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130-58-2-6/21

Open-hearth Furnace Operation on High-calorific Value Low-pressure Gas

by 20 - 30% and high-pressure air being supplied to the sides of the gas ports; blast-furnace gas should still be supplied during reversals.
There are 1 figure and 2 tables

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Card 3/3 1. Open hearth furnaces-Operation 2. Coal gas-Applications

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SOV/137-58-11-22083

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 36 (USSR)

AUTHORS: Kocho, V. S., Granovskiy, V. I., Ploshchenko, Ye. A.

TITLE: Heat Balances of 500 and 250-t Gas-fired Open-hearth Furnaces (Teplovyye balansy 500 i 250-t gazovykh martenovskikh pechey)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 3, pp 52-56

ABSTRACT: 500 and 250-t furnaces are heated by a mixture of coke and blast-furnace gas with an average thermal load of 36.8×10^{10} and 25.0×10^{10} kcal/hr. The hearth areas of the furnaces are, respectively, 96.76 and 74.0 m^2, steel (St) production being 8.65 and 6.75 t/m per day and heat time 12.4 and 10.33 hours. The necessary calculations and tables are provided. The input and a portion of the output side depend upon the batch. The fundamental heat losses of 500 and 250-t furnaces are approximately identical; they consist of carry-off of heat and combustion products (30% and 33%, respectively) and loss in the cooling elements (12.24% and 13.7%). The remaining losses (by radiation, through the brickwork, etc.) are of somewhat smaller magnitude but they are greater in the 250-t furnace in virtually all

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SOV/137-58-11-22083

Heat Balances of 500 and 250-t Gas-fired Open-hearth Furnaces

cases. In accordance with the heat balances, the average unit consumption of conventional fuel is 123.6 kg/t for a 500- and 137 kg/t for a 250-t furnace. The greater efficiency of 500-t than of 250-t furnaces is due to the reduced heat loss per t of St, the better utilization of heat in the melting chamber, and the higher rate of steel production (by 50-65%).

V. G.

Card 2/2

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.

Investigating heat absorption and thermal efficiency of 500 and 250-ton open-hearth furnaces. Izv. vys. ucheb. zav.; chern.met. no.5:65-75 My '58. (MIRA 11:7)

1.Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces) (Heat--Radiation and absorption)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

Sov/133/58-9-4/29

AUTHORS: Kocho, V. S. (Dr.Tech.Sciences, Professor), Grankovskiy, V. I., (Engineer), and Ploshchenko, Ye. A. (Engineer)

TITLE: An Investigation of the Thermal Performance of a 500 Ton Open Hearth Furnace (Issledovaniye teplovoy raboty 500-t martenovskoy pechi)

PERIODICAL: Stal', 1958, Nr 9, pp 782-788 (USSR)

ABSTRACT: A study of the thermal performance of a 500 ton open hearth furnace at the Voroshilov Works was carried out and a comparison of some of the data obtained with corresponding data for 250 ton furnaces is given. The object of the investigation was to obtain information on the possibilities of improving the furnace performance as well as to obtain some design data for 700-800 ton furnaces. The 500 and 250 ton furnaces were lined with basic refractories (mean service life of chrome-magnesite roofs from 400 to 450 heats). The furnaces were fired with a mixture of coke oven and blast furnace gas carburized with fuel oil. Compressed air was supplied (from blast furnace blowers) to the flame. Material and thermal balances of the 500 ton furnace are

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Sov/133/58-9-4/29

An Investigation of the Thermal Performance of a 500 Ton Open Hear 1 Furnace

given in Tables 1 and 2 respectively. Heat absorption and the coefficient of utilization of heat were investigated using the method of "instantaneous reverse heat balance" which is based on measurements carried out during short time intervals. The dependence of the intensity of straight heat currents on the amount of compressed air supplied to the flame - Fig.1; the dependence of the coefficient of utilization of heat (A) and heat absorption (B) on the pressure under the roof during the individual smelting periods - Fig.2; the dependence of straight heat currents during the refining period on the coefficient of excess of air - Fig.3; the dependence of the coefficient of utilization of heat and coefficient of heat absorption on the thermal load, with a supply of compressed air of 4000 m^3/hr, during the individual smelting periods - Fig.4; the dependence of the duration of melting period on the specific heat consumption and on the concentration of carbon after melt out at various thermal loads - Fig.5; the dependence of the duration of the melting period and specific heat consumption on the concentration of carbon after melt out at various thermal loads - Fig.6. On the basis of the results obtained optimum thermal operating

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An Investigation of the Thermal Performance of a 500 Ton Open Hearth Furnace

conditions for the 500 ton furnace were established (Table 3) which decreased the consumption of conventional fuel from 125 to 108 kg/ton at a duration of heats not exceeding 11.5 hours. In view of relatively lower heat losses per ton of smelted steel, the consumption of fuel in 500 ton furnaces is somewhat lower (15-20 kg of conventional fuel) than in 250 ton furnaces. The use of compressed air has a positive effect on the thermal work of the 500 ton furnace, as it permits decreasing the coefficient of excess air to 0.9-1.05. At thermal loads of 35-40 mil. k cal/hr an average 5000 m^3/hr of compressed air is required (varying the supply according to thermal loads during the individual smelting periods from 4000 to 5500 m^3/hr). On the basis of the results obtained it can be expected that the character of the distribution of thermal currents and heat exchange conditions in 700-800 ton furnaces under design will be approximately the same as

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An Investigation of the Thermal Performance of a 500 Ton Open Hearth Furnace

in 500 ton furnaces. A decrease in specific heat losses in 700-800 ton furnaces should somewhat improve the coefficients of the utilization and absorption of heat in comparison with 500 ton furnaces. There are 3 tables, 6 figures and 5 Soviet references.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut i zavod im. Voroshilova (Kiyev Polytechnical Institute and the Works im. Voroshilov)

Card 4/4

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., prof., doktor tekhn. nauk; GRANKOVSKIY, V.I., inzh.

Statistical analysis of the heat output of 500-ton and 250-ton capacity open-hearth furnaces. Biul. TSNIICHM no. 10:8-15 '58. (MIRA 11:7)

(Open-hearth furnaces)

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KOCHO, V.S., prof., doktor tekhn.nauk; GRANKOVSKIY, V.I., inzh.

Investigating temperature conditions in 500-ton open hearth furnaces. Izv.vys.ucheb.zav.; chern.met. no.10:75-83 O '58. (MIRA 11:12)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces) (Pyrometry)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

AUTHOR: Kocho, V.S. 32-1-22/55

TITLE: A New Method of Determining the Degree of Blackening of the Surface of a Body (Novyy metod opredeleniya stepeni chernoty poverkhnosti tela).

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 23, Nr 1, pp. 53-55 (USSR)

ABSTRACT: In the introduction it is said that the hitherto known methods mainly refer to the determination of the degree of blackening carried out in laboratories. The method recommended here is, however, suited for direct application in plants. It consists in measuring the heat current impinging upon the body (q_{direct}) and that which is reflected from the body ($q_{refl.}$), for which purpose thermometers, calorimeters, or thermo-probes can be used. [Ref.1-4] Thermo absorption is assumed to be $\Delta q = q_{direct} - q_{refl.}$ The amount of the reflected heat current depends on the heat absorption properties of the body, which, in turn, depends upon the degree of blackening of the surface of the body (ε). On this basis a number of theories is developed here which may serve the purpose of carrying out these directions, and suitable examples are given. Among other things,

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A New Method of Determining the Degree of Blackening of the Surface of a Body 32-1-22/55

the application of this theory with respect to the determination of the degree of blackening of slags in an open-hearth furnace is described, and it is explained that the ratio between temperature and degree of blackening can be determined. This means that, if the degree of blackening of the slag in an open-hearth furnace is known, the temperature of its surface can be calculated according to the formula: $T = \sqrt[4]{\frac{q_{refl.} - q_{direct}(1-\varepsilon)}{\varepsilon C_0}}$

where C_0 denotes a constant of the heat radiation of an absolutely black body. In the paper a table of the degree of blackening of the slag is mentioned, with the help of which the course of the work of smelting in an open-hearth furnace can be suitably controlled. There are 1 table and 6 Slavic references.

ASSOCIATION: Kiyev Polytechnic Institute (Kiyevskiy politekhnicheskiy institut).

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Card 2/2 1. Materials-Reflective effects 2. Materials-Thermal effects 3. Calorimeters 4. Thermometers

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KOCHO, Valentin Stepanovich; KHAN, Boris Khononovich; KHRENOV, K.K., akademik, otv.red.; REMENNIK, T.K., red.izd-va; MAZURIK, T.Ya., tekhn.red.

Nikolai Nikolaevich Dobrokhotov. Kiev, Izd-vo Akad.nauk USSR, 1959. 29 p. (MIRA 13:2)

1. AN USSR (for Khrenov).
(Dobrokhotov, Nikolai Nikolaevich, 1889-)

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PHASE I BOOK EXPLOITATION SOV/4710

Kocho, V.S., Doctor of Technical Sciences

Avtomatyzatsiya u chorniy metalurgiyi (Automation in Ferrous Metallurgy) Kyyiv, 1959. 37 p. (Series: Tovarystvo dlya poshyrennya politychnykh i naukovikh znan' UkrSSR, Ser. 7, no. 9) 9,500 copies printed.

Ed.: Yu. H. Kornilov, Doctor of Technical Sciences; Ed. of Editorial and Publishing Section: A.S. Teplyakova.

PURPOSE: This booklet is intended for general readers interested in the progress of automation in the domestic metallurgical industry.

COVERAGE: The booklet, issued by the Ukrainskaya SSR Society for the Dissemination of Political and Scientific Information, discusses the progress of automation in ferrous metallurgy. It contains concise information on the automation of blast furnaces, open-hearth furnaces, electric furnaces, and converters, and includes a discussion on manufacture by rolling. The author also considers the application of computers in the industry. No personalities are mentioned. There are 7 references, all Soviet.

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KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.

Changes of pressure in open-hearth furnace vertical gas flues operating with compressed air. Izv.vys.ucheb.zav.; chern.met. 2 no.6:93-97 Je '59. (MIRA 13:1)

1. Kiyevskiy politekhnicheskiy institut. Rekomendovano kafedroy avtomatizatsii metallurgicheskikh protsessov i pechey Kiyevskogo politekhnicheskogo instituta.
(Open-hearth furnaces)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk prof.; GRAMKOVSKIY, V.I., kand.tekhn.nauk

Statistical analysis of thermal processes in a 200-ton open-hearth furnace. Izv.vys.ucheb.zav.; chern.met. 2 no.7:105-110 Jl '59. (MIRA 13:2)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces) (Pyrometry)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

SOV/133-59-9-8/31

AUTHORS: Kocho, V.S., Doctor of Technical Sciences, Sabiyev, M.P., Grankovskiy, V.I., Ploshchenko, Ye.A. and Molchanov, Yu.D., engineers

TITLE: An Investigation of the Operation of a 250 Ton Open Hearth Furnace Fired with Coke Oven Gas

PERIODICAL: Stal', 1959, Nr 9, pp 796-802 (USSR)

ABSTRACT: Possibilities of firing open hearth furnaces with a low pressure hot gas of a high calorific value without carburization are discussed. Literature data are quoted indicating that autocarburization of gas can be obtained by preheating the gas to a temperature at which decomposition of methane, with the partial formation of higher hydrocarbons and carbon particles, takes place. Experience in firing a 250 ton open hearth furnace with preheated coke oven gas of the usual pressure instead of a mixture of coke oven and blast furnace gas is described. For this purpose the cross-sectional area of the outlets from dog houses was reduced from 0.45 to 0.22 m^2 and the gas port was lowered. Compressed air in an amount of 3000 to 3500 m^3/hr was introduced through the back faces of the dog houses. The above measures permitted

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An Investigation of the Operation of a 250 Ton Open Hearth Furnace Fired with Coke Oven Gas

increasing the velocity of the gas-air mixture from the dog house to 100 to 120 m/sec. The pressure in the gas vertical flue increased to the atmospheric pressure and at maximum thermal loads to 10 mm H_2O. The temperature of the upper checkers of gas regenerators was maintained at 1200 to 1250°C. The consumption of oil remained the same as on firing with mixed gas. During the melting period, the flame was covering the bath satisfactorily but during the refining period at low thermal loads the length of the flame was insufficient. In this case, an improvement can be obtained by decreasing the coefficient of excess air to 0.9 to 1.0. Changes in the operating indices of the furnace on transfer to firing with hot coke oven gas are given in tables 1 and 2. The preliminary results obtained indicated that, in respect of productivity and fuel consumption, the furnace operation was satisfactory. Further investigation of the problem of heating open hearth furnaces with a hot low pressure gas of a high calorific value and, in

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An Investigation of the Operation of a 250 Ton Open Hearth Furnace Fired with Coke Oven Gas SOV/133-59-9-8/31

particular, the development of an optimum furnace design is recommended. There are 6 figures, 2 tables and 10 references, 8 of which are Soviet and 2 English.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

PHASE I BOOK EXPLOITATION SOV/3487

Kocho, Valentin Stepanovich, and Vadim Ivanovich Grankovskiy

Teplovaya rabota martenovskikh pechey (Thermal Performance of Open-Hearth Furnaces) Moscow, Metallurgizdat, 1960. 187 p. Errata slip inserted. 2,700 copies printed.

Ed.: V.N. Kornfel'd; Ed. of Publishing House: V.N. Sidorov; Tech. Ed.: L.V. Dobushinskaya.

PURPOSE: This book is intended for scientific and technical personnel at metallurgical and machine-building plants and at research and design institutes. It may also be useful to students at higher educational institutions specializing in steel metallurgy, automation of industrial metallurgical furnaces, and industrial power engineering.

COVERAGE: The book presents the results of experimental investigations of the thermal performance of large-capacity open-hearth furnaces. Heat exchange in the combustion space of furnaces and the effect of thermal conditions on heat transfer and on thermal efficiency are discussed with a view to

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.

Temperature conditions of 500-ton open-hearth furnaces operating with blown-in turbine air and with steam injection in the air. Biul. TSIICHM no.10:34-36 '60. (MIRA 15:4)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

Kocho, V. S.

PHASE I BOOK EXPLOITATION SOV/5556

Moscow. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Moskovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, G. N. Oyks, Professor, Doctor of Technical Sciences, and V. I. Yavoyskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

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85

Nov [Developments] in the Theory (Cont.) SOV/5556

COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal desulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Glinkov, N.P. Nam, V.I. Yavoyskiy, G.N. Oyks and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); N.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Povalotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Fomin (the Moscow "Serp i molot" Metallurgical Plant); V.A. Fukiev (Central Asian Polytechnic Institute)

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New [Developments] in the Theory (Cont.) SOV/5556

and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute). References follow some of the articles. There are 268 references, mostly Soviet.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

ANDON'YEV, Sergey Mikhaylovich, dokter tekhn. nauk. Prinimali uchastiye: BELAN, V.I., insh.; MALAMUD, Ye.A.; TSKLUYKO, Yu.I., insh.; KHRZHER, S.M., insh.; SIDENKO, B.M., insh.; FILIP'YEV, O.V., insh.; KOCHO, V.S., dokter tekhn. nauk, prof., retsenzent; NIYSKEVICH, Ye.A., red.; YEZDOKOVA, M.L., red. izd-va; DOBUZHINSKAYA, L.V., tekhn. red.

[Evaporation cooling of metallurgical furnaces] Isparitel'noe okhlazhdenie metallurgicheskikh pechei; osnovnye polozheniia. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 447 p. (MIRA 14:10)

(Metallurgical furnaces—Cooling)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

S/137/61/000/011/013/183
A060/A101

AUTHOR: Kocho, V.S.

TITLE: Automatic regulation of gas temperature in open-hearth furnaces

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 11, 1961, 15, abstract 11B89 (V sb. "Novoye v teorii i praktike proiz-va martenovsk. stali", Moscow, Metallurgizdat, 1961, 219 - 226, Discuss. 332 - 334)

TEXT: A three-stage system is proposed for the regulation of gas temperature. A rotating damper connecting the joint flues of the gas and smoke vents with the common chimney is set up for the automatic regulation of the quantity of combustion products passing through the gas regenerators. As the amount of shut-off of the regulating damper in the gas and smoke flue is varied from 0 to 100%, the quantity of combustion products passing through the checkers varies from a definite initial quantity down to zero, making it possible to vary between wide limits the heating rate and the final temperature of the gas checkers. The system of automatic regulation of gas temperature has three ferromagnetic transducers, whose armatures are connected in such a way that the e.m.f.'s induced in them sum algebraically. The e.m.f. arising in the armature of each ferrodynamic transducer

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is proportional to its turn angle. The first transducer is set up in the potentiometer measuring the temperature of the roof of the gas checker as the combustion products pass through it, the second - in the instrument measuring the height-uniformity of the checker heating up, the third - in the instrument regulating the expenditure of the gas passing through the checker. The armature of a remote-controlled transducer of gas temperature and the armature of the ferrodynamic sensor of an isodromics electrohydraulic regulator, whose drive mechanism is connected to the rotating valve, are connected in series with the three armatures of the ferrodynamic transducers. This system operates periodically. At a sharp change of the gas expenditure and, consequently, also of the thermal loads, there occurs a considerable discrepancy between the actual and the requisite gas temperatures. Because of this, in order to eliminate the rise of such undesirable conditions, in the case of the furnace being heated with blast-furnace coke mixture, in order to vary the thermal loads it is possible to vary not the gas expenditure but the caloricity of the gas mixture. Since during the interval between rehandlings the temperature of the gas checker gradually falls, leading to oscillations of gas temperature drop in the time interval from 30 to 170°C for various open-

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Automatic regulation ... S/137/61/000/011/013/123
A060/A101

hearth furnaces, in order to eliminate this drawback it is recommended to make use of an additional heating up of the gas after the regenerator by means of air feed through special nozzles.

Yu. Nechkin

[Abstracter's note: Complete translation]

Card 3/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

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KOCHO, V.S.; GRANKOVSKIY, V.I.; PERELOMA, V.A.; NAYDEK, V.L.

Dynamic characteristics of open-hearth furnaces according to pressure in the melting zone. Izv.vys.ucheb.zav.; chern.met. 4 no.6:168-172 '61. (MIRA 14:6)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; ANTOSYAK, V.G.; NAYDEK, V.L.

Investigating the feasibility of ensuring the optimum luminosity of a gas flame. Izv. vys. ucheb. zav.; chern. met. 4 no.8:143-148 '61. (MIRA 14:9)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces--Combustion)

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KOCHO, V.S.; GRANKOVSKIY, V.I.; ANTOSYAK, V.O.; PROSHCHENKO, Ye.A.

Evaluating the degree of blackness of a flame furnace torch.
Zav.lab. 27 no.5:574-578 '61. (MIRA 14:5)
(Metallurgical furnaces) (Flame)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; GRANKOVSKIY, V.I., kand.tekhn.nauk

Method of continuous determination of the rate of carbon dioxide evolution from open-hearth furnace baths. Met. i gornorud. prom. no.4:69-70 Jl-Ag '62. (MIRA 15:9)
(Open hearth process)
(Carbon dioxide—Measurement)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

S/133/62/000/004/004/008
A054/A127

AUTHORS: Kocho, V.S.; Panasyuk, A.D.; Samsonov, G.V.; Strel'chenko, A.G.; Khabrunyak, I.G.

TITLE: Cermet tips made of zirconium boride for thermocouples used in the continuous measuring of liquid steel temperatures

PERIODICAL: Stal', no. 4, 1962, 317

TEXT: To develop a highly heat resistant material for thermocouple tips used in the continuous measuring of liquid steel temperatures in open hearth furnaces, tests were carried out in 1959 - 1960 at the Institut metallokeramiki AN UKrSSR (Institute of Cermets of the Academy of Sciences UKrSSR) with thermocouple tips made of zirconium boride. The tips, 120 mm in length, 11 mm O.D. and 4 mm I.D. were tested in 185-ton and 370-ton basic open-hearth furnaces into which they were placed by hand-operated thermocouples, equipped with blocks, 25 mm in diameter and 90 mm in length, made of reinforcement steel. The zirconium boride tips, which are more heat-resistant than those made of quartz, were immersed 10 - 11 times with the immersion time increased to 40 - 45 sec. To establish the service life of zirconium boride tips for continuous operation in

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Cermet tips made of .....

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the metal-slag bath, tests were carried out in 10-ton and 250-ton open-hearth furnaces. The thermocouple and the tip were placed in a water-cooled seamless steel tube tuyere with copper bottom. The tip was fixed to the device with 4 - 5 mm thick asbestos cord. The metal layer (3-5 mm thick) and slag layer (up to 25 mm) settling on the tuyere wall during immersion could be removed more easily if the tuyere was refractory-coated before immersion. However, it was found that in the arrangement described the zirconium boride tip only protected the thermocouple against the heat of the bath and not against the gases which broke the seam after a continuous immersion of 2 - 3 min. To eliminate this, the authors developed a three-layer tip shown in a figure, consisting of an external jacket against the heat, an inner alundum layer to ensure gas permeability, whereas the gap between them was filled with burnt aluminum oxide. The bottom part of the tip was filled with zirconium boride powder, to decrease its heat inertia. At the upper ends the tip is sealed with calcined decarburized asbestos. As a result of using the new ПР-30/6 (PR-30/6) type thermocouple tip, temperature measuring takes place with great accuracy: in the 1,500-1,650°C range the deviations are not greater than ± 1.5°C. The bath temperature is recorded with an ЭПП-09М (EPP-09M) type potentiometer, at a tape rate of 720 mm/h. The tips operate continuously in metal for at least 150 min, in slag for more than 60 minutes. There are 2 figures.

Card 2/2

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; STREL'CHENKO, A.G.

Effect of technological and heat engineering factors on temperature conditions in open-hearth furnace smelting in the finishing period. Met.i gornorud.prom. no.5:24-28 S-O '62. (MIRA 16:1)

1. Kiyevskiy politekhnicheskiy institut (for Kocho). 2. Institut avtomatiki Gosplana UkrSSR (for Strel'chenko.
(Open-hearth process)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, Y.S.; STREL'CHENKO, A.G.; KHAVRUNYAK, I.G.

Temperature conditions of a 250-ton open-hearth furnace bath in the finishing period. Izv. vys. ucheb. zav.) Chern. met. 5 no.9:84-91 '62. (MIRA 15:10)

1. Kiyevskiy politekhnicheskiy institut i Institut avtomatiki Gosplana UkrSSR.

(Open-hearth furnaces)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V. S.; GRANKOVSKIY, V. I.; ANTOSYAK, V. G.

Impulse for regulating the luminosity of the gas furnace flame. Izv. vys. ucheb. zav.; chern. met. 5 no.12:182-187 '62. (MIRA 16:1)

1. Kiyevskiy politekhnicheskiy institut.

(Open-hearth furnaces) (Gas burners)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; GRANKOVSKIY, V.I., kand.tekhn.nauk; NAYDEK, V.L., inzh.; MOLCHANOV, Yu.D., inzh.; PIORO, Ch.K., inzh.

Comparative analysis of thermal processes in 500-ton open-hearth furnaces in two metallurgical plants. Stal' 22 no.1:23-27 Ja '62. (MIRA 14:12)

(Open-hearth furnaces)
(Heat—Transmission)

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KOCHO, V.S., doktor tekhn. nauk; GRANKOVSKIY, V.I., kand. tekhn. nauk; PEREL'OMA, V.A., inzh.; DRYAPIK, Ye.F., inzh.; STREL'CHENKO, Yu.G., inzh.

Selecting an impulse to evaluate the pressure in the hearth of an open-hearth furnace. Met. i gornorud. prom. no.1:63-66 Ja-F '62. (MIRA 16:6)

1. Kiyevskiy politekhnicheskiy institut (for Kocho, Grankovskiy, Perel'oma). 2. Kommunarskiy metallurgicheskiy zavod (for Dryapik, Strel'chenko).

(Open-hearth furnaces) (Gas flow)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

LEVIN, Semen Lazarevich; KOCHO, V.S., doktor tekhn. nauk, retsenzent; MYLKO, S.N., kand. tekhn. nauk, retsenzent; BORNATSKIY, I.I., kand. tekhn. nauk

[Steel smelting processes; physicochemical and technological principles] Staleplavil'nye protsessy; fiziko-khimicheskie i tekhnologicheskie osnovy. Kiev, Gostekhizdat USSR, 1963. 403 p. (MIRA 17:9)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; GRANKOVSKIY, V.I., kand.tekhn.nauk; MAYDEK, V.L.

Improving the temperature control system of open-hearth furnaces. Avtom. i prib. no.1:21-24 Ja-Mr '63. (MIRA 16:3)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces) (Thermostat)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, K. S., dokter tekhn. nauk; GRANKOVSKIY, V. I., kand. tekhn. nauk; MAYDEK, V. L., inzh.; MOLCHANOV, Yu. D., inzh.; KUDRYAVAYA, N. A., inzh.

Measuring the flow of combustion products in open-hearth furnaces. Met. i gornorud. prom. no.1:59-62 Ja-F '63. (MIRA 16:4)

1. Kiyevskiy politekhnicheskiy institut (for Kocho, Grankovskiy, Maydek). 2. Cherepovetskiy metallurgicheskiy zavod (for Molchanov, Kudryavaya).

(Gas flow) (Open-hearth furnaces)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; DRYAPIK, Ye.P.; SABIYEV, M.P.; PROSHCHENKO, Ye.A.

Accelerations of open-hearth furnace operations without oxygen. Izv. vys. ucheb. zav.; chern. met. 6 no.4:150-155 '63. (MIRA 16:5)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces)
(Compressed air)

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KOCHO, V.S.; GRANKOVSKIY, V.I.; MAYDEK, V.L.

Automatic control of thermal conditions in an open-hearth furnace. Izv. vys. ucheb. zav.; chern. met. 6 no.4:163-170'63. (MIRA 16:5)

1. Kiyevskiy politekhnicheskiy institut.
(Open-hearth furnaces) (Automatic control)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; KOROTKEVICH, V.N., inzh.

Investigating temperature conditions of molten ferrous metals. Met. i gornorud. prom. no.4:64-66 Jl-Ag '63. (MIRA 16:11)

1. Kiyevskiy politekhnicheskiy institut (for Kocho).
2. Luganskiy filial Instituta avtomatiki Gosplana UkrSSR (for Korotkevich).

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; STREL'CHENKO, A.G.; SABIYEV, M.P.; DRYAPIK, Ye.P.

Investigating the temperature conditions of the bath during its continuous control in the finishing period. Izv. vys. ucheb. zav.; chern. met. 6 no.8:169-174 '63. (MIRA 16:11)

1. Kiyevskiy politekhnicheskiy institut, Institut avtomatiki Gosplana UkrSSR i Kommunarskiy metallurgicheskiy zavod.

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KOCHO, V.S., doktor tekhn. nauk; GRANKOVSKIY, V.I., kand. tekhn. nauk; PEREL'OMA, V.I., insh.; DRYAPIK, Ye.P., insh.; TEPLITSKIY, B.M., insh.; GLOBA, N.I., insh.; STREL'CHENKO, Yu.G., insh.

Heating open-hearth furnaces with hot natural gas. Met. i gornorud. prom. no.5:65-66 S-O '63. (MIRA 16:11)

1. Kiyevskiy politekhnicheskiy institut (for Kocho, Grankovskiy, Pereloma). 2. Kommunarskiy metallurgicheskiy zavod (for Dryapik, Teplitskiy, Globa, Strel'chenko).

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

BEREZOVSKIY, Mikhail Aleksandrovich, inzh.; KOROBKO, Mikhail Ivanovich, kand. tekhn. nauk; SAZILOVA, Larisa Vyacheslavovna, inzh.; KOCHO, V.I., doktor tekhn. nauk, retsenzent

[Sampled-data control devices] Elektronnye regulirujushchie ustroistva preryvistogo deistvija. Kiev, Tekhnika, 1964. 137 p. (MIRA 18:1)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk

Overall automation of metallurgical processes. Met. i gornorud. prom. no. 2:7-9 Mr-Ap '64. (MIRA 17:9)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; LAPITSKIY, V.I., doktor tekhn.nauk; PAYZANSKIY, L.D.; RESHETNYAK, Yu.S.; RUBINSKIY, P.S.; DRYSHLYUK, V.M.; KISLYY, P.S.

Measuring the temperature of the metal during the process of smelting in a converter with a top oxygen blow. Met. i gornorud. prom. no. 2:28-31 Mr-Ap '64. (MIRA 17:9)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V. S.; GRANKOVSKIY, V. I.; LISITSA, V. K.

Possibility of extremal combustion control in open-hearth furnaces. Izv.vys.ucheb.zav.; chern.met.7 no. 4:151-155 '64. (MIRA 17:5)

1. Kiyevskiy politekhnicheskiy institut.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn.nauk; FEDORETS, I.G., insh.; KOVALEV, A.S., insh.

Using water-cooled thermocouples for a continuous control of Bessemer smelting by the temperature of metal. Mashinostroenie no. 2:50-52 Mr-Ap '64. (MIRA 17:5)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; BARZILOVICH, V.S.; LYADOV, K.P. Prinimali uchastiye: ARYKHINA, V.I., inzh.; OMEL'CHENKO, T.Ye., tekhnik; SHAKARIMOV, Yu., student; YASTOCHKIN, A.I., student; ULANOVSKAYA, L.V., student

Investigating the operation of continuous furnaces with a rolling hearth. Stal' 24 no.2: 177-179 F '64. (MIRA 17:9)

1. Kiyevskiy politekhnicheskiy institut i Kommunarskiy metallurgicheskiy zavod.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; LISITSA, V.K.

Automatic regulation of the combustion process. Metallurg 9 no.6: 15-17 Je '64. (MIRA 17:9)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk, prof.; RUDOY, P.S., inzh.; MERSHCHIY, N.P., inzh.; VINOGRADOV, N.M., inzh.; BLASHCHUK, N.M., inzh.

Continuous temperature control of an open-hearth bath during oxygen blowing. Stal' 24 no.8:698-700 Ag '64. (MIRA 17:9)

1. Kiyevskiy politekhnicheskiy institut i Makeyevskiy metallurgicheskiy zavod.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; KOCHETKOV, Ye.A.; ZAKHAROVA, Ye.V.

Distribution of combustion products in open-hearth furnace regenerators. Izv. vys. ucheb. zav.; chern. met. 7 no.10: 149-154 '64. (MIRA 17:11)

1. Kiyevskiy politekhnicheskiy institut i Kommunarskiy metallurgicheskiy zavod.

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KOCHO, V.S., doktor tekhn. nauk; GRANKOVSKIY, V.I., kand. tekhn. nauk; MAYDEK, V.L., kand. tekhn. nauk

Automatic control of industrial and thermal conditions in the finishing period of open-hearth smelting. Met. i gornorud. prom. no.3:17-19 My-Je '64. (MIRA 17:10)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; BARZILOVICH, V.S.; LYADOV, K.P.; NESMACHNYY, A.N.

Improving the operation of roller hearth heating furnaces. Met. i gornorud. prom. no.1:71-72 Ja-F '64. (MIRA 17:10)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; PERELOMA, V.A.; ANTOSYAK, V.G.; DRYAPIK, Ye.P.; TEPLITSKIY, B.M.; GLOBA, N.I.; STREL'CHENKO, Yu.G.

Temperature conditions of an open-hearth furnace heated with selfcarburetting natural gas. Stal' 24 no.10:892-893 O '64. (MIRA 17:12)

1. Kiyevskiy politekhnicheskiy institut i Kommunarskiy metallurgicheskiy zavod.

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, Valentin Stepanovich, doktor tekhn. nauk, prof.; SAMSONOV, Grigoriy Valentinovich, doktor tekhn. nauk, prof.; STREL'CHENKO, Aleksandr Grigor'yevich, kand. tekhn. nauk; KISLYY, Pavel Stepanovich, kand. tekhn. nauk; YEFIMOV, V.A., doktor tekhn. nauk, retsenzent;

[Continuous liquid steel temperature control in the finishing period of open-hearth smelting] Nepreryvnyi kontrol' temperatury zhidkoi stali v period dovodki martenovskoi plavki. [By] V.S.Kocho i dr. Kiev, Tekhnika, 1965. 226 p. (MIRA 18:4)

1. Chlen-korrespondent AN Ukr.SSR (for Samsonov).

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; KOROBKO, I.M.; MALIKOV, O.P.

Device for continuous control of metal temperature in an electric arc steel furnace. Art. i prib. no.4:48-49 O-D '64 (MIRA 18:2)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, Y.S., doktor tekhn. nauk; BARZILOVICH, V.S.; PRIADKIN, L.L.; NESMACHNYY, A.N.

Automatic control system for heat-treating furnaces with roller sole. Avt. i prob. no.4:77-79 O-D '64 (MIRA 18:2)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

YAVOYSKIY, V.I., otv. red.; BIGEYEV, A.M., red.; BORKO, Ye.A., red.; GLINKOV, M.A., red.; ZARVIN, Ye.Ya., red.; KAPUSTIN, Ye.A., red.; KOCHO, V.S., red.; KUDRIN, V.A., red.; LAPITSKIY, V.I., red.; LEVIN, S.L., red.; OYKS, G.N., red.; ROMENETS, V.A., red.; UMRIKHIN, P.V., red.; FILIPPOV, S.I., red.

[Theory and practice of the intensification of processes in converters and open-hearth furnaces; transactions] Teoriia i praktika intensifikatsii protsessov v konverterakh i martenovskikh pechakh; trudy. Moskva, Metallurgiia, 1965. 552p. (MIRA 18:10)

1. Mezhvuzovskoye nauchnoye soveshchaniye po teorii i praktike intensifikatsii protsessov v konverterakh i martenovskikh pechakh. 2. Moskovskiy institut stali i splavov (for Filippov). 3. Zhdanovskiy metallurgicheskiy institut (for Kapustin). 4. Ural'skiy politekhnicheskiy institut (for Umrikhin).

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; MITROKHIN, A.K.; SHTOPKO, V.M.; SHOSTAK, V.A.; BELOKOPYTOV, V.A.; BAZILEVSKIY, A.R.; TOL'SKIY, A.A.

Temperature conditions of a converter bath with air and steam-oxygen bottom blowing. Met. i gornorud. prom. no.1:21-24 Ja-F '65. (MIRA 18:3)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S.; GRANKOVSKIY, V.I.; PERELOMA, V.A.

Automatic pressure control in open-hearth furnaces. Izv.vys. uchebn.zav.; chern. met. 8 no.4:212-215 '65. (MIRA 18:4)

1. Kiyevskiy politekhnicheskiy institut.

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KOCHO, V.S.; MAZUN, M.F.; MOISEYENKO, A.I.; STRELCHENKO, Yu.S.; MRYKHINA, V.I.

Investigating the heat conditions of regenerative soaking pits. Izv.vys.ucheb.zav.; chern.met. 8 no.8:155-158 '65. (MIRA 18:8)

1. Klyevskiy politekhnicheskiy institut i Kommunarskiy metallurgicheskiy zavod.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., dokter tekhn. nauk; GRANKOVSKIY, V.I.; PERELOMA, V.A.; MAYDEK, V.L.; PRYADKIN, L.L.; GLOBA, N.I.; MOSIASHVILI, V.V.

Intensification of the operation of open-hearth furnaces by the combined feeding of oxygen and compressed air. Met. i gornorud. prom. no.3:75-76 My-Je '65. (MIRA 18:11)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; PAYMANSKIY, L.D.; RESHETNYAK, Yu.S.; BOYCHENKO, B.M.

Thermal conditions in an oxygen-blown converter. Met. i gornorud. prom. no.4:16-20 Jl-Ag '65. (MIRA 18:10)

1. Kiyevskiy politekhnicheskiy institut (for Kocho, Paymanskiy).
2. Dnepropetrovskiy metallurgicheskiy institut (for Reshetnyak, Boychenko).

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHO, V.S., doktor tekhn. nauk; REVUN, M.P.; AL'BOKHA, V.P.; MRYKHINA, V.I.

Investigating the thermal conditions of compartments of regenerative soaking pits. Met. i gornorud. prom. no.3:40-42 My-Je '65. (MIRA 18:11)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

KOCHO, V.S.; GRANKOVSKIY, V.I.; PERELOMA, V.A.; [illegible], L.L.; KULIKOV, V.O.; PRIKHOZHENKO, A.Ye.; GRYZLOV, Ye.G.

Investigating heat transfer in very high capacity open-hearth furnaces. Stal' 25 no.12:1081-1085 D '65. (MIRA 18:12)

1. Kiyevskiy politekhnicheskiy institut i Zhdanovskiy metallurgicheskiy zavod im. Il'icha.

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L 44575-66

ACC NR: AP6015685 (A,N) SOURCE CODE: UR/0413/66/000/009/0084/0084

28

B

INVENTOR: Kocho, V. S.; Strel'chenko, A. G.; Chuprovskiy, L. F.

ORG: none

TITLE: Thermometric method of measuring the flow of high-temperature gas. Class 42, No. 181318

9m

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 84

TOPIC TAGS: gas flow measurement, high temperature gas, gas flow

ABSTRACT: This Author Certificate introduces a thermometric method of measuring the flow of high-temperature gas by measuring the temperatures at two cross sections of the controlled flow. To simplify the measurement, atomized water is introduced between the two measuring points. The water evaporates and the gas flow is calculated from the difference in temperature at the two cross sections and from the amount of heat consumed for reheating the atomized water to the temperature of the second cross section. [Translation] [LD]

SUB CODE: 20/ SUBM DATE: 26Feb65/

UDC: 681.121.83

Card 1/1 9m

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

AUTHOR: Kochorodskiy, Z., Engineer SOV/29-58-9-16/30

TITLE: [redacted] Houses (Naduvnyye doma)

PERIODICAL: Tekhnika molodezhi, 1958, 26 Nr 9, pp 26 - 27 (USSR)

ABSTRACT: This is a condensed translation of a Polish-language paper which was published in the periodical "Gorizonty tekhniki", 1957, Nr 1.(Translator not given). The roofing-in of large buildings, as for example a stadium, a circus, a cinema, or storehouses meets with great difficulties. Even the lightest type of roof requires a complicated girder system. The method described in this paper permits to construct roofs of arbitrarily large dimensions. It is basically that of thin "roof bags" which are maintained in their shape by a light excess pressure from within. This idea is not new and the construction is based on the principle of a balloon cut off around the equator (see figure). Experiments showed that a pressure exceeding atmospheric pressure by not more than 7% is sufficient to keep the roof at wind velocities up to 80 m/sec. During a storm

Card 1/3

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Inflatable Houses

SOV/29-58-9-16/36

the pressure within the building must be increased. The required pressure is controlled automatically. This small excess pressure is not discernible to persons entering the building. Only when leaving the building one has the sensation as of stepping out of an aeroplane. One of the most outstanding advantages of an inflatable roof is that if the roof is suddenly damaged, and, for example, is ripped open it will slowly and softly collapse without creating great damage. The material for such roofs must be durable, weatherproof, and watertight. In order to increase the wearability of the fabric it is produced double-layered. A coating of synthetic neoprene rubber renders the material water-tight. Condensation effects are suppressed by means of ventilators or by moisture-absorbing agents. The freezing up of smaller roofs can be avoided by continuously keeping the roof in motion by varying the pressure. Greater roofs are de-iced by infrared radiators. The greatest advantage of inflatable roofs is their low cost. There are 4 figures.

Card 2/3

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KOCHERVA, A.G.

POLOSIN, V.S., (Moskva); KOCHERVA, A.G. (Moskva)

School experiments on the synthesis and oxidation of ammonia. Khim. v shkole 12 no.2:41-46 Mr-Ap '57. (MIRA 10:3)
(Ammonia)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHOBVA, A.G. (g. Tiraspol').

Studying the industrial preparation method of potassium chloride in a chemical circle. Khim.v shkole 12 no.4:48-50 Jl-Ag '57.

(MLRA 10:8)

(Potassium chloride)

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHOMVA, A.G.

Learning the fundamentals of beet-sugar manufacture in a secondary school. Politekh.obuch. no.1:33-39 Ja '59. (MIRA 12:2)

1. Srednaya shkola No.11, g. Tiraspol'.
(Tiraspol'—Chemical engineering—Study and teaching)
(Sugar manufacture)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHORVA, A.G.

Industrial training of secondary school students at food industry enterprises. Politekh.obuch. no.9:15-20 S '59. (MIRA 12:12)

1. Pedagogicheskiy institut g.Tiraspolya.
(Moldavia--Education, Cooperative)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHORYAN, N. M. 236T74

USSR/Nuclear Physics - Cosmic Rays Nov 52

"Investigation of Composition of Cosmic Rays at 1,000 Meters Above Sea Level," N. M. Kochoryan, G. S. Saakyan, M. T. Ayvazyan, Z. A. Kirakosyan, S. D. Kaytmazov, Phys Inst, Acad Sci Georgian SSR

"Zhur Eksper i Teoret Fiz" Vol 23, No 5, pp 532-542

Describe results of measurements in 1950-51. Show that number of pi-mesons within a certain interval is 5% less than that of mu-mesons. Numerical data of observations are given. Indebted to A. I. Alikhanyan, Ye. L. Feynberg, M. P. Gambaryan, A. S. Aleksanyan, and Kh. V. Pachadzhyan. Received 4 Jun 52.

236T74

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"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHORVA, A. O.

Study of phosphorus fertilizers in high school. Uch. zap. Tir. gos. ped. inst. no.9:217-228 '60. (MIRA 16:1)

(Fertilizers and manures—Study and teaching)
(Phosphorus)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHORVA, A. G.

State of the problem of mineral fertilizers in the schools of Moldavia. Uch. zap. Tir. gos. ped. inst. no.9:207-215 '60. (MIRA 16:1)

(Moldavia—Fertilizers and manures—Study and teaching)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

CZECHOSLOVAKIA

J. KOCHOVA, Psychiatric Research Institute, Prague.

"Excretion of Catecholamines and Fluorescent Metabolites in the Urine of Psychotics Following Various Pharmacotherapeutic Procedures."

Prague, Activitas Nervosa Superior, Vol 5, No 2, May 63; pp 208-210.

Abstract : Very comprehensive study of urinary excretion of epinephrine, norepinephrine and their key metabolites in psychotic patients dosed with 100 mg. chlorpromazine i.v. and in one 15-year-old manic-depressive over several months on various treatment regimens and varying clinical conditions. Data tend to support Hoffer-Osmond hypotheses about psychotogenicity of adrenochrome or some endogenous metabolite closely related thereto. Graph, 13 Western references.

1/1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

TIKHVINSKIY, V.I., insh.; GALOCHKIN, A.F., insh.; KOCHETKOV, S.N., tekhn.

Crane job for assembly operations. Mont. i spet. rab. v stroi. 23 no.7:26-31 '61. (MIRA 14:7)

1. Kulebakskiy zavod metallokonstruktsiy.
(Kulebaki—Cranes, derricks, etc.)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

BROUDE, V. L.; KOCHUBEY, S. M.

Characteristics of the spectrum of monodeuterobenzene. Opt. i spektr. 13 no.6:865-867 D '62. (MIRA 16:1)

(Benzene—Spectra) (Deuterium—Spectra)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBAYLO, A.G.

Microscopic anatomy of the annulus fibrosus cordis. Arkh.anat., gist. i embr. 36 no.6:77-79 Je '59. (MIRA 12:9)

1. Kafedra patologicheskoy anatomii (zav. - zasluzhennyy deyatel' nauki prof.M.K.Dal') Kiyevskogo instituta usovershenstvovaniya vrachey.
(HEART, anat. & histol.
annulus fibrosus, microscopy (Rus))

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

PEREDEL'SKIY, M. [Peredel'skyi, M.]; POVOLOTSKIY, A. [Povolots'kyi, A.]; TELEDIDO, A.; BARANOVSKIY, A. [Baranovs'kyi, A.], glavnyy red.; DROBICHINSKIY, N. [Drobichyns'kyi, N.], red.; KOCHUBEY, A., red.; OLEKSYUK, I., red. [deceased]; ZHURA, S., otv. za vypusk; LYAMKIN, V., tekhn.red.

[The Soviet Ukraine in the seven-year plan, 1959-1965] Radians'ka Ukraina v semirichtsi, 1959-1965. Kyiv, Derzhpolitvydav URSR, 1959. 42 leaves. (MIRA 13:5)

(Ukraine--Economic policy)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, A.D.

Ukraine marches into communism. Nauka i zhyttia no.11:6-9 N '61. (MIRA 14:12)

1. Pervyy zamestitel' predsedatelya Gosplana USSR.
(Ukraine--Economic conditions)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, Anton Danilovich; TOMASHEVSKAYA, S.[Tomashevs'ka,S.], red.; KOPITKOVA, N. [Kopytkova,N.], tekhn. red.

[High rates of economic development guarantee us victories] Vysoki tempy rozvytku - zaporuka nashykh peremoh. Kyiv, Dersh. vyd-vo polit. lit-ry URSR, 1960. 97 p. (MIRA 14:9)
(Ukraine—Economic policy)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, Anton Danilovich; DRAGOCHINSKIY, M.O. [Drahochyns'kyi, M.O.], glavnyy red.

[Prospects for the economic development of the Ukrainian S.S.R.] Perspektyvy rozvytku narodnoho hospodarstva Ukrains'koi RSR. Kyiv, 1959. 53 p. (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan' Ukrains'koi RSR. Ser.2, no.8) (MIRA 12:12)
(Ukraine--Economic policy)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, Anton Danilovich, kand. ekon. nauk,; KOROIDA, O.S., kand. ekon. nauk, red.; LAZORENKO, M.F., red.

[Problems of economic planning under new conditions for the management of industry and construction] Pytannia narodnohospodars'koho planuvannia v novykh umovakh upravlinnia promyslovistiu ta budivnytstvom. Kyiv, 1958. 34 p. (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan'Ukrains'koi RSR. Ser. 2, no. 8). (MIRA 11:12)

(Industrial management)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

BONDARCHUK, V.G., akademik, otv. red.; KOROLEVA, M.A., glav. red.; KOCHUBEY, A.D., red.; RADUL, M.M., kand. geogr. nauk, red.; BILYK, G.I., kand.biol. nauk, red.; GEYDEMAN, T.S., kand. biol. nauk, red.; ZAMORIY, P.K., doktor geol.-min. nauk, prof., red.; KUCHUKALO, I.A., kand. ekon. nauk, starshiy nauchnyy stor., red.; MARINICH, A.M., dotsent, red.; MUKOMEL', I.F., kand. geogr. nauk, starshiy nauchnyy sotr., red.; PRIKHOT'KO, G.F., kand. geogr. nauk, red.; ROMANENKO, I.N., akademik, red.; TAL'NOVA, N.N., red.; BYUSHGENS, L.M., kand. geogr. nauk, retsenzent; DIDKOVSKIY, I.Ya., kand. geol.-miner. nauk, retsenzent; KEL'NER, Yu.G., kand. geogr. nauk, retsenzent; NADEZHIN, P.F., retsenzent; NIKISHOV, M.I., doktor tekhn. nauk, retsenzent; PIDOPLICHKO, I.G., retsenzent; KURDYMA, G.P., red.-kartograf; RACHINSKAYA, Z.P., red.-kartograf; SLEPTSOVA, L.M., redaktor-kartograf.

[Atlas of the Ukrainian S.S.R. and the Moldavian S.S.R.] Atlas Ukrainskoi SSR i Moldavskoi SSR. Moskva, 1962. vi p. 90 p. of col.maps. (MIRA 15:5)

~~(Continued on next card)~~

Zamestitel' predsedatelya Gosudarstvennogo planovogo Komiteta Soveta Ministrov USSR (for Kochubey)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, Anton Danilovich [Kochubei,A.D.]; SHCHERBAKOVA, F.M., red.

[Planning and administrative guidance at the present stage] Planuvannia i hospodars'ke kerivnytstvo na suchasnomu etapi. Kyiv, Derzhpolitvydav URSR, 1963. 139 p. (MIRA 17:7)

1. Predsedatel' Gosplana Ukr.SSR (for Kochubey).

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KORENENKO, Ye., insh.; CHUMACHENKO, I., inzh.; KOCHUBEY, I., insh.; ZAKHARCHENKO, A., insh.

Persistence brings success. Izobr.i rats. no.6:28 Je '59. (MIRA 12:9)

(Vlasenko, Nikolai Dmitrievich, 1899-)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, I.A., inzh.

T.T.Kusov's potato digger. Izbor. i rats. 3 no. 4:14 Ap '58. (MIRA 11:7)

(Potato digger(Machine))

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

KOCHUBEY, I.A., insh.

"Machinery for livestock farms" by I.I.Smirnov. Reviewed by I.A. Kochubei. Trakt. i sel'khozmash. 30 no.11:47-48 N '60. (MIRA 13:12)

(Agricultural machinery) (Stock and stockbreeding)
(Smirnov, I.I.)

KOCHUBEY, I.M.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

VOLOBUYEV, S.A.; KOCHUBEY, I.M.; BONDARENKO, P.O.; ISMAYLOV, V.O., inzhener; DOTSENKO, M., redaktor; VOYEK, M., tekhnichnyy redaktor.

[Continuous-sequence method in plastering work] Potokovo-roschlenovanyi metod shtukaturnykh robit. Kyiv, Derzh.vyd-vo tekhn. lit-ry URSR, 1954. 61 p. (MLRA 8:2)

(Plastering)

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8

Kochubey, M. I.

USSR/Soil Science - Genesis and Geography of Soils. J-2

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10473

Author : Kalashnikov, A.I., Kimberg, N.V., Kochubey, Ye.P., Kochubey, M.I.

Inst : Institute of Soil Science, Academy of Sciences UzSSR

Title : The Soils of the Right Bank Region of the Lower Amu-Dar'ya

Orig Pub : Tr. In-ta pochvoved. Akad Nauk UzSSR, 1956, No 2, 3-92

Abstract : The results are given of an investigation of 700,000 hectares of the right bank of the Amu-Dar'ya delta. The meadow soils of the region can be divided into two groups: those which have been intensively built up by alluvial deposits from the regular floods and those which have been weakly built up. The soils of low-lying areas are distinguished by their heavier mechanical composition, and occasionally by their salinity (112-186 tons/hectare and less

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USSR/Soil Science - Genesis and Geography of Soils. J-2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520013-8"

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10473

of soluble salts in the three-meter layer). The meadow carbonate soils are formed where the ground water is not far from the surface; they contain 0.6-3.0% humus, are poor in P, and rich in N and K. These soils can be divided into three categories: salt-free, weakly saline (139 T/hectare of salts), and heavily saline (241 T/hectare of salts). The salts are a chloride-sulfate mixture. Marshy and meadow-marshy soils occupy a comparatively small area. Solonchaks occupied ~ 9.5% of the investigated area and fall into the following categories: typical, meadow, marshy, and residual. On the average the solonchaks contain 746 tons of salts per hectare, with chloride-sulfate and sodium-magnesium mixtures predominating. The meadow and marshy solonchaks, which are adapted to low-lying areas, occupy ~ 1% of the region. Meadow-desert and meadow-takyr soils are formed in the channels of dried up rivers under conditions of weakened

Card 2/4

Card 4/4