

1ST AND 2ND GROUPS
PROCESSES AND PROPERTIES INDEX
3RD AND 4TH GROUPS

COMMON ELEMENTS
COMMON VARIABLES INDEX

OPEN
MATERIALS INDEX

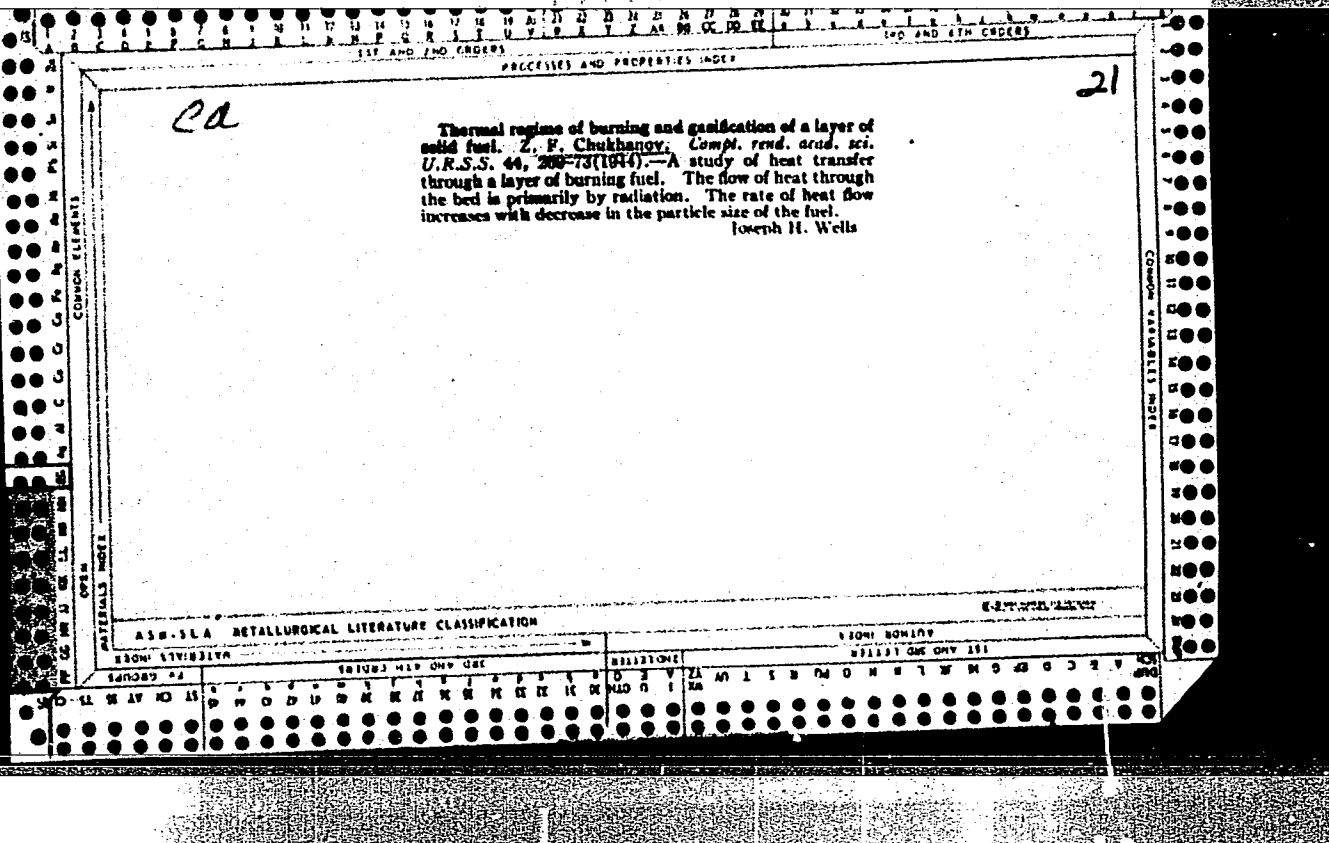
2825. HYDRODYNAMIC THEORY OF HEAT EXCHANGE AND DIFFUSION IN TURBULENT GAS FLOW IN PIPES. Chukanov, Z.F. (compt. rend. (Doklady) acad. sci. U.R.S.S., 1944, 43, 277-282; Engrs' Dig., Aug. 1946, 7, 231-232) The author has attempted to establish a concept of the mechanism of interaction between the turbulent flow and the tube wall surface, and to derive from it equations of the hydrodynamic theory of heat exchange. His equation agrees with the empirical equation of Latus and Belter, as shown graphically.

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

REGIONAL NOMENCLATURE

1ST AND 2ND GROUPS
3RD AND 4TH GROUPS

COMMON ELEMENTS
COMMON VARIABLES INDEX



CHURBANOV, Z. P. and ORLIKINA, I. A.

Corresponding Members, Academy of Sciences USSR. (-1944-)

Power Eng. Inst., Academy of Sciences, USSR. (-1944-)

"Dynamics of Low-Temperature Carbonization Process of Solid Fuel. Report 1."
Nos. 7-8, 1945. Iz. Ak. Nauk. SSSR. Otdel. Tekh. Nauk.

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

21

ca

Thermal regime of semicoking, burning, and gasification of particles in a solid fuel. H. Z. P. Chukhanov (O. M. Kravchukovskiy Power Inst., Acad. Sci. U.R.S.S.R.); *Compt. rend. acad. sci. U.R.S.S.* 47, 185-0; *Doklady Akad. Nauk S.S.S.R.* 47, 100-4(1948); cf. C.A. 30, 3680. —Criteria are proposed for assessing the relative importance of heat exchange in a fuel bed due to conduction, convection, and radiation. The dependence of these functions on temp., gas velocity and compn., particle size and particle cond. is shown. By a comparison of these criteria it is suggested that thermal control of the system by means of the most favorable method, usually convection, may be effected by the adoption of appropriate conditions.
Fred Lister

ASM-ISA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

CHUKHANOV, Z. F.

At the plenary meeting of the conference of the Power Establishments of the Academies of Science of the Union Republics and of the Affiliates of the Academy of Science, USSR, the following paper was presented by a Corresponding Member of the Academy of Sciences, USSR, Z. F. Chukhanov, on "Gas supplies 't e ts' and industry of Moscow based on Moscow coal and cut peat".

SO: Elektrichestvo, No. 9 Moscow, Sept. 1947 (U-5534)

CHUKHANOV, Z. F.

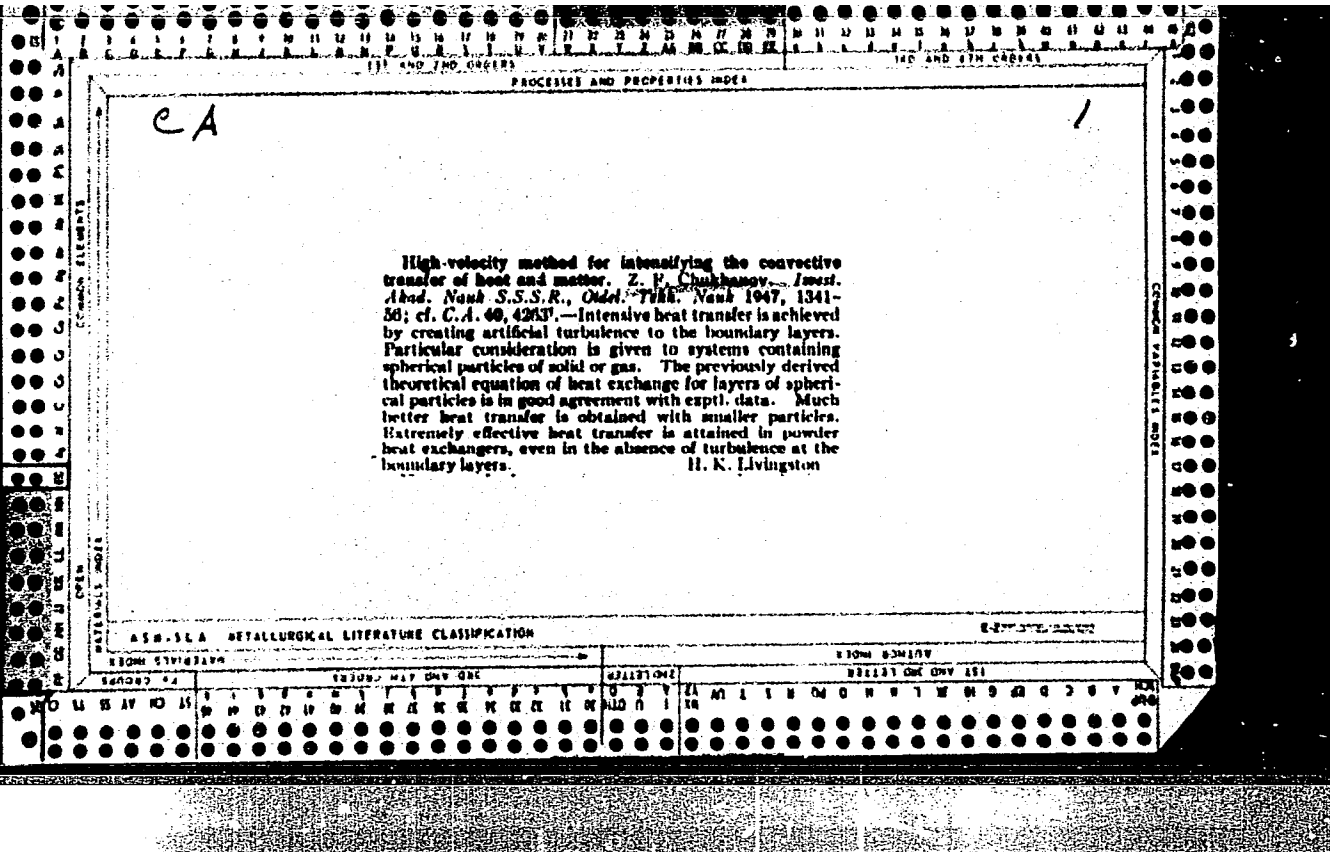
CHUKHANOV, Z. F.

Intensifikatsiia konvektivnogo teploobmena iskusstvennoi turbulizatsiei pogranichnogo sloia. (Akademii Nauk SSSR. Doklady. Novaia serii, 1947, v. 57, no. 1, p. 35-38, Table, diagr.)

Title tr.: Intensification of convective heat exchange by artificial turbulence of the boundary layer.

AS262.S3663 v. 57

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



CHUKHANOV, Z. F.

PA 8T36

USSR/Heat Exchange Systems
Heat - Transference

Feb 1947

"Heat Exchange Between a Plate and a Gas," Z. F.
Chukhanov, 4 pp

"CR Acad Sci" Vol LV, No 6

Hydrodynamical considerations of the accuracy,
of the "rectangular-duct" analogy in solving the
problem of heat-exchange between a plate and a
gas with the boundary layer in a turbulent state.

8T36

PROCESSES AND PROPERTIES INDEX

1ST AND 2ND GROUPS

21

ca

Underground gasification of coal by the percolation method. Z. F. Chukhanov (Acad. Sci., Moscow). *Compt. rend. acad. sci. U.R.S.S.* 56, 45-8(1947)(in English); cf. *C.A.* 36, 8778^a; 41, 7781^d.--In the underground gasification of coal by blowing air through the coal seam (percolation), no two-well arrangement will be found profitable so far as the rate of production is concerned, because the blast and gas losses are bound to be relatively high. For the best results the input wells should be placed along a curve embracing the blast wells. When the intake wells in the first circle have spent their gas they become blast wells and those in the next circle become intake wells. The rate of production can be further increased by gathering gas in 2 or 3 stages, i.e., in the 2nd, 3rd, or more circles at once. This creates a favorable pressure field in the coal layer with the consequent reduction of possible gas loss along the porous rocks overlaying the coal layer.

J. H. Covington

A 58-51A METALLURGICAL LITERATURE CLASSIFICATION

A 58-51A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND GROUPS

1ST AND 2ND GROUPS

CHUKHANOV, Z. F.

Jul 1947

USSR/Physics
Heat Exchange Systems
Turbulence

"Intensification of Convective Heat Exchange for
Artificial Turbulence of the Boundary Layer," Z. F.
Chukhanov, Corr Mem, Acad Sci, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 1

Describes experiments showing that general principles
produced by author on intensification of heterogenic
processes of heat exchange type are correct and can be
checked by several methods.

60T100

CHUKHANOV, Z. F.

Teploobmen v usloviakh "vnutrennei" i "vneshnei" zadachi. (Akademiia Nauk SSSR, Doklady. Novaia seriia, 1947, v. 55, no. 6, p. 501-504, diagr.)

Title tr.: The "interior" versus "exterior" problem in heat exchange.

Also published in English in Comptes Rendus de l'Academie des Sciences de l'URSS. Nouvelle serie, 1947, v. 55, no. 6, p. 497-500 (Q60.A52)

AS262.S3663 v. 55

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

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 1ST AND 2ND ORDERS

B 19

Concerning Problems of Efficiency of Gas Generators for Supplying Gas to Large Industrial Establishments.
(In Russian.) Z. P. Chukhanov. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), July 1948, p. 1101-1111.
Discusses the above with special reference to certain Soviet types of gas producers.

COMMON ELEMENTS
COMMON VARIABLES INDEX

OPEN GROUPS
MATERIALS INDEX

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS 1ST AND 2ND ORDERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
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CHUKHANOV, Z. F.

PA 12/49T47

USSR/Engineering
Generators, Gas

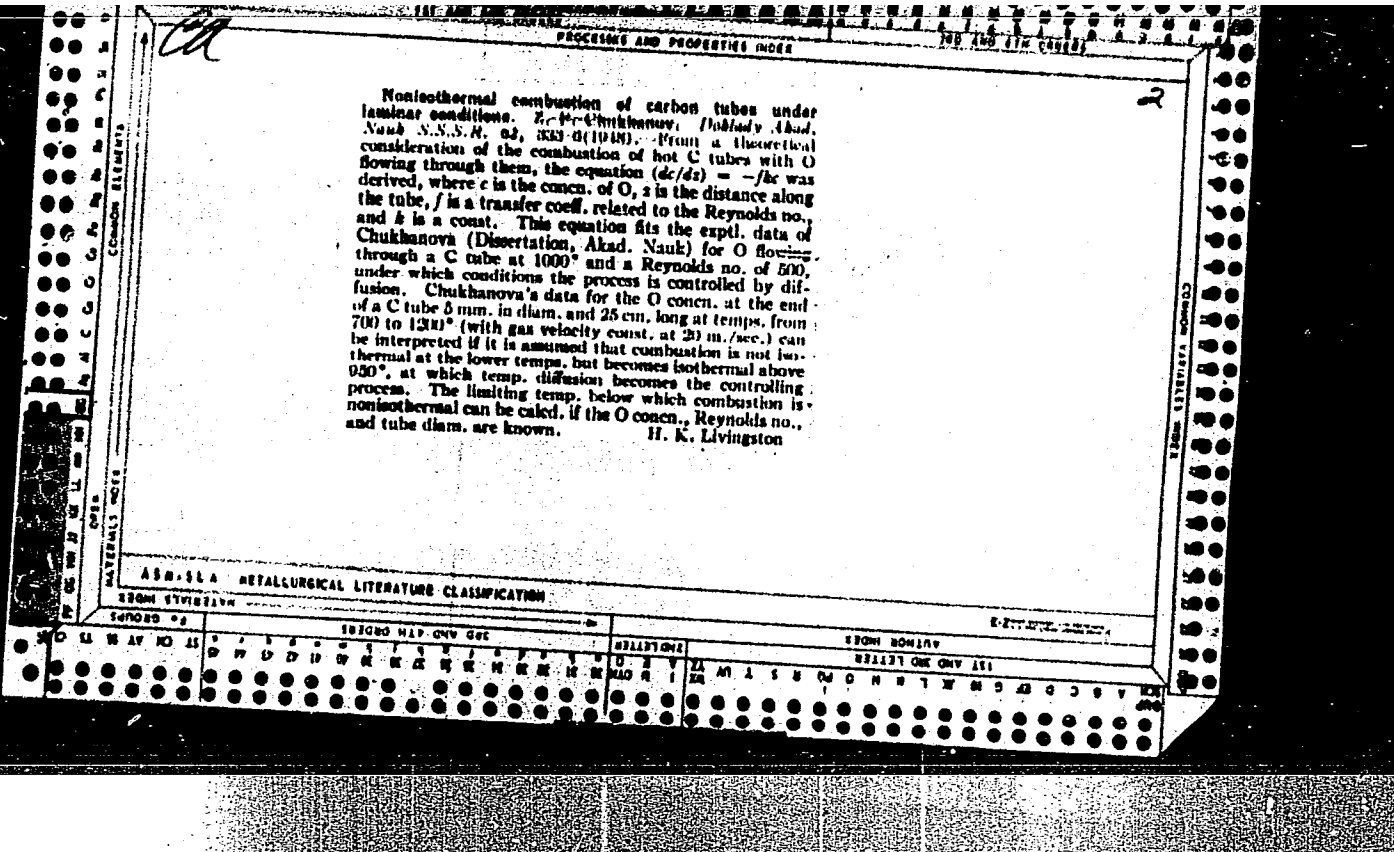
Jul 48

"The Problem of a Large Gas Generator in Connection
With the Gas Supply to Large Cities and Industries,"
Z. F. Chukhanov, Corr Mem Acad Sci USSR, Energetics
Inst imeni G. M. Krzhizhanovskiy, Acad Sci USSR,
11½ pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 7

Treats subject under following headings: (1)
the problem of a large gas generator; (2) the
GIAP type gas generator; (3) gasification of fine
semi-coke. Submitted 20 Jan 48.

12/49T47



USSR/Engineering
Combustion
Coke

Apr 49

"Nonisothermic Combustion of Carbon Particles (Coke)
in a Stratum," Z. F. Chukhanov, Corr Mem, Acad Sci
USSR, 4 pp

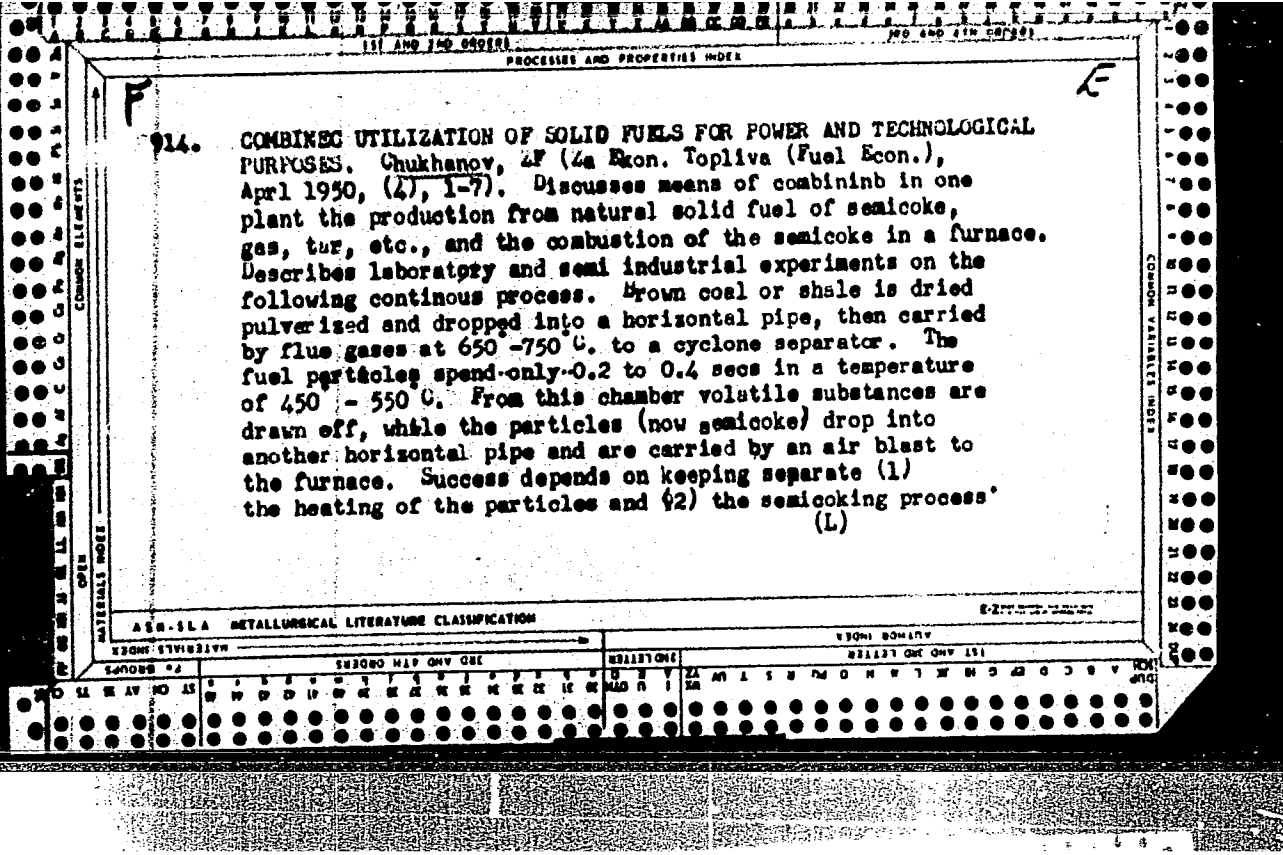
"Dok Ak Nauk SSSR" Vol LXV, No 5

Derives equations for nonisothermic combustion of
a coke layer, using resulting change in oxygen
concentration along the layer. Certain of these
equations are applicable to work of furnaces and
gas generators. Various curves show distribution
of oxygen concentration and temperature in a layer
39/49T34

USSR/Engineering (Contd)

Apr 49

of burning charcoal, distribution of oxygen con-
centration in a layer of burning coke, and distri-
bution of oxygen concentration in a layer of burn-
ing coal and coke. Submitted 19 Feb 49.



19

PROCESSES AND PROPERTIES INDEX

SEPARATION OF THE PROCESSES OF PREHEATING AND SEMI-COKING OF FUEL PARTICLES. (In Russian.) Z. F. Chukhary. *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 72, June 1, 1950, p. 687-690.

Presents theoretical, mathematical analysis of the above. Thermal decomposition of fuel is considered as a series of parallel and successive physicochemical reactions, whose rate is a definite function of the organic mass of the fuel. Formula for determination of this function is proposed. Influence of variables such as size of fuel particles is indicated. Results are discussed and possibility of practical application is emphasized.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

COMMON VARIABLE INDICES

1ST AND 2ND ORDERS	3RD AND 4TH ORDERS	1ST AND 2ND ORDERS	3RD AND 4TH ORDERS
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

AMR

Heat and Mass Transfer

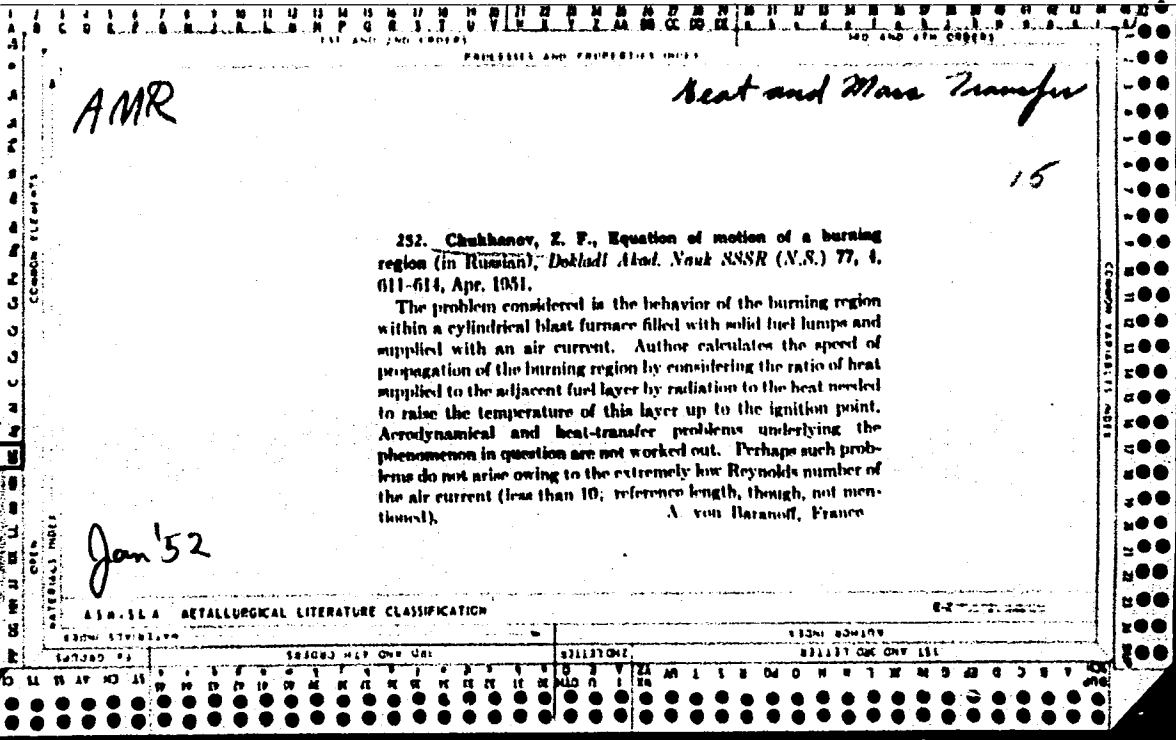
15

252. Chukhanov, Z. F., Equation of motion of a burning region (in Russian); *Dokladi Akad. Nauk SSSR (N.S.)* 77, 4, 611-614, Apr. 1951.

The problem considered is the behavior of the burning region within a cylindrical blast furnace filled with solid fuel lumps and supplied with an air current. Author calculates the speed of propagation of the burning region by considering the ratio of heat supplied to the adjacent fuel layer by radiation to the heat needed to raise the temperature of this layer up to the ignition point. Aerodynamical and heat-transfer problems underlying the phenomenon in question are not worked out. Perhaps such problems do not arise owing to the extremely low Reynolds number of the air current (less than 10; reference length, though, not mentioned).
A. von Karanoff, France

Jan '52

ASA-11A METALLURGICAL LITERATURE CLASSIFICATION



CHUKHANOV, Z. F.

184T43

USSR/Engineering - Thermal Engineering 1 Jun 51

"On the Problem of the Motion of Solid Particles in a Gas Flow," G. N. Khudyakov, Z. F. Chukhanov, Corr Mem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXVIII, No 4, pp 681-684

Conducted expts to study heterogeneous processes in gas flow contg moving solid particles, as in cases of coal-dust combustion, catalytic cracking, burning of certain materials, etc. Describes installation. Data obtained disprove assumption that solid particles always move with velocity close to that of gas flow. Used movie camera for detn of velocities.

184T43

CHUKHANOV, Z. F.

USSR/Engineering - Heat Exchange

11 Oct 51

"Heat Exchange in Gas Suspension of Solid Particles," G. N. Khudyakov, Z. F. Chukhanov, Corr Mem, Acad Sci USSR, Power Eng Inst imeni G. M. Krzhizhanovskiy, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXX, No 5, pp 747-750

Describes equipment and procedure for studying heat exchange between solid particles and air in forward flow. Expts corroborate exceedingly high intensity of heat exchange between gas and dust in gas suspension and show strong intensifying effect of hydrodynamically unstable portion of flow on heat exchange. Suggests effective utilization of this zone in industrial equipment.

221T41

Ignition of coke dust. Z. P. Chukhrai, Doklady
Akad. Nauk S.S.R. 81, 821 (1964). Ignition of a
process of ignition and extinction of coke particles; the
process can be expressed by $(T_s - T_0)/(T_s - T_0) = 1/2$
(1) (2), where T_s is temp. in diffusion region, and T_0
is limiting surface temp. in diffusion region, and S_{00}
is the limiting rate. A simplified solution is given of
heat balance of coke particles for parallel stationary flow
of the gaseous medium. A decrease in primary air flow
to a definite limit, facilitates ignition. W. Z. Kozmin

Aug 52

CHUKHANOV, Z. F.

USSR/Engineering - Heat, Combustion

"On the Theory of Surface Combustion. I Tunnel Burners," Z. F. Chukhanov, Corr Mem

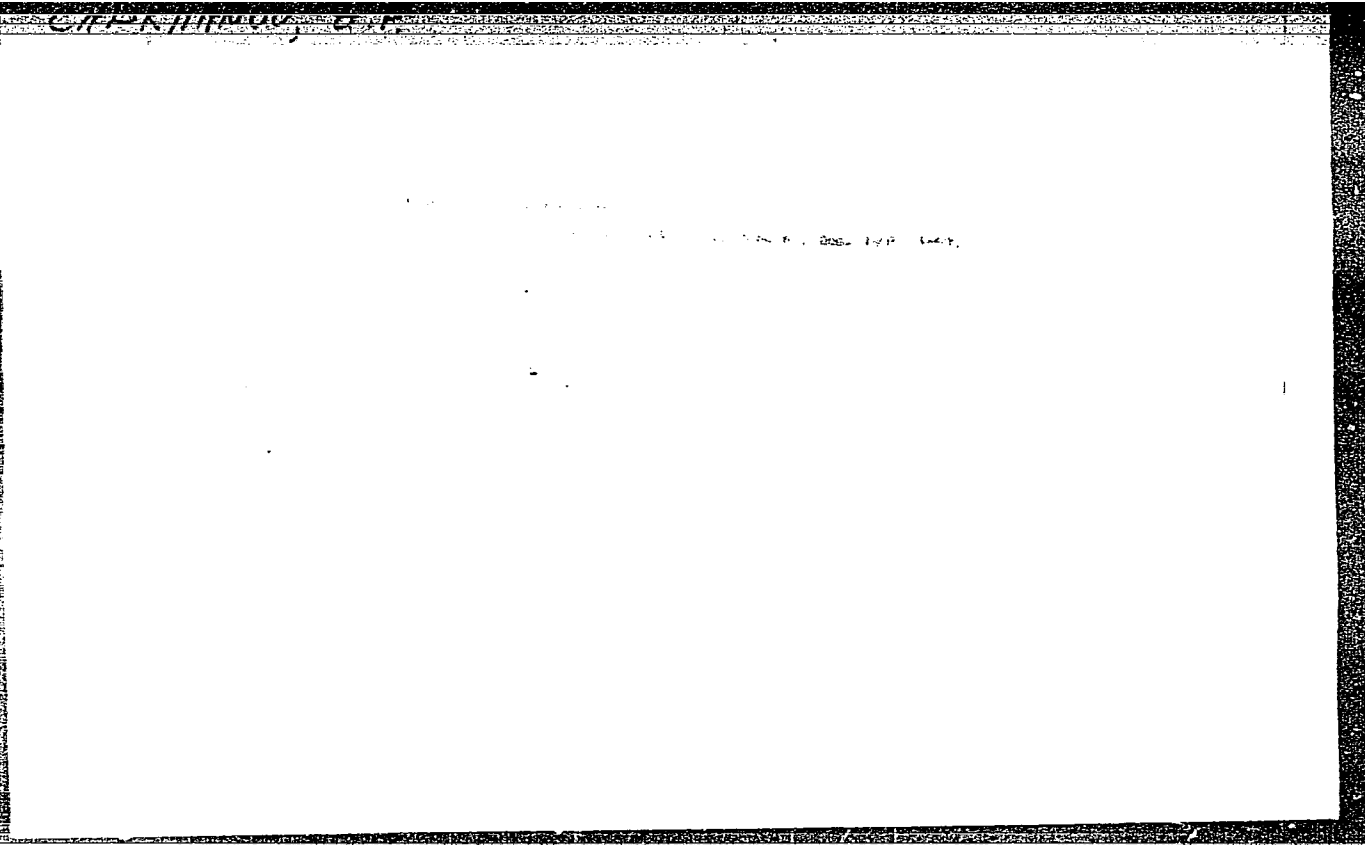
Acad Sci USSR

Iz Ak Nauk SSSR, OTN, No 8, pp 1160-1171

Considers surface or flameless combustion as combined homogeneous-heterogeneous process and concludes that role of surface combustion for tunnel burners is insignificant in regard to portion of gas burning on surface, and therefore activity of surface of burner refractory walls is unessential. But surface of tunnel burners is of great significance from viewpoint of "stabilizing" homogenous burning of gas in volume. In this respect, proper use of active surfaces is expedient, especially in combustion of lean gaseous mixtures.

262T11

(CA 47 no. 19: 9729 53)



CHUKHANOV, Z. V., (Corr Mo Acad Sci USSR)

USSR/Engineering - Heat Engineering,
Combustion

Apr 53

"Problems of the Theory of Combustion of Carbon-Coke and Ways of Developing the Technique for Burning and Gasification of Solid Fuels," Z. V. Chukhanov, Corr Mo Acad Sci USSR

Iz Ak Nauk SSSR, OTN, No 4, pp 562-598

Article is based on author's report presented at sci res session, arranged at Power Engineering Inst im G. M. Krzhizhanovskiy in 1952. There are several subjects discussed, as follows: general characteristic of process of C combustion and gas formation

276T43

in this process; reduction theory of gas formation during high-speed gasification; calculation of gas formation; combustion of coke with high ash content; hydrodynamic and temp conditions of coke combustion. In conclusion, measures for efficient utilization of fuels are discussed with emphasis on necessity for preliminary thermal processing of solid fuels for medium and large furnaces.

Chem. Abst.
Vol. 48, No. 3
Feb 10, 1959

BLINOV, V.I.; CHUKHANOV, Z.F., chlen-korrespondent.

Combustion of coal in a zone of low temperatures. Izv.AN SSSR. Otd.tekh.
nauk no.5:736-740 My '53. (MLRA 6:8)

I. Akademiya nauk SSSR.

(Combustion)

KARZHAVINA, N.A.; CHUKHANOV, Z.F., chlen-korrespondent.

Investigation of the combustion process of carbon layers. Izv. AN SSSR. Otd.
tekh.nauk no.7:969-991 J1 #53. (MLBA 6:8)

1. Akademiya nauk SSSR (for Chukhanov). (Carbon) (Combustion)

CHUKHANOV, Z.F.

Perspectives of gasification in the truck industry. Avt. trakt.
prom. no.12:3-6 D '53. (MLRA 6:12)

1. Chlen-korrespondent Akademii nauk SSSR. 2. Energeticheskiy
institut Akademii nauk SSSR.
(Motor trucks) (Transportation, Automotive)

USSR/Engineering - Thermotechnics

FD -1581

Card 1/1 : Publ. 41-2/18

Author : Chukhanov, Z. F., Moscow

Title : Elements of the theory of thermal treatment of fuels. Problems of the theory of the intensive process of thermal treatment of fuels and means for control of the quality of the obtained products

Periodical : Izv. AN SSSR. Otd. tekhn. nauk 8, 7-22, Aug 1954

Abstract : Examines fundamental problems of theory of intensive thermal treatment of the organic part of fuels for the purpose of understanding the mechanism of the process of thermal change and planning ways of improving and controlling this process. Process is used in obtaining high-fuel-value gas and synthetic liquid fuel from solid fuels. States experiments were conducted at the Power Engineering Institute of the Academy of Sciences of the USSR by Ye. A. Shapatina, A. M. Nikolaev, F. Ye. Keneman, A. P. Kashurichev, N. A. Karzhavina, V. V. Kalyuzhnyy, and G. N. Khudyakov under the direction of the author. Table; graphs. Eleven references.

Institution :

Submitted : April 12, 1954

Combustion of a gaseous suspension of coke particles.

Z. F. Chukhanov and A. P. Chel'm. *Doklady Akad. Nauk*
S.S.S.R. 1000-72 (1954). — An approximation method is
developed for computation of combustion results of coke
suspended in a gas. Curves are presented for the variation
of O concn. with the coke particle size, for O concn. with
different air-excess coeff., and for different values of the
Semenov criterion (Nusselt No./Pe). W. M. Strubert

b2

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(1)

Combustion of gas-borne coke particles. *Z. S. Gorkhachenov and
A. P. Chirkov (Dokl. Akad. Nauk SSSR, 1984, 24, 1089-1092).*
Equations are developed for calculating the combustion of
gas-borne coke particles.

T. G. MURRAY

velocity, whereas the reaction of C₂H₂ proceeds by I and is
affected only by the temp. and the activity of the coke.
E. Benzene

CHUKHANOV, Z. F.

Subject : USSR/Engineering AID P - 2387
Card 1/1 Pub. 110-a - 1/15
Authors : Chukhanov, Z. F., Khitrin, L. N. and Golubtsov, V.A.,
Corr. Memb., Academy of Science, USSR
Title : Efficient utilization of fuels - a new stage in power
development
Periodical : Teploenergetika, 7, 3-12, J1 1955
Abstract : The necessity for fuel saving gives new importance to
the method of processing coal - i.e. using heat treat-
ment for extraction of gas liquid tar and other by-
products before combustion. The results of theoret-
ical and experimental study are reported. The process
of separating gas, and tar is explained graphically
and in detail. The thermal treatment of peat shale
and pulverized coal from the Moscow basin is pre-
sented with curves. The authors recommend more re-
search and consider the reported study as the begin-
ning of a new field in efficient fuel utilization.
Thirteen diagrams. Eight Russian references, 1949-1955.
Institution: ENIN AN SSSR (Institute of Power Engineering, Academy
of Sciences, USSR)
Submitted : No date

Influence of the ...

CHUKHANOV, Z. F.

"The Role of the Reaction of Carbon Dioxide Reduction in the Process of Coke Burning," a paper presented at the 6th International Conference on Combustion, New Haven, 19-24 August 1956

Cor. Mbr. AS USSR
Inst. Energetics, AS USSR, Moscow

A-52806, 9 Jul 56

CHUKHANOV, Z.F.; KHITRIN, L.N.; GOLUBTSOV, V.A.; FOMINIS, I.G., redaktor;
ZIL'KOVA, Ye.V., tekhnicheskiy redaktor

[Heat engineering; ways of using heat efficiently] Energo-
tekhnologicheskoe ispol'zovanie topliva; puti effektivnogo
primeneniya topliva. Moskva, Izd-vo Akademii nauk SSSR,
1956. 126 p. (MLRA 9:3)

1. Glavn-korrespondent AN SSSR (for Chukhanov, Khitrin, Go-
lubtsov)

(Heat engineering)

Chukhanov, Z. F.

USSR/ Electricity - Fuel utilization

Card 1/1 Pub. 124 - 4/28

Authors : Chukhanov, Z. F.; Khitrin, L. N.; and Golubtsov, V. A., Memb. Correspondents of the Acad. of Sc., USSR

Title : Complex electric power technological utilization of fuel

Periodical : Vest. AN SSSR 26/1, 27-37, Jan 1956

Abstract : Various ways for reducing the specific solid fuel (coal) consumption by technical and industrial undertakings (R/R, manufacture of gas, liquid fuels, foundries, electric power, etc.) are discussed from the economical view point. Graphs; drawings.

Institution :

Submitted :

Chukhanov, Z.F.

W.M. Sternberg

ЧУКХАНОВ, З. Ф.

AUTHORS: Karzhavina, N.A., Keneman, F. Ye and Chukhanov, Z.F. (Moscow) ^{24-9-11/33}
TITLE: High speed thermal decomposition of fuel by means of
effusive heat

24-9-11/33

High speed thermal decomposition of fuel by means of a gaseous heat carrier.

downwards and the gaseous heat carrier (super-heated steam) being driven upwards (in counter current). Steam is preferable to flue gases since after condensation it permits measurement of the gas yield in the first stage of the process and also up to 600°C it represents an inert heat carrier. The results are given of experiments of heat and thermal decomposition of Moscow region coal and Baltic shale in an experimental set-up with an output of up to 150 kg/hr of fuel of 1 to 2 mm and 2 to 3 mm fractions. A sketch of the experimental set-up is shown in Fig.1. The heating retort consists of a vertical tube of 0.2 m dia. and 1.2 m long. The heated fuel was fed into a chamber by means of a worm arrangement and the products of thermal decomposition were drawn off through a side opening and fed into a cooler, ventilator and, finally, into a gas container. For maintaining a constant fuel temperature in the thermal decomposition chamber, it was fitted with an electric winding which enabled compensation of the heat loss into the ambience. The fuel was held in the decomposition chamber for about two hours. Drawbacks

Card 2/3 comprised inadequate hermeticity of the chamber and the

High speed thermal decomposition of fuel by means of a gaseous heat carrier. 24-9-11/33

ventilator, as a result of which it was not possible to measure accurately the yield of gas and the yield of tar. Fig. 2 gives typical curves of the temperature distribution of the steam and the fuel along the height of the retort for 1 to 2 mm fraction coal; in a given cross section, the fluctuation of the steam temperature did not exceed 10 to 15°C and it was possible to ensure heating of the fuel to a temperature which was practically equal to the inflow temperature of the steam. The obtained test data are tabulated and plotted in graphs, Figs. 2 to 7. The obtained results confirmed in principle the practical possibility of thermal decomposition of Moscow region coal by separating the processes of heating of the fuel and its thermal decomposition at heating temperatures up to 500°C. Whilst maintaining all the advantages of "internal" heating, the here described method permits prevention of the mixing of the thermal decomposition gas with the gaseous heat carrier. There are 4 tables, 7 figures and 3 Slavic references.

SUBMITTED: February 6, 1967.

AVAILABLE: Library of Congress.

Card 3/3

NOV/30-58-8-42/43

AUTHOR: Chukhurov, Z. P., Corresponding Member, Academy of Sciences,
(USSR)

TITLE: On the Economical Efficiency of Subterranean Coal Gasification
(Ob ekonomicheskoy effektivnosti podzemnoy gazifikatsii ugley)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 8, pp. 143-154 (USSR)

ABSTRACT: This is a detailed critical review of the book by G. B.
Bakulev: "An Economical Analysis of Subterranean Coal Gasification". This book was published in 1957 by the Publishing House, AS USSR, Moscow, in an edition of 3000 copies. The book has 133 pages. It has the price of 7,30 Roubles.

Card 1/1

STONANS, Ya.A.; CHUKHANOV, Z. F.

Effect of the temperature and reaction time on the process of thermal decomposition of peat caused by rapid heating [with summary in English]. Inzh.-fiz. zhur. no. 9:16-28 S '58. (MIRA 11:10)

1. Institut khimii AN Latvyskoy SSR, g. Riga i Energeticheskiy institut AN SSSR, g. Moskva.
(Peat gasification)

CHUKHANOV, Z.

Efficiency of the development of the Moscow Coal Basin. Vop. ekon.
no.9:39-48 '58. (MIRA 11:10)
(Moscow Basin--Coal mines and mining)

STOMANS, Ya.A.; CHUKHANOV, Z.F.

Rapid thermal decomposition of peat in the presence of free oxygen.
Inzh.-fiz.zhur. no.10:11-17 0 '58. (MIRA 11:11)

1. Energeticheskiy institut AN SSSR, g. Moskva, i Institut khimii
AN Latvyskoy SSR, g. Riga.
(Feat)

Chukhrov, Z.F.

RUSSIAN BOOK EXHIBITION 697/3407

Abstracts book 6888. Bibliographically correct list. G.M. Khrushchovskaya
Problems of Power Engineering: Collection of Articles Dedicated to Academician G.M. Khrushchovskiy Moscow, 1979. 621 p. Price also inserted. 2,900 copies printed.

Ed. of Publishing House: B.D. Akhmedov, V.V. Dobov, P.I. Dobov, and E.K. Koybas; Tech. Ed.: E.A. Prusakov; Editorial Board: A.V. Yatsar, A.S. Krasovskiy, V.I. Popov (Mag. Ed.) Corresponding Member, Academy of Sciences USSR, V.I. Volyn, A.S. Pechenkin, M.A. Bystrykh, L.P. Gerasimov, R.N. Pogonov, Candidate of Technical Sciences, B.K. Zakharyev, Candidate of Technical Sciences, K.K. Dobov, Candidate of Technical Sciences, and I.N. Sushkov.

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

CONTENTS: 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, power engineering technology and the physics of combustion. So personalities are mentioned. References are given after each article.

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Dobov, V.I., V.A. Sushkov. Basic Methods of the Present Theory of Heat Exchange
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Process of Their Thermal Decomposition 529

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of Solid Substances 673

Selov, N.S. Burning Damp Substances 681

Chukhrov, Z.F., A.K. Kholodov, A.P. Kholodov. Utilization of Gas
in Power Engineering 687

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Khabin, V.S. Structure of Heterogeneous Flow in a Shock Front
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Pechenkin, A.S. Motion of Combustion Zone as a Hydrodynamic
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Dobov, P.I. Making Substituted Formulas More Precise for Kinetic
Gas Coefficients 817

CHUKHANOV, Z.F.

Basic ways of using peat in power engineering and in
industry. Trudy Inst.energ. AN BSSR no.10:3-11 '59.
(MIRA 13:6)

(Peat)

CHUKHANOV, Z. F.

PHASE I BOOK EXPLOITATION SOV/A358

Труды и техника в семилетке (Labor and Engineering in the Seven-Year Plan) Moscow, Profizdat, 1960. 385 p. Серией Массовая Библиотека (Zhivobegs) 10,000 copies printed.

Compiler: S. O. Knylov; Ed.: A. V. Antsimov; Tech. Ed.: A. A. Golichenova.

PURPOSE: This book is intended for the general reader.

COVERAGE: The book is a collection of 19 articles dealing with the achievements and progress of the Seven-Year Plan in branches of the Soviet economy and in science. Attention is given to power plant construction, machine building, electronics, electrification, transportation, production of synthetic materials, production of consumer goods and chemical production, and chemistry. Suggestions for further production progress in these areas are mentioned. There are no references.

Prokhorovich, A. Ye. [Deputy Director, Experimental "NYU" (Experimental Scientific Research Institute of Metal-Cutting Machine Tools)] From Automatic Production Tools to Automatic Production Lines, Shops, and Factories 59

ROBINSKIY, A. Ye. [Doctor of Technical Sciences] Program Control of Machine Tools 119
Solodovnikov, Y. Y. [Doctor of Technical Sciences, Professor] Pyrometals 119

Petrov, B. N. [Corresponding Member, Academy of Sciences USSR] Automation in the Near Future 127
Gansburg, D. Yu. [Candidate of Chemistry] Chemistry Today and Tomorrow 142

Pavlov, A. S. [Candidate of Technical Sciences] Foundation of Industry 166
Staklov, V. Yu. [Deputy Director, Moscow Branch of the "Urgenetsirov" Institute] The Seven-Year Plan and the Electrification of the USSR 189

Chukhannov, Z. F. [Corresponding Member, Academy of Sciences USSR] on Comprehensive Utilization of Fuel 207
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Cherkov, A. A. [Candidate of Technical Sciences] Welding Strategy for the Future 232
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Bogoyev, B. D. [Director, Tsentrallyy nauchno-issledovatel'skiy Institut, Komsomol'skiy rayon, Kirovskaya, Kirovskaya, tobnazhnyy promyshlennosti (Central Scientific Research Institute of the Leather and Footwear Industry)] Half a Million Pairs of Shoes 320

Karpenko, A. N. [Member, All-Union Academy of Agricultural Sciences Imeni V. I. Lenin, Large-scale Mechanization of Agriculture 325

Zvonkov, V. V. [Corresponding Member, Academy of Sciences USSR, Honored Scientist and Technologist] A Big Leap in the Book 341

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AVAILABLE: Library of Congress

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CHUKHANOV, Z.F.

Introduction. *Ennergotekh.ispol'*.topl. no.1:5-12 '60.

(MIRA 13:10)

(Fuel) (Power engineering)

CHUKHANOV, Z.F.

**Fist All-Union Conferenc on the Utilization of Fuel for Power
Engineering. Energotekh.ispol'.topl. no.1:13-23 '60.**

(MIRA 13:10)

(Fuel--Congresses) (Power engineering--Congresses)

25420
S/137/61/000/006/009/092
AC06/A101

11.7350

AUTHORS: Chukhanov, Z.F., Stonans, Ya.A., Kashurichev, A.P.

TITLE: Combustion process of a fuel gas suspension with high content of volatiles

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 6, 1961, 2, abstract 6B10 (V sb. "3-ye Vses. soveshchaniye po teorii goreniya, v. 2", Moscow, 1960, 169 - 178)

TEXT: In accordance with the new theory of developing reactions of thermal dissociation of various fuels during the combustion process (in particular of a fuel gas suspension with high content of volatile substances) it is recommended to consider the process of the thermal dissociation of fuels as a composite complex of parallel and consecutive reactions occurring simultaneously and having different kinetic characteristics. Bitumens, liberated from the fuel when heated from 400 to 500°C, are not mechanical admixtures of fuels, but their liberation is caused by chemical processes of thermal dissociation along energetically weak bonds. It is stressed that the time factor together with temperature, plays a very important part in thermal dissociation processes of any fuels. Thus the

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Combustion process ...

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A006/A101

thermal dissociation process can be regulated within a very wide range as to the yield and composition of dissociation products. Investigations were made at high-speed (up to 10^5 - 10^6 degrees/sec) uniform heating of solid and gaseous fuels by their rapid mixing with hot gaseous and solid heat carriers and still more rapid cooling of thermal dissociation products.

Yu. Filimonov

[Abstracter's note: Complete translation]

Card 2/2

CHUKHANOVA, Z.F.

Ignition and heating conditions in the combustion of coke particles.
Inzh.-fiz.zhur. no.8:125-135 Ag '60. (MIRA 13:8)

1. Energeticheskiy institut im. G.M.Krzhizhanovskogo, g. Moskva.
(Coal gasification) (Combustion)

CHUKHANOV, Z.

Time factor and the economic effectiveness of socialist production.
Vop.ekon. no.9:90-96 S '60. (MIRA 13:8)

1. Chlen-korrespondent AN SSSR.
(Cost, Industrial)

CHUKHANOV, Z. F.

What is more advantageous; steam or hydroelectric power plants?
MTO 2 no.9:17-23 S '60. (MIRA 13:9)

1. Chlen-Korrespondent Akademii nauk SSSR; zaveduyushchiy labora-
toriyey energotekhnologii Energeticheskogo instituta imeni
G.M.Krzhizhanovskogo AN SSSR.
(Electric power plants)

CHUKHANOV, Z.F., doktor tekhn.nauk

Economic effectiveness of the utilization of peat in power engineering methods of production. Torf.prom. 37 no.4:30-34 '60.
(MIRA 13:7)

1. Energeticheskiy institut AN SSSR; chlen-korrespondent AN SSSR.
(Peat) (Fuel)

CHUKHANOV, Zinovi Fedorovich; PEVZNER, G.Ye., red. izd-va; LAUT, V.G.,
tekh. red.

[Some problems of fuel and power] Nekotorye problemy topliva i
energetiki. Moskva, Izd-vo Akad. nauk SSSR, 1961. 477 p.

(MIRA 14:8)

(Fuel)

(Power resources)

APTER, D.M.; CHUKHANOV, Z.F.

Movement of reacting solid particles [with summary in English].
Inzh.-fiz. zhur. 4 no.3:26-30 Mr '61. (MIRA 14:8)

1. Vostochno-Sibirskiy filial Sibirskogo otdeleniya AN SSSR,
g. Irkutsk.

(Fluidization)

22820

S/170/61/004/005/003/015
B104/B205

11.1280

AUTHORS: Aptar, D. M.; Chukhanov, Z. F.

TITLE: Motion of gas-liberating particles

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 5, 1961, 16-20

TEXT: The authors investigated the motion of heterogeneous reacting solid spheres developing a gaseous phase in a liquid or a gas. As in a previous paper (IFZh, no. 3, 1961), the authors used 5-mm spheres of baked clay, which were saturated with Na_2CO_3 (by a solution or crystals). HCl was used as a liquid. The interaction of sodium carbonate with hydrochloric acid resulted in a violent formation of CO_2 . The sinking of the spheres was examined with a motion-picture camera. Fig. 2 shows the ratio ψ_p/ψ_{NH} as a function of the sinking path (in cm).. ψ_p is the hydrodynamic resistance of the reaction spheres, and ψ_{NH} is that of a non-reacting sphere. The maximum coefficient of resistance was inferred from photo-
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Motion of gas-liberating particles

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B104/B205

graphs of the point where the liberation of gas was most violent and was accompanied by formation of bubbles. Further experiments with spheres sinking in gas are described. Experiments were also carried out with spheres of moist clay, which dropped in superheated steam (300-700°C). The aerodynamic resistance was calculated from the formula

$$\psi = \frac{4}{3} \frac{\gamma_s}{\gamma_w} \frac{d}{(w+v)^2} \left(g - v \frac{dv}{dt} \right),$$

where d and γ_w are the diameter and the specific gravity of the spheres; w and γ_s are the velocity and specific gravity of steam; v is the velocity of the sphere referred to a fixed scale. Fig. 3 shows that the velocity of large wet particles is less than that of small dry particles. Cold particles of 5 mm diameter were found to be considerably slowed down at a temperature of 300°C. The very complex aerodynamic and hydrodynamic pressures associated with the motion of particles in gases and liquids are discussed. It is noted that the increase in aerodynamic and hydrodynamic resistance is due to the gas bubbles and the vapor emerging from the pores. The temperature of superheated steam and the temperature-dependent forma-

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Motion of gas-liberating particles

tion of volatile substances by coal is found to affect these processes appreciably. It is finally noted that processes associated with the motion of reacting solid particles can never be calculated by the methods applied to non-reacting particles. There are 4 figures and 2 Soviet-bloc references.

ASSOCIATION: Energeticheskiy in-t AN SSSR im. G. M. Krzhizhanovskogo, g. Moskva (Institute of Power Engineering of the AS USSR imeni G. M. Krzhizhanovskiy, Moscow); Vostochno-Sibirskiy filial Sibirskogo otdeleniya AN SSSR, g. Irkutsk (East Siberian Branch of the Siberian Department of the AS USSR, Irkutsk)

SUBMITTED: September 12, 1960

Card 3/5

CHUKHANOV, Z.F.

Economic efficiency of thermal and hydroelectric power plants.
Teploenergetika 8 no.12:7-12 D '61. (MIRA 14:12)

1. Energeticheskiy institut AN SSSR, chlen-korrespondent AN SSSR.
(Electric power plants)

CHUKHANOV, Z.F.

Complex use of fuel for industrial power plants in conditions of
the new structure of the balance of fuel. Energotekh. ispol'.
topl. no.2:13-83 '62. (MIRA 16:5)

1. Chlen-korrespondent AN SSSR.
(Power plants) (Fuel)

STONANS, Ya.A.; CHUKHANOV, Z.E.

Investigating the process of the thermal decomposition of peat
under the effect of high-speed heating. Energotekh. ispol'. topl.
no.2:84-100 '62. (MIRA 16:5)

1. Chlen-korrespondent AN SSSR (for Chukhanov).
(Peat) (Carbonization)

STONANS, Ya.A.; CHUKHANOV, Z.F.

Effect of oxygen concentration in a gas heat-transfer agent on the process of thermal decomposition of peat during high speed heating. Energotekh. ispol'. topl. no.2:101-106. '62. (MIRA 16:5)

1. Chlen-korrespondent AN SSSR (for Chukhanov).
(Peat) (Carbonization)

CHUKHANOV, Z.F.

Evaluation of various fuels and prospects for the use of Moscow
Basin coals. Energotekh. ispol'. topl. no.2:199-214 '62.

(MIRA 16:5)

1. Chlen-korrespondent AN SSSR.

(Fuel) (Moscow Basin—Coal)

CHUKHANOV, Z.F.

Use of fuel oils with high sulfur content in large electric power plants. Elek. sta. 33 no.6:21-27 Je '62. (MIRA 15:7)

1. Chlen-korrespondent AN SSSR.
(Electric power plants) (Petroleum as fuel)

S/020/62/143/001/028/030
B101/B147

AUTHORS: Chukhanov, Z. F., Corresponding Member AS USSR,
Kashurichev, A. P., and Stonans, Ya, A.

TITLE: Effect of disproportionation of composition and increase
in yield of volatile fuel pyrolysis products during
high-rate heating

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 162 - 165

TEXT: The pyrolyses during high-rate heating (I) ($10^3 - 10^6$ °C/sec and more) and low-rate heating (II) (0.01 - 5.0 °C/sec) are compared on the basis of experimental data. Effects of disproportionation and of considerable changes in amount and type of volatile products were determined and found to be consistent with previous theoretical studies. For Moscow basin coal, the following data were obtained for II (600 °C): the volatile product contains the total O₂, ~65% H₂, and ~25% C of the initial coal. For I (600 °C, 0.35 sec contact): ~25% O₂, ~45% H₂, and ~12% C. As for peat, the data for II are: steady increase in

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S 020/62/143/001/028/030
B101/E:147

Effect of disproportionation ...

volatile products up to 400 - 450 °C, the decelerated increase, maximum yield 64.5%; the yield obtained for I was 85% and more. I (600 - 900 °C) changes the process so that H₂ and O₂ are separated in the form of compounds transferring a maximum of C into the volatile product. The results are: reduced gas volume with increased contents of CO and unsaturated hydrocarbons, lower contents of CO₂, H₂, saturated hydrocarbons, and H₂O. The yield of tar rich in aromatics increases.

Rapid removal of pyrolysis products from the reaction zone prevents secondary decomposition and allows control of the process. The above results were confirmed by pilot plants. There are 4 figures, 1 table, and 14 references: 8 Soviet and 6 non-Soviet. The four references to English-language publications read as follows: M. J. Byrgess, R. V. Wheeler, J. Chem. Soc., 105, 131 (1914); W. Fuchs, A. G. Sandgoff, Ind. and Eng. Chem. 34, no. 5, 567 (1942); D. B. van Krevelen et al., Fuel, 30, no. 11 (1951); D. Fitzgerald, D. B. van Krevelen, Fuel, 38, no. 1 (1959).

Card 2/3

Effect of disproportionation ...

S/020/62/143/001/028/030
B101/B147

ASSOCIATION: Energeticheskiy institut im. G. M. Krzhizhanovskogo
(Power Engineering Institute imeni G. M. Krzhizhanovskiy)

SUBMITTED: October 31, 1961

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CHUKHANOV, Z.F.

Methods for economic calculations and determination of the efficiency
of different types of fuel. Energotekh.ispol'.topl.no.3:9-60 '63.
(MIRA 16:5)

1. Chlen-korrespondent AN SSSR.
(Fuel)

L 13671-63

EMF(q)/EMT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AT3002384

8/2934/63/000/003/0061/0136

53
52

AUTHOR: Chukhanov, Z. F. (Corr. member, AN SSSR)

TITLE: Combined ¹⁸production of iron or steel and electric power by direct method

SOURCE: AN SSSR. Energeticheskiy institut. Energotekhnologicheskoye ispol'zovaniye topliva (Combined utilization of fuel for industrial purposes and power production), no. 3, 1963, 61-136

TOPIC TAGS: fuel, cast iron, CO, steel, blast furnace, coke

ABSTRACT: The existing methods of producing steel are very expensive and require large quantities of high-grade fuel. The basic method of producing cast iron is by means of melting the ore in blast furnaces using high-grade fuel amounting to about 60% of the total cost. It has been shown that blast furnaces are the most irrational means of producing iron, although they have been used for centuries. One of such illogical factors is the use of large pieces of ore and metallurgical coke which slows the main process of reducing iron oxide to metal and the production of CO reducing gas. The production of steel and cast iron is not moving at a satisfactory pace and, therefore, a radical change is possible only by means of creating a new technique for producing steel and cast iron. This can be accomplished through

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ACCESSION NR: AT3002384

the liquidation of main factors which slow down the rapid development of metallurgy such as cutting down on fuel, eliminating the problem of coking coals, eliminating the use of blast furnaces, and, if possible, simplifying the multichain scheme in the production of metals. The production of porous iron by means of electrical furnaces or by reduction of ore with reducing gases in a shaft or rotary furnaces, and also in furnaces with so-called fluidized bed has been used industrially in those countries which have little or no coking coal. All these methods economically are slightly effective and cannot compete with the blast furnaces in the production of ferrous metal, since they are complicated, less productive, more energy consuming, require a comparatively high grade fuel, and also large quantities of fuel. To achieve this radical change in the production of iron and steel a complex energy-technological method of production must be applied in which the technological processes are linked organically with the energy from the combustion of a part of the fuel in a power furnace. One of the most obvious and simple energy-technological schemes is the organic link of thermal process of treating the fuel and the combustion of less-valuable residue of this fuel in boiler furnaces. The principal idea of energy-technological method of producing metals is simple. The fine particles of ore and lime are mixed with a hot air blast and fuel (which can be either liquid, solid or gaseous) forming a high temperature (1600-2400C) flame

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ACCESSION NR: AF3002384

with a very strong reducing media where the reduction of ore and the formation of melt, including the metal and the slag, takes place. The remains of the unburned fuel and the hot gases separated from the melt are used for combustion in a steam boiler for a power plant. The process of reducing the ore, and the smelting of metal and the slag is feasible in a metallurgical furnace of energy-metallurgical construction at high concentrations of CO and H₂, sustained by continuous regeneration from the reaction of CO₂ with H₂O with an excess of pulverized coke. Highly preheated air or air in a mixture with oxygen can serve as the hot air blast which will result in the attainment of high temperatures. Another practical possibility is the preheating of this enriched oxygen mixture and also preheating the utilized fuel. The construction of such a system will permit the use of various types of fuels which will revolutionize the metallurgical industry. Such technological fuels will include peat, brown coal, hard coal, including anthracite, and liquid and gaseous fuels. Another important fact is that all types of ores including the poor and dust-like ores, and the difficult-to-reduce ones can be used in this system. The presented calculations based on the theoretical and experimental data show a practical feasibility of the energy-metallurgical method for the production of cast iron and steel in a high temperature flow of gas and fuel suspension. The analysis shows that the proposed system will give not only heat but also 3-5 kilowatt/hr of electricity for each kg of produced steel. A power plant with a capacity of 1 million kilowatts when con-

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ACCESSION NR: AT3002384

verted to the new system will produce 1.5-2.5 millions of tons of steel and 2,000,000 tons of cement per year besides the electricity and heat. By using the simplest energy-technological system with the utilization of low grade fuels it is possible to obtain not only metal, energy, and cement as useful materials, but also the high calory gas and valuable chemicals for the production of plastics and other products. The cost of producing steel will be cut in half. The above system can be used not only for the production of cast iron and steel, but also for the production of high quality non-ferrous metals. Orig. art. has: 46 figures and 20 formulas.

ASSOCIATION: Energeticheskiy institut im. G. M. Krzhizhanovskogo Akademii nauk SSSR (Power Institute, Academy of Sciences SSSR)

SUBMITTED: 00

DATE ACQ: 10Jun63

ENCL: 00

SUB CODE: FL, ML

NO REF SOV: 033

OTHER: 000

Card 4/4

APTER, D.M.; CHUKANOV, Z.F.

Some problems concerning the motion of solid reaction particles.
Energotekh.ispol'.topl.no.3:155-170 '63.

(MIRA 16:5)

(Combustion research)

(Furnaces)

CHUKHANOV, Z.F.

Use of sulfur-containing masut in electric power plants. Energotekh.
ispol'.topl.no.3:179-200 '63.

(Petroleum as fuel)

(MIRA 16:5)
(Electric power plants)

CHUKHANOV, Z.F.

Use of natural gas in electric power plants. Energotekh.ispol'.topl.
no.3:205-211 '63.

(MIRA 16:5)

1. Chlen-korrespondent AN SSSR.
(Electric power plants)

(Gas, Natural)

CHUKHANOV, Z.

Power engineering opens new perspectives. NTG 7 no.3:9-12 Mr '65.

(MIRA 18:5)

1. Chlen-korrespondent AN SSSR.

CHUKHANOV, Z.

The Soviet Union, year 2000: Power technology. Voen. znan. 41 no.7:
34-35 J1 '65. (MIRA 18:7)

1. Chlen-korrespondent AN SSSR.

CHUKHANOV, Z.F.

Combined utilization of fuel for technological processes and power generation; present state and future development of the problem. Ispol'. tverd. topl., ser. maz. i gaza no. 5:5-65 '64 (MIRA 19:2)

Ways to reduce capital investments in the fuel industry. Ibid.:72-78.

High-speed pyrolysis of fuel with a gas heat carrier in a "falling" bed. Ibid.:89-93

Evaluating the economic efficiency of the use of natural gas. Ibid.:126-156.

Use of natural gas in metallurgical and power production processes. Ibid.:220-233.

ROZANOV, Yu.N.; CHUKHIANOV, Z.F.

Use of natural gas for combined technological and power generation processes and development of the methodology for studying its high-speed pyrolysis. Izpol'. tvord. topl., ser. naz. i gaza no. 5172-177 '64. (MIRA 19:2)

CHUKHANOV, Z.F.; KONDAKOV, V.V.; KALYUZHNYI, V.V.; RYZHONKOV, D.I.;
SPEKTOR, A.N.; STROKOVSKIY, L. Kh.; KHORZHEMBO, A.L.; YARKHO, Ye.N.
KUNAKOV, N. Ye.

Pilot plant for the study and application of the hear regenerating
direct process of cast iron and steel production. Ispol'. tverd.
topl., ser. maz. i gaza no. 5:182-192 '64 (MIRA 19:2)

L 24077-66 EWT(1)/EWP(m)/EWT(m)/EWA(d)/T/EWA(h)/EWA(l) JKT/WW/JW/JWD/WE/JT 18C
 ACC NR: AP6011966 SOURCE CODE: UR/0281/65/000/002/0158/0159

AUTHOR: Alad'yev, I. T.; Aleksandrov, B. K.; Bawn, V. A.; Golovina, Ye. S.;
 Gol'denberg, S. A.; Zhimerin, D. G.; Zakharin, A. G.; Iyevlov, V. N.; Knorre, V. G.;
 Rózióv, G. I.; Leont'yeva, Z. I.; Markovich, I. N.; Meyerovich, E. A.; Kikhrovich, G. V.;
 Popkov, V. I.; Popov, V. A.; Prodvoditelev, A. S.; Pyatnitskiy, L. N.; Styrikovich,
 H. A.; Tolstoy, Yu. G.; Tsukhanova, O. A.; Chukhanov, Z. F.; Sheyndlin, A. Ye.

ORG: none

TITLE: Lev Nikolayevich Khitrin

SOURCE: IN SSSR. Izvestiya. Energetika i transport, no. 2, 1965, 158-159

TOPIC TAGS: academic personnel, physics personnel, combustion, carbon, high temperature research, plasma beam, fuel

ABSTRACT: Professor L. N. Khitrin Corresponding Member, Academy of Sciences USSR, State Prize Laureate, and Doctor of Engineering Sciences, died after a short but severe illness at the age of 58. He was well known here and abroad as an outstanding scientist and specialist in the field of combustion theory and the development of methods for speeding up burning of fuel. He began his scientific work at the All-Union Heat Engineering Institute after graduating from the physics department of Moscow University in 1930. His early work was on the propagation of flames in gases, and on heterogenous combustion. In 1948 he defended his Doctor's Dissertation on the theory of combustion of car-

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L 24077-66

ACC NR: AP6011966

bon. His monograph "Combustion of Carbon" was awarded the State Prize in 1950. In 1951 he became the permanent director of the laboratory for the intensification of combustion processes of the G. M. Krzhizhanovskiy Power Institute. He was elected a corresponding member of the Academy of Sciences USSR in 1953. He headed the All Union Advisory Board on combustion, represented Soviet science at International Symposia, and was a member of the International Institute of combustion. For a number of years, he directed the Moscow general seminar on combustion, and took an active part in the work of the Scientific Council of the Academy of Sciences USSR, on high temperature heat physics, and of the scientific council on the comprehensive utilization of fuel. He devoted a large amount of attention to teaching work. He directed the Combustion Division of the Physics Department of Moscow State University. His monograph "Physics of Combustion and Explosion" (1957) is a basic text for students in this field. Three Doctor's Dissertations and fifteen Candidate Dissertations were defended under his direction. In the last years of his life he directed work on methods for comprehensive utilization of fuel at power stations so as to obtain valuable products from the mineral part of the fuel, as well as work on the physical chemical processes in a plasma stream, and the mechanism of interaction between carbon and gases. He was the author of more than 60 scientific works, for which he was awarded the Order of the Red Banner of Labor and medals. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 21, 20 / SUBM DATE: none

Card 2/2 *ala*

L 00760-67 EWP(m)/EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) GG/WW/JD

ACC NR: AP6023208

SOURCE CODE: UR/0020/66/168/006/1307/1310

AUTHOR: Khmelevskaya, Ye. D.; Chukhanov, Z. F. (Corresponding member AN SSSR)

ORG: Power Engineering Institute im. G. M. Krzhizhanovskiy (Energeticheskiy institut)

TITLE: Investigation of hydrodynamics and mass exchange between a "sharp" gas jet and a liquid

SOURCE: AN SSSR. Doklady, v. 168, no. 6, 1966, 1307-1310

TOPIC TAGS: gas jet, hydrodynamics, mass exchange, *FLUID SURFACE*

ABSTRACT: The author considers interaction between a liquid and a gas jet which depresses the surface of the liquid. A double-jet model is proposed in which a forward jet is propagated from the nozzle and a reverse jet flows in the tapered annular channel formed by the expanding forward jet on the inside and by the surface of the liquid in the depression on the outside. Due to pulsations and vorticity of the surface, some gas bubbles and liquid drops may be formed at the interface between the liquid and the reverse gas jet. Even when blowing conditions are held constant, variations are observed in the width and depth of the depression which average $\pm 5\%$ and may reach $\pm 50\%$. The following empirical equations were derived for the upper and lower diameters of the depression: $D_1/d=1+0.305(h/d)^{0.96}$ and $D_2/d=1+0.67(h/d)^{0.85}$. It was found on the basis of these equations that the apex angle is $14-18^\circ$ for the forward jet and $5-20^\circ$ for the

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IMP: 526 216+522 022 02

L 00760-67

ACC NR: AP6023208

reverse jet depending on the relative depth of the depression. Experimental curves are given for the depth of the depression, average diameter, velocity and Reynolds number for the reverse jet as functions of the gas jet velocity at the outlet of a 2.2 mm nozzle. An increase in gas velocity expands the depression but causes very little change in the velocity of the reverse jet. Experimental data are given from a study of mass exchange for absorption of ammonia by water. The results show that vorticity of the walls of the depression may increase the mass-exchange surface by a factor of $1\frac{1}{2}$ -2. Experimental data show that the transfer function ϕ can be given in terms of the Archimedes number $Ar = \frac{v_{gas}^2 \rho_{gas}}{g \Delta \rho_{liq}}$ by the equation $\phi = 0.15 Ar^{-0.71}$. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 21Jan66/ ORIG REF: 006/ OTH REF: 001

pd
Card 2/2

CHUKHANOV, Z.Z.

High-speed pyrolysis of hydrocarbons in a burning layer of coke.
Inzh.-fiz.zhur. 5 no.8:23-28 Ag '62. (MIRA 15:11)

1. Khimiko-tekhnologicheskii institut imeni D.I.Mendeleeva,
Moskva.

(Pyrolysis) (Hydrocarbons)

L 00479-66 EWT(m)/EPF(c)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5020560

UR/0294/65/003/004/0577/0586

535.231.4:546.265

23
22
D

AUTHOR: Chukanova, L. A.; Nevskiy, A. S.

TITLE: Experimental investigation of the irradiation of carbon dioxide gas at nonequilibrium temperatures. II.

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 4, 1965, 577-586

TOPIC TAGS: gas irradiation, carbon dioxide, nitrogen, temperature dependence

ABSTRACT: Irradiation of the gas was carried out in two coaxial chambers with a beam length of 163 mm in each chamber. Along the axis of the chamber were, to the left, a radiometer for measuring the irradiation of the gas and, to the right, a hot or cold black body. A mixture of carbon dioxide gas and nitrogen was blown through the chambers at different temperatures in each chamber. Each chamber consisted of an inner volume in which the irradiation of the gas was measured, and an outer annular space in which the gas was heated. Three series of experiments were made: 1) with identical temperatures and carbon dioxide concen-

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ACCESSION NR: AP5020560

trations in both chambers, 2) with different temperatures but identical concentrations, and 3) with different temperatures and concentrations in both chambers. Tests were made at nonequilibrium temperatures up to 900C. Experimental values agreed well with calculated values. For calculation of the temperature dependence of gas absorption, it is recommended to proceed by an approximate method based on the assumption of lack of dependence of the spectral coefficients of the absorbing medium on its temperature. This method has been verified up to 900C. Orig. art. has: 6 formulas, 7 figures and 3 tables

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki (All-Union Research Institute for Metallurgical Heat Technology)

SUBMITTED: 29Jun64

ENCL: 00

SUB CODE: ME, TD

NR REF SOV: 003

OTHER: 000

mlr
Card 2/2

CHUKHARENKO, Z.T., kand. ekon. nauk; STEOYEVA, V.P., inzh.

Mechanization and automatization of industrial operations in flour
mills. Mekh. trud. rab. 12 no.5:37-39 My '58. (MIRA 11:6)
(Flour mills—Equipment and supplies) (Automation)

CHUKHAREV, P. A.

CHUKHAREV, P. A. "Clock-relays for Z-ray therapy," Sbornik nauch. trudov 301-go Khabar. voyen. gospitalya, III, Khabarovak, 1948, p. 203-05.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 22, 1949).

TRUSOV, M.S., podpolkovnik meditsinskoy sluzhby; CHUKHAREV, P.A.

Apparatus for the study of color vision. Voen.-med. zhur. no.3:
85-86 Mr '60. (MIRA 14:1)

(COLOR VISION)