initial Perturbations Upon the Development of the Turbulent-Flow Condition

PERIODICAL: Energetika, 1960, Vol. 3, No. 8, pp. 102-109.

TEXT: The paper presents the results of the investigation, carried out in 1958-1959, on the influence of initial perturbations upon the development of axial velocity pulsations in an isothermic flow and on their influence upon the value of the hydraulic resistance coefficient in short tubes. The tests were carried out in a drawn tube, 50 mm in diameter, 80 diameters long, linked through a system of dampers to a compressed air main. The axial velocity pulsations were measured by the ЭТА 5А (ETA-5A) apparatus designed by the VEI im. V. I. Lenina (All-Union Institute of Power Engineering imeni V. I. Lenin). The tests indicated that the level of initial perturbances influences the development intensity of the

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

83237

S/143/60/000/008/004/005
A189/A029

Experimental Investigation of the Influence of Initial Perturbations Upon the Development of the Turbulent-Flow Condition

turbulent flow. The higher the initial level in tubes shorter than 80 diameters, the sooner the laminar flow ends and the hydrodynamic stabilization of the flow ensues. A substantial influence of the level of initial perturbances upon the value of the hydraulic resistance coefficient was found for Reynolds numbers from 1,800 to 5,000. This influence was within the measurement errors for higher Reynolds numbers in tubes longer than 80 diameters. There are 3 sets of oscillograms, 3 graphs and 2 Soviet references.

ASSOCIATION: Kiyevskiy universitet imeni T. G. Shevchenko Institut teplo-energetiki AN UkrSSR (Kiyev University imeni T. G. Shevehenko Insitute of Heat Engineering of the AS UkrSSR)

SUBMITTED: March 18, 1960

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

S/262/62/000/008/004/022
I007/I207

AUTHORS: Shvets', I. T., Fedorov, V. Y. and Bondarchuk, V. G.

TITLE: Approximation methods for solving equations of heat conduction in turbine rotors

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 42. Silovyye ustanovki, no. 8, 1962, 20, abstract 42.8.108. "Zb. prats'. In-t teploenerg. AN URSR", no. 18, 1960, 3–15 (Ukr. Russian res.)

TEXT: The problem of solving certain equations of nonsteady heat conduction by Sokolov and Galerkin's approximation methods is studied. Proceeding from theoretical computations, the authors plotted comparative graphs characterizing the degree of accuracy obtained by the above methods.

[Abstracter's note: Complete translation.]

Card 1/1

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

S/124/62/000/006/013/023
D234/D308

AUTHORS: Shvets', I. T., Dyban, E. P., Stradoms'kyy, M. V. and Selyavin, G. F.

TITLE: Determining flow rate coefficients of rotating channels

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 6, 1962, 34-35, abstract 6B209 (Zb. prats'. In-t teploenerh. AN URSR, 1960, no. 16, 16-27)

TEXT: The paper is devoted to the description of results and an experimental investigation of the coefficients of flow rate and hydraulic resistance of rotating channels with application to turbines. The authors give the diagram of the experimental installation with the apparatus, the method of data processing and the results of the experiments carried out by them, which show a considerable influence of the ratio of circumferential velocity of the channel center and the mean flow-rate velocity of gas in the channel on the flow rate coefficient and the resistance. Empirical

Card 1/2

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

Determining flow rate ... S/124/62/000/006/013/023
D234/D308

Formulas are given for determining the flow rate coefficient and the coefficient of resistance. /Abstracter's note: Complete translation./

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. [Shvets', I.T.]; DYBAN, Ye.P. [Dyban, IE.P.]; SELYAVIN, G.F. [Seliavin, H.F.]; STRADOMSKIY, M.V. [Stradoms'kyi, M.V.]; RUDKIN, S.K.; MEL'NIK, V.P. [Mel'nyk, V.P.]

Effect of initial disturbances on the development of turbulent flow of air through pipes. Zbir. prats' Inst. tepl. AN URSR no. 20:3-15 '60. (MIRA 14:4)

(Pipe—Fluid dynamics)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. [Shvets', I.T.]; DYBAN, Ye.P. [Dyban, IE.P.]; BOGACHUK-KOZACHUK, O.A. [Bohachuk-Kozachuk, O.A.]

Investigating the temperature fields of turbine shafts cooled by air blown through the clearances. Zbir. prats' Inst. tepl. AN URSR no. 20:16-21 '60. (MIRA 14:4)

(Gas turbines—Cooling)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

21793
S/123/61/000/004/024/027
A004/A104

26.2131

AUTHORS: Shvets, I. I., and Khristich, V. A.

TITLE: Experimental investigation of the atomizing device in gas-turbine combustion chambers of the evaporative type

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 4, 1961, 18-19, abstract 4I155. ("Izv. Kiyevsk. politekhn. in-ta", 1960, vol. 30, 98-109)

TEXT: The investigation of fuel evaporation by injecting it into a pipe heated by a flame showed that a high degree of vaporization is ensured if the fuel is injected onto the surface of a pipe whose temperature does not exceed 500°C. In this case the atomization quality practically does not depend on the injection pressure, varying in the range of 2 - 30 kg/cm^2. The degree of vaporization increases with the growing pipe length and the coefficient of air surplus and decreases with the growing air pressure. At low air temperatures the degree of vaporization improves with the growth of the volatility of the fuel. The authors present an empirical formula for the calculation of the pipe length depending on the degree of vaporization, temperature and coefficient of air surplus. I. Barskiy

[Abstractor's note: Complete translation]

Card 1/1

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, Y. T., DYBAN, E. P., STRADOMSKIY, M. V., and EPIK, E. Y.

"Experimental investigation of Flow Turbulence on Heat Transfer At Air Motion in Tubes."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

KHRENOV, K.K.[Khienov, K.K.], akademik, otv. red.; DANILEVSKIY, V.V. [Danylevs'kyi,V.V., deceased], red.; BELYANKIN, F.P. [Bieliankin, F.P.], red.; DOBROKHOTOV, M.M., red.; PATON, B.Ye., red.; SUKHOMEL, G.Y.[Sukhomel, H.I.], red.; SHVETS', I.T., red.; KUCHEROV, P.S., red.; NESTERENKO, A.D., red.; POKHODZILO, P.V., red. izd-va; YEFIMOVA, M.I., tekhn. red.

[From the history of institutes of the Department of Technology] Narysy z istorii instytutiv viddilu tekhnichnykh nauk. Kyiv, Vyd-vo Akad. nauk URSR, 1961. 167 p. (MIRA 15:7)

1. Akademiya nauk URSR, Kiev, Komisiia z istorii tekhniky.
2. Chlen-korrespondent Akademii nauk USSR (for Kucherov).
3. Akademiya nauk USSR (for Khrenov).
(Academy of Sciences of the Ukrainina S.S.R.]

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, Ivan Trofimovich, akademik; BUKSHPUN, Il'ya Davidovich; KIRAKOVSKIY, Nikolay Feliksovich, dotsent; MARKOVSKIY, Filipp Titovich, kand. tekhn. nauk, dotsent; PERKOV, Vasiliy Gerasimovich, kand. tekhn. nauk, dotsent; ZOLOTAREV, T.L., doktor tekhn. nauk, prof., retsenzent; MIKLASHEVICH, G.P., inzh., retsenzent; RIKBERG, D.B., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Electric power] Energetika. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 501 p. (MIRA 14:9)

1. Akademiya nauk USSR (for Shvets).
(Electric power) (Electric machinery)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

S/021/61/000/005/012/012
D215/D304

AUTHORS: Shvets', I.T., Member of AS UkrSSR, Dyban, Ye.P., Stradoms'kyy, M.V., Rudkin, S.K., and Epik, E.Ya.

TITLE: Investigating radial components of velocity pulsation during the motion of air in short pipes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 5, 1961, 644 - 648

TEXT: The ratio of these pulsations to mean velocity is usually considered as degree of turbulence (the so-called Karman number) where $\sqrt{(w_r'^2)}$ is the mean square value of the radial component of velocity pulsation, w_0 the mean velocity of streaming, with respect to the cross section of the pipe. The experiments were made on a seamless, hydraulically smooth pipe with inner diameter of 51 and length of 4000 mm. To increase initial disturbances, special turbulizators were put before the pipe, in the form of perforated pla-

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

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D215/D304

Investigating radial components ...

tes and gratings having different diameters of openings and diffe-
rent coefficients β (ratio of free passage to total area). Measure-
ments of magnitude of the pulsations were made according to the
thermoanemometric method with the aid of ETA-2A set of instruments.
The sensitive element was a V-shaped pickup connected with two ad-
jacent arms of the measuring bridge. Pulsations were measured at
seven longitudinal sections of the pipe and at seven points within
each section. The type of variation shown here was found to be va-
lid for all turbulizators, without any exception, also for a stream
of air in a pipe without artificial disturbances. It can be assu-
med that the part of the pipe where the radial component of velo-
city pulsation is variable, is the zone of hydrodynamical stabili-
zation of the stream. The relative length of this zone depends on
geometrical characteristics of the turbulizator. Practically only
one turbulizator among those tested had corresponding zone of sta-
bilization longer than 30 diameters. Two other turbulizators were
intended for calming and are not considered. The value of Kr can
be found, with possible error up to 10 %, from

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

$$Kr_{ser} = \frac{210}{Re^{0.5}} \qquad (2)$$

(Kr_{ser} is the mean value of Kr with respect to cross section of the pipe). The absolute value of the radial component of pulsation is

$$\sqrt{\overline{w_r'^2}} = 6{,}45 \cdot 10^{-4}\ Re^{0.5}. \qquad (3)$$

The attempt to find an empirical formula for the radial component of pulsation with respect to the length of stabilization zone has failed. The authors find that the determination of the radial component of pulsation alone is insufficient for the characterization of the stream in the initial zone of the pipe. There are 3 figures.

ASSOCIATION: Instytut teploenerhetyky AN URSR (Institute of Heat-power Engineering, AS UkrSSR)

SUBMITTED: February 1, 1960

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

25350
S/021/61/000/007/008/011
D205/D306

26.5200

AUTHORS: Shvets', I.T., Member AS UkrSSR, Dyban, E.P., Stradoms'kyy, M.V., Rudkin, S.K., and Epik, E.Ya.

TITLE: Effect of the level of initial disturbances on the heat exchange intensity during turbulent air flow in short pipes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR, Dopovidi, no. 7, 1961, 920 - 923

TEXT: In calculations involving short heat exchange surfaces it is essential to take into account the effect of the air stream initial turbulence on the value of heat exchange coefficients. The authors studied the effects of pipe lengths, stream conditions and that of initial disturbances level on heat exchange intensity in pipes less than 80 diameters long [Abstractor's note: This expression probably means the ratio: length/diameter]. The lower pipe partition was heated to 150°C by electricity. The temperature was measured by

X

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S/021/61/000/007/008/011
D205/D306

Effect of the level ...

means of thermocouples and the air temperature with a specific device, also previously described. The criterial equation Nu = f(Re) as well as the obtained experimental data proves that the physical flow conditions along the pipe length have less effect on the Nu value than on the heat exchange coefficient (beyond the latter stabilization level). Therefore, in evaluating experimental data -- the pipe length influence on the average values of heat exchange coefficient, as well as that of the distance of the examined pipe partition from the pipe mouth, (for local data), the coefficient Ee was used, which is the ratio of Nusselt's number for the given pipe part and that for part remote from the air entrance. Investigation of heat exchange intensity with turbulent flow, without artificial turbulizers, proved that this intensity might be expressed (for pipe partitions beyond the stabilization level) by the following equation: $Nu_p = 0.018\ Re^{0.8}$, which is in agreement with the well known generalization. During that kind of air flow, a laminar flow zone existed for the whole range of the studied Re values (up to $Re = 5.10^4$). Behind that zone a transitory zone was observed,

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D205/D306

Effect of the level ...

the length of which is inversely proportional to Re values (Fig.1). This leads to corresponding changes in the local Nusselt's numbers. By graphs illustrating the changes of the coefficient Ee along the pipe length, the local Nu numbers as well as the average ones' can be calculated (as long as parameters on the tube entrance are constant). When artificial turbulence devices are used the air flow characteristics change, but the zone of initial artificial perturbations does not exceed 30 diameters of the pipe length, even for the most effective turbulizer. As a result of increased local heat exchange coefficient in the first pipe partition, their average values are increased along a large stretch of pipe length and are inversely proportional to Reynold's numbers; so the average increase of Nusselt's number with the most effective turbulizer (one opening 10 mm in diameter, $\beta = 0.038$) was observed on the pipe length equalling about 600 diameters when Re was equal to 5.10^4, but on a length of 75 diameters only when $Re = 1.5 \cdot 10^6$. It follows that for evaluation of heat exchange data in the entrance part of a pipe heated by an air flow with natural as well as artificial turbulence it is necessary to make a correction on the pipe length: Ee =

Card 3/5

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

25350

S/021/61/000/007/008/011
D205/D306

Effect of the level ...

Nu/Nu$_p$. There are 3 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut teploenergetiki AN URSR (Institute of Thermoenergetics AS UkrSSR)

SUBMITTED: February 1, 1961

Card 4/5

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, Ivan Trokhimovich [Shvets', I.T.]; OVCHARENKO, Fedor Danilovich, akademik; DOBROKHOTOV, Nikolay Nikolayevich [Dobrokhotov, M.M.], akademik, zasluzhennyy deyatel' nauki i tekhniki USSR; STUDENNIKOV, Timofey Vasil'yevich [Studennykov, T.V.]; BAKUMA, Pavel Fedorovich, akademik; DMITRENKO, Petr Alekseyevich [Dmytrenko, Petro Oleksiiovych]

Congress of conquerors. Znan. ta pratsia no.10:1-5 O '61. (MIRA 14:8)

1. Rektor Kiyevskogo gosudarstvennogo universiteta im. T.G. Shevchenko (for Shvets). 2. AN USSR (for Ovcharenko). 3. Nachal'nik upravleniya transporta i svyazi Ukrainskogo sovnarkhoza (for Studennikov). 4. Chlen-korrespondent Ukrainskoy Akademii sel'skokhozyaystvennykh nauk (for Dmitrenko).
(Russia—Economic conditions)

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B104/B204

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26.1410

AUTHORS: Pol'skiy, N. I. and Shvets, I. T., Academician AS UkrSSR

TITLE: Progressive solutions of laminar boundary-layer equations in magnetohydrodynamics

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1051-1054

TEXT: For an incompressible liquid, the laminar boundary-layer equation may be written down in the form

$$u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}=-\frac{1}{\rho}\frac{dp}{dx}+\nu\frac{\partial^2 u}{\partial y^2}-\frac{\sigma}{\rho}B^2u;\quad \frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0;$$
$$u\frac{\partial\theta}{\partial x}+v\frac{\partial\theta}{\partial y}=\frac{\nu}{\mathrm{Pr}}\frac{\partial^2\theta}{\partial y^2}+\nu\left(\frac{\partial u}{\partial y}\right)^2+\frac{\sigma}{\rho}B^2u^2. \quad (1)$$

Here, $\theta(x,y)$ is the difference between the enthalpy of the mass unit at any point and in the outer flow; the last two terms in the energy equations characterize the viscous and the Joulean dissipation. The boundary conditions are: $u(x,0) = v(x,0) = 0$; $u(x,\infty) = U_e(x)$; $\theta(x,0) = \tau(x)$; $\theta(x,\infty)=0$ (2). The function $U(x)$ is now defined with the aid of the equation

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$-1dp/\varrho dx = UU'$, and it is found that this function differs from the distribution of the velocities $U_e(x)$ on the boundary layer if there exist volume forces which are produced by a magnetic field in the outer flow. The distributions of $U(x)$ and $\tau(x)$ are now sought, at which the equations of system (1) may be reduced to ordinary differential equations with the help of a similarity transformation via the velocity profiles and the enthalpies. The interrelation between $U(x)$ and $U_e(x)$ is found. By means of substitutions (3), the equation of continuity and the two other equations of the system (1) may be wr[illegible] down in the form of the system

$$u(x, y) = U\varphi'(\xi); \quad \xi = yK(x); \quad \theta(x, y) = \tau(x)\, g(\xi); \qquad (3)$$

$$v(x, y) = \left\{\frac{UK'}{K^2} - \frac{U'}{K}\right\}\varphi(\xi) - \frac{UK'}{K}\xi\varphi'(\xi).$$

$$\varphi'^2 - \left\{1 - \frac{UK'}{U'K}\right\}\varphi\varphi'' = 1 + \nu\frac{K^2}{U'}\varphi''' - \frac{\sigma}{\rho}\frac{B^2}{U'}\varphi';$$

$$\frac{U\tau'}{U'\tau}g\varphi' - \left\{1 - \frac{UK'}{U'K}\right\}g'\varphi = \frac{\nu}{\Pr}\frac{K^2}{U'}g'' + \frac{\sigma}{\rho}\frac{B^2}{U'}\frac{U^2}{\tau}\varphi'^2 + \nu\frac{U^2}{\tau}\frac{K^2}{U'}\varphi''^2. \qquad (4)$$

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Progressive solutions of...

It may easily be seen that this system is nothing but the system of ordinary differential equations if with a suitable normalization function K(x) the following holds: $1 - UK'/U'K = 1/\beta$; $\nu = K^2/U' = 1/\beta$; $U^2/\tau = \alpha$; $U\tau'/U'\tau = \gamma$ (5). On the assumption that the magnetic field strength B on the wall is described by the function $B_w(x)$, which changes in the Y-direction in inverse proportion to the s-th power of y, and that further the relation $B_e(x)/B_w(x) = m$, which characterizes the attenuation of the field across the flow, does not depend on x, it is necessary for obtaining progressive solutions that for the magnetic parameter the following holds:

$\zeta = \frac{\sigma B_w^2}{\varrho U'}\beta$. On these assumptions, the boundary conditions (2) and the Eq. (4) assume the form:

$$\varphi''' + \varphi\varphi'' = \beta(\varphi'^2 - 1) + \zeta\varphi'\left\{m + \frac{1-m}{(1+\xi)^s}\right\}^2; \quad (7)$$

$$\frac{1}{Pr}g'' + g'\varphi - \beta\gamma g\varphi' + \alpha\varphi''^2 + \alpha\zeta\varphi'^2\left\{m + \frac{1-m}{(1+\xi)^s}\right\}^2 = 0; \quad (8)$$

$$\varphi(0) = \varphi'(0) = 0; \quad \varphi'(\infty) = C; \quad g(0) = 1; \quad g(\infty) = 0. \quad (9)$$

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Progressive solutions of...

Furthermore, the authors show a way of obtaining analogous results for a compressible liquid. In this, they proceed from the boundary-layer equation

$$\rho\left(u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}\right)=-\frac{dp}{dx}+\frac{\partial}{\partial y}\left(\mu\frac{\partial u}{\partial y}\right)-\sigma B^2u; \qquad (10)$$

$$\rho\left(u\frac{\partial\theta}{\partial x}+v\frac{\partial\theta}{\partial y}\right)=\frac{1}{\mathrm{Pr}}\frac{\partial}{\partial r}\left(\mu\frac{\partial\theta}{\partial y}\right); \quad \frac{\partial(\rho u)}{\partial x}+\frac{\partial(\rho v)}{\partial y}=0.$$

with which the Joulean dissipation is neglected for the purpose of simplification, and where ~ 1 holds for Pr. The new variables $X = \int_0^x (p/p_0)^r dx$ and $Y = \int_0^y (\varrho/\varrho_0)dy$ (11) are introduced, which are analogous to Dorodnitsyn variables. By means of the substitution $V = u(p_0/p)^r\partial X/\partial x + v(p_0/p)^{r-1}T_0/T$ and by introduction of dimensionless variables, the system

$$u\frac{\partial u}{\partial X}+V\frac{\partial u}{\partial Y}=(\theta+1-u^2)\frac{UU'}{1-U^2}+(1-U^2)^{-\delta}\frac{\partial^2u}{\partial Y^2}-\frac{\sigma B^2}{\rho_0}u(\theta+1)(1-U^2)^{-\delta-1}; \qquad (12)$$

$$\frac{\partial u}{\partial X}+\frac{\partial V}{\partial Y}=0; \quad u=\frac{\partial\theta}{\partial X}+V\frac{\partial\theta}{\partial Y}=(1-U^2)^{-\delta}\frac{1}{\mathrm{Pr}}\frac{\partial^2\theta}{\partial Y^2}; \quad \delta=\frac{k(\alpha-1)}{k-1}$$

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Progressive solutions of...

is obtained from (10). The boundary conditions for the variables X and Y may be written down by means of (2), and the progressive solutions were found by means of the relations (3). It is further pointed out that the progressive solutions may be obtained with constant wall temperature (τ = const) or with constant velocity (case of a plate), and these two cases are discussed more in detail. There are 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Institut teploenergetiki Akademii nauk USSR (Institute of Heat Engineering of the Academy of Sciences UkrSSR)

SUBMITTED: June 1, 1960

Card 5/5

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T., akademik, otv. red.; DAL', V.I., doktor tekhn. nauk, red.; SHCHEGOLEV, G.M., kand. tekhn. nauk, zam. otv. red.; OSTROVSKIY, S.B., red.; LAVROV, P.I., kand. tekhn. nauk, red.; LANDSMAN, S.U., kand. tekhn. nauk, red.; KUZNETSOV, V.I., kand. khim. nauk, red.; SUSHON, S.P., inzh., red. DAKHNO, Yu.B., tekhn. red.

[Complete utilization of Ukrainian solid fuels]Kompleksnoe izpol'zovanie tverdykh topliv Ukrainy. Kiev, Izd-vo AN USSR, 1962. 287 p. (MIRA 15:11)

1. Akademiya nauk USSR, Kiev. Rada po vyvchenniu produktyvnykh syl URSR. 2. 2. Akademiya nauk Ukr.SSR (for Shvets). 3. Nachal'nik otdela toplivnoy promyshlennosti Gosudarstvennogo planovogo komiteta Soveta Ministrov Ukr. SSR (for Ostrovskiy). 4. Institut teploenergetiki Akademii nauk Ukr.SSR (for Shchegolev, Sushon).

(Ukraine--Fuel)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. [Shvets', I.T.], akademik, DYBAN, Ye.P. [Dyban, E.P.]; KOZACHUK-BOGACHUK, K.A. [Kozachuk-Bohachuk, O.A.]

Study of heat exchange in the flow of air in diffusers and nozzles. Dop. AN URSR no.9:1203-1206 '62. (MIRA 18:4)

1. Institut teploenergetiki AN UkrSSR, 2. AN UkrSSR (for Shvets)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. [Shvets', I.T.], akademik; DYBAN, Ye.P. [Dyban, Ye.P.]; KHAVIN, V.Yu.

Experimental study of heat exchange in labyrinth packings of gas turbines. Dop. AN URSR no.10:1332-1336 '62. (MIRA 18:4)

1. Institut teploenergetiki AN UkrSSR.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I. T., FEDOROV, V. I. and BANNIKOV, A. I. (ITTF Academy of Sciences of Ukrainian SSR)

"Results of investigation of dynamics of combustion chambers GTU with fast flowing high-temperature processes."

Report presented at the Section on Physics of Combustion, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, Ivan Trofimovich, prof.; TOLUBINSKIY, Vsevolod Ivanovich, prof.; KIRAKOVSKIY, Nikolay Feliksovich, dots.; NEDUZHIY, Ivan Afanas'yevich, dots.; SHELUD'KO, Ivan Mikhaylovich, dots.; VOZNESENSKIY, A.A., prof., retsenzent; LABUTIN, A.A., spets. red.; BALYASNAYA, A.Ye., red.

[General heat engineering] Obshchaia teplotekhnika. [By] I.T.Shvets i dr. Kiev, Izd-vo Kievskogo univ., 1963. 562 p. (MIRA 17:10)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. (Kiyev); DYBAN, Ye.P. (Kiyev)

Development and study of gas turbine air cooling systems. Izv. AN SSSR. Energ. i transp. no.6:747-758 N-D '63. (MIRA 17:1)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

S/0145/63/000/009/0144/0153

ACCESSION NR: AP4008100

AUTHORS: Shvets, I. T. (Professor, Doctor of technical sciences); Fedorov, V. I. (Candidate of technical sciences); Martsenyuk, Z. A. (Engineer); Kovalenko, G. V. (Engineer)

TITLE: Analysis of transient processes in twin-shaft gas turbine unit

SOURCE: IVUZ. Mashinostroyeniye, no. 9, 1963, 144-153

TOPIC TAGS: transient process, twin shaft turbine, gas turbine, turbine control, turbine characteristic, turbine

ABSTRACT: The transient characteristics of a 50 000 kw gas turbine installation with three compression stages and two expansion stages were investigated. The schematic diagram of the installation is shown in Fig. 1 on the Enclosure. The pertinent parameters in the diagram are as follows: P_3 = 2.6 atm, T_6 = 150C; P_2 = 6.3 atm, T_4 = 40C; P_1 = 17 atm, T_2 = 370C, T_1 = 800C; P_4 = 5.9 atm, T_4 = 770C; T_5 = 440C. The control system used to change the speed of the low- and high-pressure compressors and high-pressure turbine between 2700 and 3600 rpm is shown in Fig. 2 on the Enclosure. It consists of a speed regulator (1), a booster (2),

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4008100

control valves (3) (for high pressure) and (4) (for low pressure), servo-motors (5) (for high pressure) and (6) (for low pressure). The dynamic equations for this configuration were derived, and the step response of the system for sudden load reductions of 100, 50, and 15% were investigated on an analog computer for relative air consumption $\bar{G}$ = 0.6, 0.8, 1.0. It was found that the gas turbine installation (without the control system) is stable when the load is suddenly decreased (or increased) 50 or 100%. The speed overshoot varied within 26% and 60% of the new final value. With the control system the speed overshoot of the generator was kept to 3.7% (50% load step) and the speed overshoot of the compressor to 10%. The moment of inertia of the generator significantly influenced the temperature behavior before the low- and high-pressure turbines. The volume of the combustion chamber and air ducts appeared to have negligible effects on transient response. (b) Results with $\bar{G}$ = 0.8 and 0.6 indicated that although the response is slower, the system remains stable and the response is sufficient for practical application. Orig. art. has: 6 figures and 14 formulas.

ASSOCIATION: Institut teploenergetiki AN UkrSSR(Heat Energy Institute AN UkrSSR)

SUBMITTED: 08May63 DATE ACQ: 09Jan64 ENCL: 02

SUB CODE: ME, GP PR NO REF SOV: 002 OTHER: 000

Card 2/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4008100

ENCLOSURE: 01

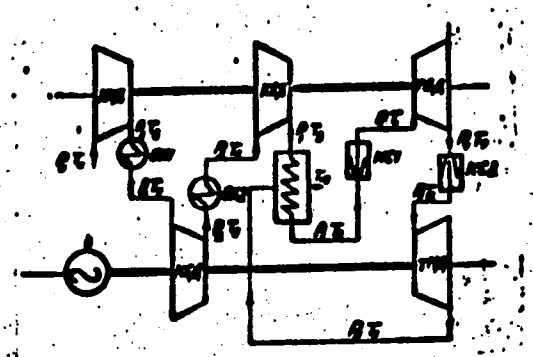

Fig. 1 Schematic drawing of gas turbine installation

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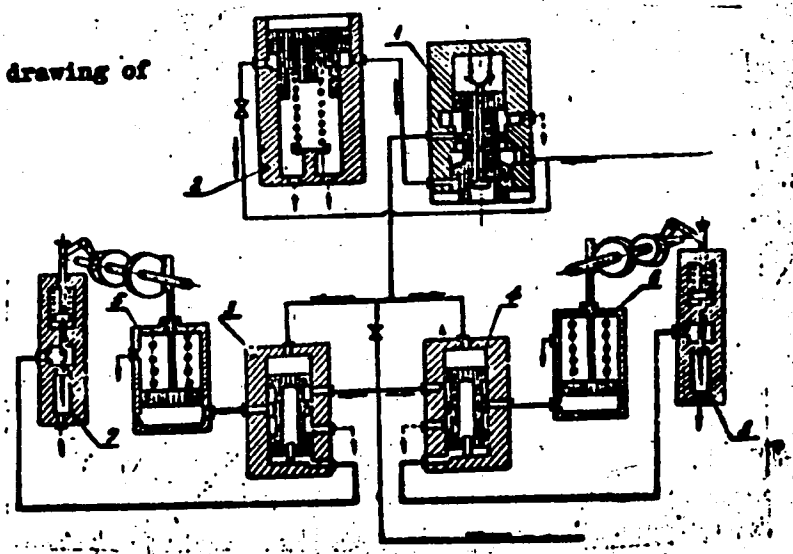
"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4008100

ENCLOSURE: 02

Fig. 2 Schematic drawing of control system



Card 4/4

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T., akademik; DYBAN, Ye.P., kand.tekhn.nauk; KHAVIN, V.Yu., inzh.

Heat transfer in the labyrinth glands of turbine wheels. Energomashinostroenie 9 no.12:8-11 D '63. (MIRA 17:1)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T., akademik

Gas turbines. Teploenergetika 10 no.12:33-37 D '63. (MIRA 17:8)

1. Akademiya nauk Ukrainskoy SSR.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

KHRENOV, K.K., akademik, otv. red.; SHVETS', I.T., red.; SHCHERBAN', O.N., red.; KUCHEROV, P.S., red.; SAMSONOV, G.V.[Samsonov, H.V.], red.; ANISIMOV, Yu.O., kand. tekhn. red.; DOBROV, G.M.[Dobrov, H.M.], kand. tekhn. nauk, red.; MATIYKO, M.M., red.; ORLIK, O.L.[Orlyk, O.L.], red.

[E. says on the history of technology in the Ukraine] Narysy z istorii tekhniky na Ukraini. Kyiv, Naukova dumka, 1964. 110 p. (MIRA 17:11)

1. Akademiya nauk UkSSR, Kiev. Sektor istorii tekhniki i yestestvoznaniya. 2. Chlen-korrespondent AN Ukr.SSR (for Kucherov, Samsonov).

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

TOLUBINSKIY, V.I., otv. red.; FEDOSEYEV, V.A., doktor fiz.-mat. nauk, zam. otv. red.; DORFMAN, A.Sh., kand. tekhn. nauk, red.; DUSHCHENKO, V.P., kand. fiz.-mat. nauk, red.; DYBAN, Ye.P., kand. tekhn. nauk, red.; KREMNEV, O.A., doktor tekhn. nauk, red.; NAZARCHUK, M.M., kand. tekhn. nauk, red.; ORNATSKIY, A.P., kand. tekhn.nauk, red.; PAVLOVICH, V.P., doktor tekhn. nauk, red.; SHVETS, I.T., kand. tekhn. nauk, red.; SHCHEGOLEV, G.M., kand. tekhn. nauk, red.; SHCHERBAN', A.N., akademik, red.; SYTNIK, N.K., red.

[Thermophysics and heat engineering] Teplofizika i teplotekhnika. Kiev, Naukova dumka, 1964. 339 p. (MIRA 18:1)

1. Akademiya nauk URSR, Kiev. Instytut tekhnichnoy teplofizyky. 2. Institut tekhnicheskoy teplofiziki AN Ukr.SSR, Kiev (for Dorfman, Dyban, Nazarchuk, Tolubinskiy, Shchegolev). 3. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti (for Dushchenko, Pavlovich). 4. Kiyevskiy politekhnicheskiy institut (for Ornatskiy).

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

TOLUBINSKIY, V.I.--- (continued). Card 2.

5. Odesskiy universitet (for Fedoseyev). 6. Kiyevskiy universitet (for Shvets). Akademiya nauk Ukr.SSR (for Shcherban', Shvets). 7. Chlen-korrespondent AN Ukr.SSR (for Tolubinskiy). 8. Gosudarstvennyy komitet Soveta Ministrov po koordinatsii nauchno-issledovatel'skikh rabot (for Shcherban').

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4012590 S/0021/64/000/002/0220/0223

AUTHOR: Shvets', I. T. (Academician); Fedorov, V. Y.; Minyaylenko, M. O.; Banny*kov, A. I.

TITLE: Experimental study of the nonstationary temperature field in the rotor of a gas turbine

SOURCE: AN UkrRSR. Dopovidi, no. 2, 1964, 220-223

TOPIC TAGS: gas turbine, gas turbine temperature, gas turbine thermal stress, gas turbine starting temperature, gas turbine stopping conditions

ABSTRACT: Using the test assembly shown in Fig. 1 of Enclosure 01, the temperature field in the rotor of a gas turbine was investigated under the following operating conditions: normal start-up, start-up with hot rotor, and emergency start-up of a cold turbine.

1. Temperatures at the top of the blade reached 550 to 560C after 3 minutes in operating conditions 0 - 100 - 0. Temperatures at the bottom of the blades were 180 to 200C.

2. The maximum temperature difference (Fig. 2. of Enclosure 02) between the periphery and the hub of the turbine wheel reached 290C, 10 to 12 minutes after

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4012590

start-up or 5 to 7 minutes after arriving at 100 percent load.

3. The maximum temperature difference between the periphery and the hub during start-up with warming at low rpm was 240 to 250C after 20 minutes.

4. The temperature gradients between the periphery and hub are considerably reduced with warming up at low rpm.

5. The maximum composite thermal stresses in the turbine rotor are -1600 (quick start-up and maximum gradient), -60 (quick start-up and constant temperature field), and -720 kg/mm^2 (normal start-up and maximum gradient).

On the basis of the obtained results it is possible to consider reducing the start-up time and to provide safe start-up and operating conditions for gas turbines.

ASSOCIATION: Insty*tut teploenergety*ky*, AN UkrRSR (Institute of Thermal Power Engineering, AN UkrRSR)

SUBMITTED: 17Jun63 DATE ACQ: 03Mar64 ENCL: 02

SUB CODE: AI, PR NO REF SOV: 002 OTHER: 000

Card 2/2

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4019078 S/0170/64/000/003/0003/0009

AUTHOR: Shvets, I. T.; Dy*ban, Ye. P.

TITLE: Heat exchange through a contact of plane metallic surfaces

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 3, 1964, 3-9

TOPIC TAGS: Heat exchange, heat transfer, metal contact, microgeometry

ABSTRACT: The laws governing contact heat transfer between two plane metallic surfaces are analyzed theoretically and the results are presented. On the basis of recent concepts of microgeometry, an attempt was made to derive an equation governing such transfer. Heat flowing through the contact may be represented as heat passing through portions of direct contact and heat passing through the interlayers between the microroughnesses and waves present on the surfaces of the two parts. The relation between the area of direct contact and the compression force is assumed to be governed by the power law, the exponent and constant coefficient of which are found from experimental data. The dependence of the direct contact area on strain is determined with the aid of the curve of a supporting

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

ACCESSION NR: AP4019078

surface. The criterial equation obtained theoretically is in good agreement with experimental results conducted earlier and with the data of other authors. Orig. art. has 2 figures.

ASSOCIATION: Institut teploenergetiki, AN UkrSSR, Kiev (Institute of Heat and Power Engineering, AN UkrSSR)

SUBMITTED: 22Oct63 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 011 OTHER: 003

Card 2/2

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

L 24397-65 EWT(d)/EPA/EWT(m)/EWP(f)/EPF(n)-2/EPR/T-2/EPA(bb)-2 Paa-4/ Ps-4 WW/MLK

ACCESSION NR: AT5004218 S/0000/64/000/000/0147/0153

AUTHOR: Shvets, I. T. (Academician AN UkrSSR); Fedorov, V. I.; Bannikov, ~~A. I.~~

TITLE: Investigation of transient characteristics of stationary gas turbine combustion chambers

SOURCE: AN UkrSSR. Institut tekhnicheskoy teplofiziki. Teplofizika i teplotekhnika (Thermophysics and heat engineering). Kiev, Naukova dumka, 1964, 147-153

TOPIC TAGS: stationary gas turbine, combustion chamber, turbine testing, transient regime, gas turbine

ABSTRACT: The transient characteristics during a sudden increase or decrease or a periodic change in the fuel feed rate to a stationary gas turbine combustion chamber was investigated with natural gas in a test chamber 3 m long. The fuel feed fluctuations were changed at a frequency of 0.6—8 cps and amplitudes of 2.7—12.5 mm. The temperature fluctuations during the transient regimes were oscillographically determined. As a result, the transfer function and transfer

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L 24397-65

ACCESSION NR: AT5004218

coefficients for the investigated combustion chamber were determined. The time lag was plotted vs the fuel feed rate in the transient regimes. Orig. art. has: 6 figures. [AC]

ASSOCIATION: Institut tekhnicheskoy teplofiziki AN UkrSSR (Institute of Technical Thermophysics, AN UkrSSR)

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: PR

NO REF SOV: 001 OTHER: 000 ATD PRESS: 3179

Card 2/2

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T. (Kiyev); DYBAN, Ye.P. (Kiyev)

Reply to M.I. TSaplin's remarks. Izv. AN SSSR. Energ. i transp. no.2:149-150 Mr-Ap '65. (MIRA 18:6)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

L 21650-66 EWT(d)/EWT(m)/EWP(w)/EWP(f)/EPF(n)-2/EWP(v)/T-2/EWP(k)/ETC(m)-6 WW/RM
ACC NR: AP6006138 SOURCE CODE: UR/0114/65/00/010/0022/0025

AUTHORS: Shvets, I. T. (Academician AN UkrSSR); Dyban, Ye. P. (Candidate of technical sciences); Stradomskiy, M. V. (Candidate of technical sciences); Gusak, Ya. M. (Engineer); Zatkovetskiy, G. N.; Klimenko, V. N.; Nasybullina, A. A.; Chepaskina, S. M.

ORG: none

TITLE: Development and investigation of the air cooling system for the high-pressure turbine rotor of GT-6-750 TMZ

SOURCE: Energomashinostroyeniye, no. 10, 1965, 22-25

TOPIC TAGS: turbine, turbine cooling, gas turbine, blade cooling/ GT-6-750 gas turbine

ABSTRACT: In conjunction with the development of gas turbine GT-6-750 (initial gas temperature 750C, pressure 5.8 kg/cm^2), several air cooling systems for the high-pressure turbine rotor were designed and tested at the Ural Turbine Factory and Institute of Heat Physics of the AN UkrSSR (Ural'skiy turbomotornyy zavod i Institute tekhnicheskoy teplofiziki AN UkrSSR). The development of the final

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ACC NR: AP6006138

cooling system shown in Fig. 1 is discussed and the temperature distributions at the blade roots and in the turbine wheel are graphically presented for cooling air flows of 0.9 and 0.73 kg/sec respectively (0.73 kg/sec represents 1.7% of the total gas flow). The values of local cooling air pressure, temperature, flow rate, and heat transfer coefficient at the 16 locations in Fig. 1 are tabulated. It was found that the cooling system maintained all metal temperatures below 410C (at 0.73 kg/sec) and calculations show that the cooling flow can be further reduced to 0.4--0.45 kg/sec without dangerous temperatures. With such a cooling system, perlitic steels can be used with gas temperatures of up to 900C. The experiments confirmed the accuracy of previously proposed methods for calculating the cooling system parameters (Ye. P. Dyban, Issledovaniye sistem vozdushnogo okhlazhdeniya rotorov gazovykh turbin. Avtoreferat dissertatsii. LPI im. M. I. Kalinina, 1964).

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

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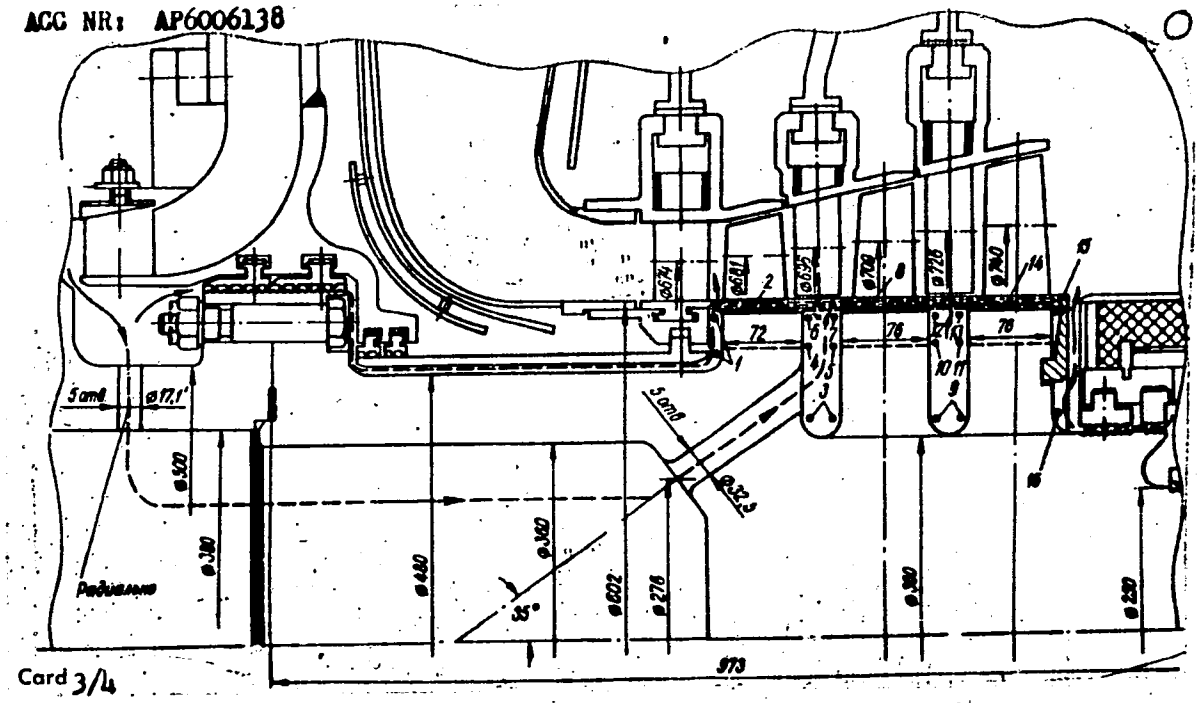
ACC NR: AP6006138



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ACC NR: AP6006138

Fig. 1. Cooling system for GT-6-750 gas turbine rotor.

Orig. art. has: 1 table and 4 figures.

SUB CODE: 21, 13/ SUBM DATE: none/ ORIG REF: 003

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L 3464-66 EWT(m)/EWP(w)/EWI(f)/EWA(d)/EWP(v)/T-2/EWP(t)/EWP(k)/EWP(z)/EWP(b)/
ETC(m) EM/MJW/JD/WW

ACCESSION NR: AP5024137 UR/0096/65/000/010/0047/0051

621.438.542.46.001.5

79
73
B

AUTHOR: Dyban, Ye. P. (Candidate of technical sciences); Stradomskiy, M. V.; Khavin, V.Yu.; Shvets, I. T. (Academician AN UkrSSR); Kurosh, V. D. (Engineer)

TITLE: Experimental investigation of the GT-6-750 turbine cooling system

SOURCE: Teploenergetika, no. 10, 1965, 47-51

TOPIC TAGS: turbine design, hydraulics, turbine cooling, thermodynamics/ GT-6-750 turbine

ABSTRACT: The newly developed cooling system for the rotor of a GT-6-750 high pressure turbine was investigated. Six tests were made on the temperature state of the rotor and 11 on the hydraulic characteristics of the cooling system. Cooling system efficiency was evaluated from measurements of metal temperature and cooling air pressure under steady state cooling conditions. Results of the measurements shown graphically, demonstrate that, with an overall consumption of cooling air of 0.86 kg/sec. and an initial gas temperature of 750C, there is assured a maximum temperature level not higher than 410C over the disc plates. This is substantially lower (by 100-110C) than the permissible value for heat resistant perlitic steel type EI-415. With this system, the main body of heat is

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ACCESSION NR: AP5024137

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removed from the upper part of the disc plate. Thus, heating up of the main body of the rotor proceeds very rapidly and steady state conditions are attained within 45-50 min after startup. The radial and axial temperature gradients are within permissible limits. In general, the highest temperature gradients over the thickness of a disc amount to 110C and are attained after 40 minutes from the start of heating. Orig. art. has: 5 figures

ASSOCIATION: Institut tekhnicheskoy teplofiziki AN UkrSSR (Institute of Industrial Thermophysics, AN UkrSSR); Ural'skiy turbomotornyy zavod (Ural Turbine Motor Plant)

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NR REF SOV: 000 OTHER: 000

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APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

SHVETS, I.T., akademik; DYBAN, Ye.P., kand.tekhn.nauk; ANTONENKO, F.T., inzh.; BUMARSKOV, A.I., inzh.; ZARUBIN, L.A., inzh.; SHPET, N.G., inzh.

Development and study of the air cooling system of the welded rotors of large gas turbines. Energomashinostroenie 11 no.11:13-16 N '65. (MIRA 18:11)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

DYBAN, Ye.P., kand.tekhn.nauk; STRADOMSKIY, M.V., kand. tekhn. nauk; SHVETS, I.T., akademik; KNABE, A.G., inzh.; POVOLOTSKIY, L.V., inzh.; SHPET, N.G., inzh.

Study of the cooling system of a seamlessly forged drum rotor of an experimental gas turbine. Teploenergetika 12 no.5:26-31 My '65. (MIRA 18:5)

1. Institut tekhnicheskoy teplofiziki AN UkrSSR i Khar'kovskiy turbinnyy zavod imeni S.M.Kirova. 2. AN UkrSSR (for Shvets).

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L 26476-66 EWP(m)/EWT(1)/EWA(d)/EWA(1) GS

ACC NR: AT6008139 UR/0000/65/000/0000/0007/0017

AUTHOR: Dyban, Ye.P. (Candidate of technical sciences); Prokopov, V.G.; Stradomskiy, M.V.; Shvets, I.T. (Academician AN UkrSSR)

ORG: None;

95
90
B+1

TITLE: Problems of hydraulic resistance of air flow through porous media

SOURCE: AN UkrSSR. Techeniya zhidkostey i gazov (Flows of liquids and gases). Kiev, Naukova dumka, 1965, 7-17

TOPIC TAGS: porous metal, gas flow, hydraulic resistance, differential equation, porosity, gas viscosity, flow meter, metal powder, Reynolds number/ RS-100 flow meter

ABSTRACT: This work is an experimental investigation of the air flow through porous media. The study is aimed at the determination of flow and hydraulic resistance coefficients, and their dependence upon the state of flow and the geometrical characteristics of the porous structure. A theory of similitude approach, considering the two basic physical factors, - viscosity and inertia - leads to the differential equation

$$dp/dL = \alpha \mu . v + \beta . \rho . v^2 \qquad (1)$$

suitable transformations and integration of (1) over the porous sample thicknes gives:

$$y = \alpha . \mu . + \beta . G_f/g \qquad (2)$$

where μ, ρ - dynamic viscosity & density of the gas and:

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$y = \gamma_{av} \cdot p/(L \cdot G_f)$ (3). In the above expressions: $p = p_1 - p_2$ - pressure fall across sample; γ_{av} - average specific density of gas; g - gravity constant; $G_f = \gamma \cdot v$ - filtration weight flow; v - velocity of gas; α, β, - coefficients of viscosity and of inertia. The experimental apparatus consisted of a clean and dry regulated air supply with provisions for temperature, pressure and flow measurement. Low rates of gas flow were measured by two GKP-6 gas meters and a rheometer in series; high rates - by double diaphragms and a RS-100 flow meter. Experimental samples were disks of steel powder, 5 mm thick and 50 mm dia. with porosities of 20.5, 37, 42.5 & 55.75%. All samples had particles of the same shape and granulemetric distribution. The experiments confirmed the theoretical expressions. For the experimental coefficients α & β the following expressions were derived as functions of the porosity P :

$$\alpha = 7.22\, P^{-3.81} \cdot 10^{17}\ (m^{-2}) \quad (4) \qquad \beta = 1.26\, P^{6.35} \cdot 10^{13} (m^{-1}) \quad (5)$$

The porous medium friction coefficient, λ, is shown to be representable by

$$\lambda = 2 - 2/Re \quad (6)$$ where Re is the Reynold's number.

Directions for further research are recommended. Orig. art. has: 5 figures, 12 formulas.

SUB CODE: 20,11/ SUBM DATE: 15May64 / ORIG REF: 001 / OTH REF: 002

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L 29731-66 EWP(k)/EWT(m)/T-2/EWP(w)/EWP(f)/EWP(v)/EWP(t)/ETI IJP(c) EM/WW/JD

ACC NR: AP6012267 SOURCE CODE: UR/0114/65/000/011/0013/0016

AUTHOR: Shyets, I. T. (Academician); Dyban, Ye. P. (Candidate of technical sciences); Antonenko, F. T. (Engineer); Bumarskov, A. I. (Engineer); Zerubin, L. A. (Engineer); Shpet, N. G. (Engineer)

ORG: none

TITLE: Development and investigation of a system of air cooling of welded rotors for high power gas turbines

SOURCE: Energomashinostroyeniye, no. 11, 1965, 13-16

TOPIC TAGS: turbine rotor, gas turbine, turbine cooling, electronic simulation

ABSTRACT: In the present work, thermal calculation of the cooling system was carried out on a three-dimension electric model, based on the use of a Type EI-12 electronic integrator. A diagram shows the scheme for an electric model of a welded double-disk rotor. Based on experimental results, a figure shows the temperature field for a two-stage rotor; the data were obtained at an overall cooling air rate of 1.865 kg/sec. Conclusions are as follows: 1) use of intensive air cooling of all surfaces permits the fabrication of welded rotors with

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ACC NR: AP6012267

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greater rigidity and less weight; 2) use of the modelling system proposed in the article permits development of more reliable and efficient systems of air cooling for two- and four-state rotors for gas turbines; 3) parallel distribution of the cooling air over the stages allows sufficiently uniform temperature fields in all the disks; 4) with the proposed cooling system, use of more heat resistant material for the vanes of the first stage permits raising the temperature of the gas to 850-870°; and, 5) use of the electronic modelling also makes it possible, simply and with sufficient accuracy to determine the temperature field of practically any rotor, with the use of any present type of cooling system. Orig. art. has: 4 figures and 1 table.

SUB CODE: 13, 09 / SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

L 04270-67

ACC NR: AP6013298 SOURCE CODE: UR/0413/66/000/008/0091/0091

AUTHORS: Dyban, Ye. P.; Klimenko, V. N.; Rudkin, S. K.; Stradomskiy, M. V.; Khavin, V. Yu.; Shvets, I. T.

ORG: none

TITLE: Apparatus for measuring the temperature of revolving machine details. Class 42, No. 180833 [announced by Institute of Technical Thermophysics, AN UkrSSR (Institut tekhnicheskoy teplofiziki AN UkrSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 91

TOPIC TAGS: temperature measurement, thermocouple, electromagnet, magnetic circuit, MEASURING INSTRUMENT, MECHANICAL STRESS

ABSTRACT: This Author Certificate presents an apparatus for measuring the temperature of revolving machine details. The apparatus contains thermocouples fixed on the revolving detail and connected into the chain of movable electromagnets of the induction-type contactless current receivers. The fixed magnets of the latter are connected into a circuit for amplifying and registration of the measured impulses (see Fig. 1). To diminish the influence of the machine shaft displacement and the interference of the nearby electromagnets, the magnetic connections of the fixed magnets are provided with magnetic screens placed on both sides of the connections in parallel to the rotation axis. The shaft carries a spline-like

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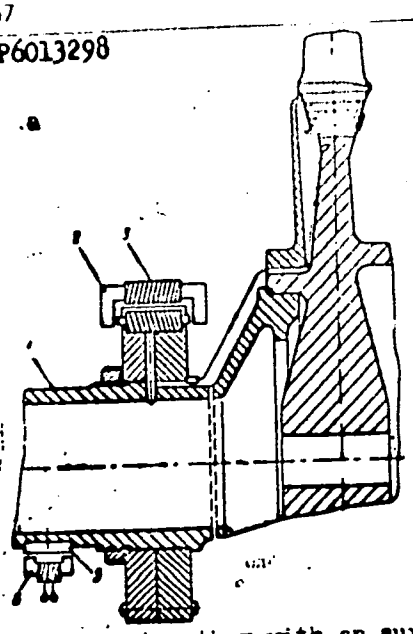

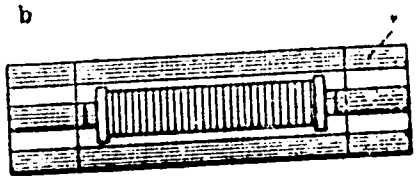

Fig. 1. 1 - machine shaft; 2 - magnetic connection; 3 - fixed electromagnets; 4 - magnetic screen; 5 - spline-like protrusion; 6 - auxiliary magnet

protrusion which, together with an auxiliary magnet, forms a system producing the directing impulses sent to the recording circuit. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 08Feb65

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001550410009-6

BARBUKOVA, V.I., kand. ist. nauk; DEMIDOVA, Z.F., kand. ist. nauk; POSELYANINA, O.K., kand. ist. nauk; SORIN, Yu.N., kand. ist. nauk; SHATVOROVA, V.D., kand. ist. nauk; KHRUSHCHEV, V.I.; STARODUBTSEV, N.I.; SHVETS, I.Ye.; TOROPCHIN, N.S., red.; IVANOVA, R.N., tekhn. red.

[Krasnyi Aksay; from the history of the M.V.Frunze Rostov Plant of Agricultural Machinery] Krasnyi Aksai; iz istorii Rostovskogo zavoda sel'skokhoziaistvennogo mashinostroeniia imeni M.V.Frunze. Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1962. 158 p. (MIRA 15:9)

1. Prepodavateli Rostovskogo gosudarstvennogo universiteta (for Barbukova, Demidova, Poselyanina, Sorin, Shatvorova). 2. Otvetstvennyy sekretar' mnogotirazhnoy gazety "Krasnyy aksayets" (for Khrushchev). 3. Zaveduyushchiy kabinetom politicheskogo prosveshcheniya partiynogo komiteta Rostovskogo zavoda sel'skokhozyaystvennogo mashinostroyeniya "Krasnyy Aksay" (for Starodubtsev). 4. Rabochiy remontno-mekhanicheskogo tsekha Rostovskogo zavoda sel'skokhozyaystvennogo mashinostroyeniya "Krasnyy Aksay" (for Shvets).
(Rostov-on-Don—Agricultural machinery)

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