47. Hungarian pioneers of the ...

BRODSZKY, D.

Survey of the development of automoti e-gas turbines abroad. p. 177.
KOZIEKEDESTUDOMANYI SZEMLE. (Kozlekedesi Kiado) Budapest. Vol. 6,
no. 5, May 1956.

SOURCE: East European Accessions List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956

BRODSZKY, D.

Packing four-stroke Diesel engines. p. 127.

(Jarmuvek Mezogazdasagi Gepek. Vol. 4, no. 3, July 1957. Budapest, Hungary)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

BRODSZKY, D.

Gas turbines for motor cars with heat exchangers.

p. 159 (Janmuvek Mezogazdasagi Gepek. Vol. 4, no. 4, Sept. 1957, Budapest, Hungary)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2, February 1958

BRODSZKY, D.

TECHNOLOGY

KOZLEKEDESTUDOMANYI SZEMLE. (Kozlekedes- es Kozlekedesepitestudomanyi Egyesulet) Budapest.

BRODSZKY, D. 30-year use of the Ganz-Jendrassik engine in railroad transportation. p. 291.

Vol.8, no. 7/8, July/aug. 1958.

Monthly list of East European Accession (EEAI)LC Vol. 8, No. 3
March 1959, Unclass.

BRODSZKY, D.

The Ganz-Jendrassik Motor's 30 years in railroad transportation. p. 103.

KOZLEKEDESTUDOMANYI SZEMLE. (Kozlekedes-es Kozlekedesepitestudomanyi Egyesulet) Budapest, Hungary, Vol. 9, No. 3, Mar. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 7, July 1959.
UNCL

BRODSZKY, D.

Hungarian pioneers of the gas turbine. In English. p.63.

ACTA TECHNICA. Budapest, Hungary. Vol. 25, no. 1/2, 1959.

Monthly List of East European Accessions (EEAI), LC. Vol. 8, No. 9, September 1959
Uncl.

S/262/62/000/020/008/009
E194/E135

AUTHOR: Brodszky, Dezső

TITLE: Some disputed problems concerning the general arrangement of turbo super-chargers

PERIODICAL: Referativnyy zhurnal, Silovyye ustanovki, no.20, 1962, 42, abstract 42.20.234. (Járművek, mezógazd. gépek, v.8, no.7, 1961, 242-251). (Hungarian)

TEXT: Various arrangements of gas turbine centrifugal supercharger are considered: compressor and axial turbine with bearings located at the ends of the shafts; the same but with bearings fitted between the runners of the compressor and the turbine; combined compressor and centripetal turbine with bearings between turbine and compressor runners and also with overhung bearing of combined compressor and turbine rotors. Turbo compressor designs adopted by 20 manufacturers are described and technical data are given.
13 figures, 15 references.

Card 1/1 [Abstractor's note: Complete translation.]

BRODSZKY, Dezso

Supercharging of four-stroke diesel engines. Jarmu mezo gep 4 no.3:127-134 Jl '57.

BRODSZKY, Dezso

Gas turbines with free-piston generators. Jarmu mezo gep 5 no.5/6:170-179 '58.

BRODY, A.

Savings of enterprises and the national economy. p. 11.

MAGYAR TUDOMANYOS AKADEMIA MATEMATIKAI KUTATO INTEZETENEK KOZLEMENYEI. PUBLICATIONS OF THE MATHEMATICAL INSTITUTE OF THE HUNGARIAN ACADEMY OF SCIENCES. Budapest, Hungary. Vol. 4, no. 1, 1959

Monthly list of East European Accessions (EEAI). LC. Vol. 9, no. 1, Jan., 1960

Uncl.

BRODY, Andras

Mathematics in the economy of enterprises; linear programming. Elet tud 16 no.15:451-455 9 Ap '61.

BRODY, Andras

Economic life - in tabulation. Elet tud 16 no.35:1107-1109 27 Ag '61.

SINITSYN, A. I., inzh.; BRODYAGIN, G. N., inzh.

Attachment for the dressing of rollers on seam welding machines. Svar. proizv. no.10:35-36 O '62. (MIRA 15:10)

1. Ural'skiy avtomobil'nyy zavod.

(Electric welding—Equipment and supplies)

ZAKHVATKIN, Ye.V., inzh.; NAUMOV, V.I., inzh.; BRODYAGIN, G.N., inzh.

Unit for welding under flux of hydraulic servo-mechanism cylinders. Svar.proizv. no.4:37-38 Ap '64.

(MIRA 18:4)

1. Ural'skiy avtomobil'nyy zavod.

BRODYAGIN, V.G.

Automatic control of the pneumatic distributor of fibrous materials. Mekh. i avtom. proizv. 19 no.7:11-13 Jl '65.
(MIRA 18:9)

IL'INA, K.A.. Prinimali uchastiye: BUSLAYEV, V.G., starshiy inzhener; KOZLOV, V.F., ispoln. obyazannosti inzhenera; YESIPOVA, O.V., starshiy tekhnik; BRODYANSKAYA, Ye.A., tekhnik. YAKOBSON, M.O., prof., doktor tekhn.nauk, red.; ALEKSEYEVA, T.V., tekhn.red.

[Standard technological processes in the manufacture of medium size machine parts; instructional materials] Tipovye tekhnologicheskie protsessy obrabotki korpusnykh detalei srednikh razmerov; rukovodiashchie materialy. Pod red. M.O.IAkobsona. Moskva, TSentr.biuro tekhn.informatsii, 1958. 218 p. (MIRA 12:7)

1. Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.
(Machinery industry)

SOKOLOVA, A.A.; BURMISTROVA, Ye.M.; YALYNNAYA, P.I.; BRODYANSKAYA, Ye.I.; SHIRYAYEVA, K.K.; LEONOVA, V.F.; KOTEL'NIKOVA, Z.V.

Treatment of pericementitis in one visit. Stomatologiia 39 no.1: 15-17 Ja-F '60. (MIRA 14:11)

1. Iz TSentral'noy polikliniki Ministerstva vnutrennikh del SSSR (nachal'nik M.D. Kormilitsyn).

(GUMS--DISEASES)

BRODYANSKIY, A.S.; KLIGMAN, I.B.

Producing prefabricated reinforced concrete parts at the building site. Mekh.trud.rab. 8 no.7:11-15 O-N '54.(MLRA 8:1)

1. Upravlyayushchiy trestom TSentrostankostroy (for Brodyanskiy)
2. Nachal'nik proizvodstvenno-tekhnicheskogo otdela tresta (for Kligman).

(Precast concrete construction)

BRODYANSKIY, B.A., inzh.

Using lime in pavement construction in the Virgin Territory. Avt.dor. 28 no.6:13-14 Je '65. (MIRA 18:8)

BRODYANSKIY, B.A., inzh.; RYABOVOL, I.M., inzh.

Building roads in the virgin territories of the Golodnaya Steppe. Avt.dor. 24 no.5:5-6 My '61. (MIRA 14:6)
(Golodnaya Steppe--Road construction)

BRODYANSKIY, Isor Khaimovich; REYKHERT, L.A., vedushchiy red.; GENNAD'YEVA, I.M., tekhn.red.

[Marking of welded shaped sections of pipelines; new table-graphic method] Razmetka svarnykh fasonnykh chastei truboprovodov; novyi tablichno-graficheskii metod. Leningrad, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, Leningr. otd-nie, 1961. 230 p. (MIRA 14:6)
(Pipelines)

BRODYANSKIY, Isor Khaimovich; REYKHERT, L.A., ved. red.; SAFRONOVA, I.M., tekhn. red.

[New tabular graphic method of laying out welded fittings for pipelines] Razmetka svarnykh fasonnykh chastei truboprovodov; novyi tablichno-graficheskii metod. Izd.2., perer. i dop. Leningrad, Gostoptekhizdat, 1963. 287 p. (MIRA 16:7)
(Pipe fittings)

BRODYANSKIY, Isor Khaimovich; REYKHERT, L.A., ved. red.; SAFRONOVA, I.M., tekhn. red.

[Marking pipeline welding fittings] Razmetka svarnykh fasonnykh chastei truboprovodov; novyi tablichno-graficheskii metod. Izd.2., perer. i dop. Leningrad, Gostoptekhizdat, 1963. 287 p. (MIRA 16:7)

(Pipe fittings)

BRODYANSKIY, Isor Khaumovich; FEDOTOVA, M.I., ved. red.

[Laying out gas pipeline fittings; new table and graph method] Razmetka fasonnykh chastei gazoprovodov; novyi tablichno-graficheskii metod. Izd.3., sokr. i perer. Leningrad, Nedra, 1965. 150 p. (MIRA 18:7)

BRODYANSKIY, M.O., inzh.; KRAYZ, B.N., inzh.

New field trailer. Stroi. i dor. mash. 9 no.3:5-6 Mr '64.
(MIRA 17:6)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000307010008-2"

BRODYANSKIY, V. M

USSR/Physics - Thermodynamics — Nov 52

"Thermodynamic Analysis of Irreversible Low-Temperature Processes. II. Analysis of Individual Irreversible Processes in Low-Temperature Technology," I. P. Ishkin and V. M. Brodyanskiy

"Zhur Tekh Fiz" Vol 22, No 11, pp 1783-1793

Authors derive formulas for computation of the coefficients of thermodynamic reversibility and astaticity, concepts of which were introduced in Part I. On the basis of these two new coefficients,

236T100

the authors make subject analysis and point out the possibility of a general method for analyzing all processes in refrigerator and thermal installations. Indebted to Prof A. A. Gukhman.

236T100

[illegible], V. M.

Dissertation: "The Continuous Production of Technically Pure Argon." Cand Tech Sci, Moscow Order of Lenin Chemicotechnological Institute imeni D. I. Mendeleyev, 23 Jun 54, (Vechernyaya Moskva, Moscow, 14 Jun 54)

SO: Sum 318, 23 Dec 1954

BRODYANSKIY, V.M.

USSR/Chemistry - Oxygen FD-1734

Card 1/1 : Pub. 50-10/18

Authors : Brodyanskiy, V. M., Cand Tech Sci; Skvortsova, O. V.

Title : Extension of the period of uninterrupted operation of regenerators at oxygen installations

Periodical : Khim. prom., No 1, 47-48, Jan-Feb 1955

Abstract : Propose a method whereby the solid carbon dioxide which clogs regenerators of liquid oxygen installations is removed by blowing with high-pressure air. Recommend that this method be used instead of the old procedure of heating the regenerators. One figure, one graph. One reference, USSR, since 1940.

TOROCHESHNIKOV, N.S.; BRODYANSKIY, V.M.; PORTNOY, R.I.; ZAKHAROV, V.G.

[redacted]

Copper in the elimination of oxygen from a mixture containing inert gases. Khim.prom.no.4:224-230 Je '56. (MLRA 9:10)
(Copper) (Oxygen) (Gases, Rare)

Brodyanskiy, V.M.

USSR/Chemical Technology - Chemical Products and Their Application. Preparation and Separation of Gases. H-8

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 2133

Author : Brodyanskiy V.M.
Inst : -

Title : Production of Crude Argon in the KT-1000 Air Separation Plant.

Orig Pub : Kislorod, 1957, No 1, 26-33

Abstract : The air separation plant KT-1000 processes 4700-5000 m^3 of air per hour, including 800-900 m^3/hour of high pressure air, and makes it possible to produce in the argon column a crude argon (Ar) containing 8-10% oxygen (O_2) and 6-8% nitrogen (N_2) with a degree of extraction of up to 60-65%. In order to do this the number of plates in the upper column of the oxygen apparatus, and in the argon column, must be at least 46. The gaseous argon fraction is withdrawn from 16-th or 17-th plate, counting from the bottom.

Card 1/2

BRODYANSKIY, V.M., kandidat tekhnicheskikh nauk.

New techniques for purifying crude argon from oxygen. Kislorod 10 no.2:45 '57. (MIRA 10:9)

(Argon)

BRODYANSKIY, V. M.

BRODYANSKIY, V.M., kand. tekhn. nauk.

Removal of oxygen and nitrogen from argon. Kislorod 10.no.3:27-33 '57. (MLRA 10:11)
(Argon) (Oxygen) (Nitrogen)

STOLPER, M.B., inzh.; KATIN, N.F., inzh.; BRODYANSKIY, V.M., kand. tekhn. nauk.

Answers to readers. Kislorod 10 no.5:44-45 '57. (MIRA 11:4)
(Gases)

AUTHOR: Brodyanskiy, V. M., Candidate of Technical Sciences SOV/67-58-4-19/29

TITLE: Reply to Readers (2) (Otvety chitatelyam)

PERIODICAL: Kislorod, 1958, Nr 4, p 43 (USSR)

ABSTRACT: To Ibragimov and Munasypova of Begovat, Tashkentskaya Oblast'. Question: What conditions must be satisfied in order to warrant smooth operation of oxygen apparatus during the heat of summer in southern regions ? Answer: The power output of the compressor 2R-3/220 at temperatures of up to + 40° can, if necessary, be reduced to 90% of its normal output. The same output can be maintained by the following measures: 1.) Increase of the density of the air to be sucked in, e.g. by means of an additional air blast of the I. stage or by air cooling by means of an additional cooling device. In the former case the blowing plant RGN-427 can be used. 2.) By the increase of the output per volume of the compressor, which can be attained by an increase of the numbers of revolutions it performs. It was found in practice that an increase of the number of revs. by 10-15% cannot lead to a premature wearing-out of the apparatus. The supply of cooling water for the

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compressor is of great importance. It is advisable in any case to mount additional nitrogen-water-air coolers. Drawing are available from VNIIKIMash.

1. Oxygen equipment—Operation 2. Oxygen equipment—Temperature factors 3. Oxygen equipment—Performance

SOV/24-58-5-7/31

AUTHORS: Brodyanskiy, V. M. and Ishkin, I. P. (Moscow)

TITLE: Thermodynamic Analysis of Irreversible Processes in Refrigerating Plants (Termodinamicheskiy analiz neobratimykh protsessov v kholodil'nykh ustanovkakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 40-45 (USSR)

ABSTRACT: Losses due to irreversibility in refrigerating plants are normally analysed by comparison of actual cycles with the Carnot cycle. Assessment of the thermodynamic efficiency of the cycle demands complicated constructions. A simple graphical method of determining the thermodynamic coefficients of various cooling cycles is outlined which is based on earlier work of the authors. Schematic diagrams outline three systems:

1. An air compressor and air expansion turbine cycle.
2. A conventional vapour compression and expansion valve system.
3. An absorption system.

Under each diagram is a linear representation of the heat and work quantities introduced and taken out of the cycle by the individual elements of the cycle. Heat or

work put into the system at each unit is represented by an appropriate length of line running from left to right, and heat or work taken out of the system by lines running from right to left immediately below the input lines. For simplification insulation losses are ignored. This linear representation of heat or work input and output at the various units of the system reappears as the central abscissa of a coordinate plot of energy quantities, of which, Fig.4, p.42, is typical; it gives the $Q - K_t$ diagram for an air expansion cooling system. The ordinate in the diagram is a quantity $K_t = 1 - T_o/T$ where T_o is the temperature of the medium surrounding the system and T is the temperature of the working substance at different points in the cycle and virtual temperature in relation to work. When $K_t = 1$, $T = \infty$ when $K_t = 0$, $T = 293^\circ K$ (i.e. T_o) and when $T = 0^\circ K$, $K_t = -\infty$ (corresponding to an infinite amount of work). In Fig.4 the large rectangular area bounded by $K_t = 1$ at the top and L_1 on the abscissa is proportional to

Thermodynamic Analysis of Irreversible Processes in Refrigerating Plants

the amount of energy put in by the compressor. The area bound by the curve below the abscissa and the heat quantity Q_4 is proportional to the energy entering the system through the evaporator (i.e. the heat taken out of the body being cooled). These areas are considered as positive. The smaller rectangular area bounded by $K_t = 1$ at the top and L_2 on the abscissa is proportional to the energy expended in the expansion turbine, and the fourth area bounded by the curve above the abscissa and the heat quantity Q_3 is proportional to the energy taken out of the system by the cooler (i.e. a heat exchanger between the compressor and the expansion turbine). These two latter areas are considered as negative. The difference between the positive areas and the negative areas is proportional to the "external" loss due to irreversibility in the cycle. The ratio between the negative quantities and the positive quantities gives a "coefficient of thermodynamic reversibility" for the actual cycle. The full lines and the dotted lines in the diagram indicate the temperature level of the working substance, and that of the cooling medium (in the case of the cooler curve) or that of the body being cooled (in the case of the evaporator curve). The shaded area between the full and dotted lines represents an "external" irreversible loss in the system through imperfect heat transfer. The ratio of the area below the abscissa, representing the heat energy entering the system at the evaporator (i.e. heat taken out of the cooled body), to the area representing work energy put into the system by the compressor, gives the so-called "coefficient of thermodynamic reversibility of cooling". The advantage of this method of representation is that it enables direct evaluation to be made of these "coefficients of thermodynamic reversibility". The usual T - Q diagram gives areas whose algebraic sum is always equal to zero. The coefficients obtained by this method are an immediate measure of the efficiency of the cooling cycle. Further diagrams are given which detail the losses due to "external" irreversibility in the evaporator element of the cooling cycle. These are plotted on a similar co-ordinate system for various conditions of heat exchange, cross-flow, counterflow, etc. Minimum loss occurs where the cooled body changes

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Thermodynamic Analysis of Irreversible Processes in Refrigerating Plants

its temperature, spatially, at the same rate as the working substance. The analysis concludes with observations on "internal" irreversibility due to the "energy mass" of the various elements of the cycle. (cf. thermal mass and inertia). Attention is drawn to the importance of attaining good efficiencies in the units where the "energy mass" is high. The authors refer to "B - I" diagrams given in an earlier paper (Ref 8). These give the necessary functions for determining the "energy mass" more conveniently than the conventional entropy diagrams.
There are 5 figures and 9 references, 6 of which are Soviet, 2 English, 1 German.

SUBMITTED: December 17, 1956

Card 5/5

5(1) SOV/67-58-6-14/22

AUTHOR: Brodyanskiy, V. M., Candidate of Technical Sciences

TITLE: At the Moscow Power Engineering Institute (V Moskovskom energeticheskom institute)

PERIODICAL: Kislorod, 1958, Nr 6, pp 39 - 39 (USSR)

ABSTRACT: The importance of power engineering problems in oxygen production has steadily risen with the expansion of oxygen use in many industrial branches. Such are thermodynamic problems of air-fractionating apparatus, selection and control of the drive of turbocompressors and the adjustment of oxygen plants to the other power engineering enterprises. These problems are dealt with and investigated in scientific papers by the Moscow Power Engineering Institute , Kafedra teplo-energosnabzheniya promyshlennykh predpriyatiy (TEPP) (Chair of Thermal Power Supply of Industrial Enterprises). Results obtained have shown that on the application of secondary power sources the power consumption for air compression in turbocompressors can be diminished by 10-15%. In conjunction with the Chelyabinsk Metallurgical Factory a system was worked out for drying oxygen through freezing. The study

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At the Moscow Power Engineering Institute SOV/67-58-6-14/22

of a gas-turbine drive for turbocompressors has been taken up. In addition, elaborations of a new scheme for the fractionation of gas mixtures at normal temperatures are now in progress.

Card 2/2

57-28-6-17/34

AUTHORS: Torocheshnikov, N. S., Leytes, I. L., Brodyanskiy, V. M.

TITLE: Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube (Issledovaniye effekta temperaturnogo razdeleniya vozdukha v pryamotochnoy vikhrevoy trube)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6, pp. 1229 - 1236 (USSR)

ABSTRACT: The effect produced by a turbulent temperature subdivision of gases, which was discovered by Ranque (Reference 1), usually takes place in the counterflow turbulence tube (figure 1a). The effect of the turbulent subdivision of gases caused considerable interest among research workers, both on account of its apparently paradoxical character and because of the possibility of applying it in refrigeration technology. Cooling of the gas in the turbulence tube is considerably more intense than in the case of the chocking effect of the flow. In the course of the present work the effect produced by the direct-flow turbulence tube was studied, and, at the same time, the hypothesis

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Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube 57-28-6-17/34

of turbulence variation was checked. In the course of experiments carried out with a direct-flow tube the dependence of the cooling effect on the point where the cold fraction is taken off along the length of the tube, was carefully studied. Also the influence exercised by the cold-air portion upon the process of temperature-subdivision was investigated. The results obtained in no way differ qualitatively from the indices of the counterflow tube, which change according to the same dependences. Although the experiments were carried out under the same conditions, it nevertheless remained unexplained by what the decrease of efficacy in the direct-flow tube as compared with that in the counterflow tube was caused. It turned out that the direct-flow tube is, in principle, of unfavorable construction. As is shown (figure 4) the efficacy of the direct-flow construction is greater in the case of an increase of from 1 to $3 \div 4$ than that of the counterflow tube, conditions otherwise being the same. The results obtained by these two types of tubes are shown (table 2). Constructional inter-

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Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube 57-28-6-17/34

relations must be found experimentally for each type of tube. The same is the case also with the interrelation of air consumption. The authors also calculated the thermodynamical efficacy of counterflow turbulence tubes for different μ. All existing hypotheses concerning the nature of the turbulence effect agree that its amount depends basically upon the velocity with which the gas is discharged from the ejector nozzle into the tube. Higher pressure before the nozzle leads to a certain increase of the velocity with which the gas is discharged from the nozzle. Nevertheless the increase of velocity in the supersonic range is not proportional to pressure but it lags behind. Therefore, if pressure increases, the greater part of the gas pressure is dealt with during the throttling process without causing a corresponding acceleration of the gas current. The authors thank N. I. Stolyarov for his aid in constructing and producing the experimental plant. There are 5 figures, 2 tables and 12 references, 7 of which are Soviet.

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Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube 57-28-6-17/34

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut (Moscow Chemical-Technological Institute)

SUBMITTED: July 1, 1957

1. Turbulent flow—Theory 2. Gases—Testing equipment 3. Gases—Pressure 4. Gases—Temperature factors

Card 4/4

"The Method of Thermodynamic Analysis of Low Temperature Rectification of Binary Mixtures."

Report submitted for the 10th Intl. Refrigeration Congress, Copenhagen, 19 August - 2 September 1959.

MEYERZON, Frina Isaakovna; BRODYANSKIY, V.M., red.; KISELEVA, T.I., red.izd-va; ISLENT'YEVA, P.G., tekhn.red.

[Starting up and adjusting oxygen units] Pusk i naladka kislorodnykh ustanovok. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 42 p. (MIRA 12:2)
(Oxygen)

BRODYANSKIY, V.M., kand. tekhn. nauk

Power losses in contemporary oxygen installations. Izv. vys. ucheb. zav.; energ. 2 no.7:87-96 Jl '59. (MIRA 13:1)

1. Moskovskiy ordena Lenina energeticheskiy institut.
(Oxygen)

AUTHORS: Consultants: Butkevich, K. S., Engineer, SOV/67-59-3-24/27
Brodyanskiy, V. M., Candidate of Technical Sciences,
Divinskiy, T. Z., Engineer

TITLE: Answers to the Readers (Otvety chitatelyam)

PERIODICAL: Kislorod, 1959, Nr 3, p 53 (USSR)

ABSTRACT: Comrade Astaf'yev from Stalino, Donbass, asked the following questions: 1) Is it possible to replace the bronze bushes of the cylinders of the I and the II stage of the oxygen compressor 2RK-1.5/220 by bushes of stainless steel? Answer: yes, by bushes of stainless steel of the type 1Kh18N9T.
2) Which kind of bronze must be used for the production of the above mentioned bushes and how can the load stability of the bronze bush be increased? Answer: stability may be increased by chromium plating. In this case the type of the bronze is not important, also lithium-silicon-nickel of the type KL80-3L may be used. (K. S. Butkevich gave the answers).
Comrade Sandrov from the Katav-Ivanovsk, Chelyabinsk Oblast', asked the questions: 1) Is it possible to apply a filter with a back-pressure valve to a tube which conducts the oxygen

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which has penetrated through the stuffing box of the pump for liquid oxygen into the condenser? Yes, this arrangement would be very useful, only the valve must be applied behind the filter in order to prevent its pollution. 2) Must a unit of apparatus be inspected by the Gosgortekhnadzor after a carried out modification? Answer: no, this is not necessary.
(V. M. Brodyanskiy gave the answers).
Comrade Reznikov asked the question: May the supply of an enterprise with liquid oxygen be organized with a monthly consumption of 30,000 normal-m^3 of gaseous oxygen? Which device may be used for the transportation and the gasification of liquid oxygen and where may the plan for a gasification plant be obtained? Answer: works with so-called oxygen consumption may be supplied with liquid oxygen by means of automobile tanks of the type ST-1300 with a volume of 1300 l, which is sufficient to cover the 24 hours' demand, daily from a near oxygen plant. The apparatus of the type UGZhK-1 which was worked out by the Giprokislorod is recommended for the oxygen gasification for industrial purposes. More accurate data on this plant are given. The plan of this apparatus will be available in the Central Institute of Type Planning

Answers to the Readers SOV/67-59-3-24/27

(in Moscow, Spartakovskaya 2) at the beginning of the second half of every year.

Card 3/3

24 (8)

AUTHORS: Brodyanskiy, V. M., Candidate of Technical Sciences, Kupershmidt, A. Ye., Engineer SOV/67-59-4-4/19

TITLE: Graphical Method for the Computation of Temperatures in Heat Exchange Apparatuses at Variable Specific Heats

PERIODICAL: Kislorod, 1959, Nr 4, pp 23-27 (USSR)

ABSTRACT: In gas liquefaction- and fractionating plants operating on the countercurrent principle, the differences between the temperatures of the heat-emitting and of the heat-absorbent substance in the various parts of the system are conveniently calculable only if the specific heats of the two substances are constant. A variation of the specific heat of one or both substances undergoing a heat exchange process complicates the calculation of temperature differences to such an extent as to render it unusable for practical purposes owing to its duration. . The authors worked out a method which makes it possible to determine the temperature differences in question by a graphical procedure which is considerably simpler and quicker. The method is based on the application of the enthalpy - temperature diagram. There are 6 figures and 5 references, 4 of which are Soviet.

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5.1330 SOV/143-59-7-13/20

~~8(6)~~

AUTHOR: Brodyanskiy, V.M., Candidate of Technical Sciences

TITLE: Power Losses in Modern Oxygen Plants

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1959, Nr 7, pp 87-96 (USSR)

ABSTRACT: The causes of power losses in large, modern oxygen plants are investigated. Possibilities for a further reduction of the power consumption of oxygen plants are shown. About 30,000-35,000 kw are required for the motors driving the compressors of large, modern oxygen plants producing 50,000 cubic meters of oxygen per hour. In the future, this power may be increased to 75,000-100,000 kw for still larger plants. About 60-75% of the oxygen production costs are expenses for electric power. Consequently, the reduction of the power consumption of air decomposing plants is an important economical task. During the past 50 years, the amount of power required for producing 1 cubic meter of oxygen was reduced from 4-5 kw/h to 0.45-0.5 kw/h, chiefly by building larger plants. However, the theoretical amount of energy required for separating oxygen from nitrogen (0.056 kw/h per 1 cubic

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SOV/143-59-7-13/20

Power Losses in Modern Oxygen Plants

meter O_2) is still exceeded several times. This means that the thermodynamic efficiency of modern oxygen plants does not exceed 12-13%. The remaining 87-88% are lost in different phases of the technological process. Yet, the recovery of all of these losses is not feasible from the engineering viewpoint. For determining the possibilities of reducing power losses, the functions of a large, modern air decomposing plant are analyzed. A schematic diagram of such an installation is shown in fig.1. In modern air decomposing plants, the rectification of the air is performed in socalled rectification columns shown in fig.2, a and b. In 1932, Lakhman introduced essential improvements to the rectification process, but otherwise it remained unchanged since 1907 when it was suggested by Linde. The improvement of the efficiency of air decomposing plants was concentrated primarily on the cooling process. In this connection the Claude-Heilandt (Klod-Heylandt) process is mentioned resulting in an efficiency increase to 28-29%. Academician L.P. Kapitsa introduced the turbo-expansion process, increasing the efficiency to 26-28%. The possibility of

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Power Losses in Modern Oxygen Plants

employing turbines is an essential advantage of the Kapitsa process. In fig.3, the processes of Linde, Claude-Heilandt and Kapitsa are compared. Based on the utilization of the described combination of the low-pressure cooling process and the double rectification, a plan of a large, modern air decomposing installation was developed, which is shown in fig.4. The results of a thermodynamic analysis of such an installation are shown in table 1. The data were compiled by Engineer A.V. Martynov based on test data. The total losses amount to ~89% of the energy spent, ~41% are lost in the compressors and ~48% in the decomposing unit. The rectification column accounts for ~25% of the losses in the decomposing unit. These losses are connected with those in the supercooler and in the throttle valves (5.7%) thus the total amounts to 31% of the losses in the entire plant of 60% of the losses in the decomposing unit. The regenerators take second place causing 25% of the losses in the decomposing unit (8.7% for the nitrogen regenerators and 3.1% for the oxygen regenerators). The losses in the other units are relatively small. Based

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Power Losses in Modern Oxygen Plants

on this analysis, recommendations are given for the improvement of the decomposing unit and for increasing the compressor efficiency. Since the oxygen plant of a metallurgical plant has an annual power consumption of four to five million kw/h, it is obvious that the development of more efficient air decomposing installations is of great importance. In his conclusions the author points out that the efficiency of the best air decomposing plants does not exceed 10-12%, while the efficiency of the decomposing unit is not higher than 20%. The thermodynamic analysis shows the following distribution of losses in modern low-pressure air decomposing plants: Compressor ~45%, separation unit ~55%. Losses in the compressor may be reduced by 10-15% by employing the best designs of centrifugal and axial compressors. Losses in the decomposing unit may not be reduced without modifications of the rectification system. The losses in low-pressure plants are of such a nature that they cannot be reduced without modifications of the rectification system and there are no essential reserves for a considerable reduction of losses. The efficiency of large

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Power Losses in Modern Oxygen Plants

air decomposing units may be increased to ~25% by replacing the double rectification columns by intermediate heat exchange columns with corresponding changes of the other units in a plant. Increasing the efficiency of the decomposing unit above 25% may be achieved only by designing more perfect plants with nonadiabatic rectification columns and effective cooling. This paper was presented at the inter-vuz conference on industrial power engineering on December 28, 1958. There are 4 diagrams, 1 table and 5 Soviet references.

ASSOCIATION: Moskovskiy ordena Lenina energeticheskiy institut (Moscow Lenin Order Institute of Power Engineering)

SUBMITTED: March 23, 1959

Card 5/5

BRODYANSKIY, V.M., kand.tekhn.nauk; KUPERSHMIDT, A.Ye, inzh.

Graphic method for calculating temperatures in heat exchangers at variable heat capacities. Kislorod 12 no.4: 23-27 '59. (MIRA 12:12)
(Heat exchangers) (Heat--Transmission)

BRODYANSKIY, V.M., kand. tekhn. nauk

A.A. Romaniuk's book "Technician in charge of oxygen apparatus". Kislorod 12 no.5:61-63 '59. (MIRA 13:2)
(Oxygen)

PHASE I BOOK EXPLOITATION SOV/5039

Brodyanskiy, Viktor Mikhaylovich, and Frina Isaakovna Meyerzon

Proizvodstvo kisloroda (Production of Oxygen) Moscow, Metallurgizdat, 1960. 469 p. Errata slip inserted. 5,200 copies printed.

Ed.: I. P. Ishkin; Ed. of Publishing House: M. R. Lanovskaya; Tech. Ed.: Ye. B. Vaynshteyn.

PURPOSE: This book is intended for technical personnel at oxygen departments of metallurgical and other plants. It may also be used by students specializing in oxygen production at schools of higher education and tekhnikums.

COVERAGE: The book deals with production methods of gaseous oxygen from air. It describes the physical principles of air purification, liquefaction, and separation processes, including the schemes and designs of oxygen units used in the metallurgical, chemical, and gas industries. The material contains data on the operation of various oxygen units, the layout and organization of oxygen departments at metallurgical plants, and the

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equipment for transporting and storing of oxygen. Problems of control of the industrial processes, automatization of the apparatus and equipment, and accident prevention during work with oxygen are discussed. Specifications for various oxygen units and insulating materials, and diagrams [entropy vs. temperature, enthalpy vs. temperature, enthalpy vs. efficiency for air, entropy vs. temperature for oxygen, and molecular enthalpy vs. temperature for N_2-O_2 mixture] are contained in the appendixes. Noted for their contribution to the Soviet development of oxygen production are: Professor S. Ya. Gersh, K. S. Butkevich, I. P. Ishkin, D. L. Glizmanenko, K. F. Pavlov, M. P. Malkov, N. I. Gel'perin, and Academicians I. P. Bardin and P. L. Kapitsa. The role of the VNIIKIMASh (All-Union Scientific Research Institute for the Planning and

Production of Oxygen

I. R. Zusman, and A. V. Martynov. There are 93 references: 84 Soviet, 4 English, 4 German, and 1 French.

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APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000307010008-2"

14(1)

S/025/60/000/03/006/045
D048/D002

AUTHOR: Brodyanskiy, V.M., Cand. Technical Sci.

TITLE: Cold is Working

PERIODICAL: Nauka i zhizn', 1960, Nr 3, pp 17 - 23 (USSR)

ABSTRACT: The author deals with the technique of low temperatures in general and describes in detail the manufacture of oxygen and nitrogen by fractionating liquified air. Because of its importance for all branches of industry, this technique will be further developed during the Seven Year Plan. Within the 1959 - 65 period, more than 50 blast furnaces and a large number of open-hearth furnaces and heating furnaces will be converted to a new system using oxygen and natural gas. By 1965, up to 40% of cast iron and 70% of steel will be smelted with the aid of oxygen. An additional production of about 3 million tons of cast iron and 8 million tons of steel will result

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Cold is Working

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from the introduction of the oxygen blast method into units. The use of oxygen will save millions of tons of fuel and reduce the capital investments in metallurgy by billions of rubles. A further development of the production of nitrogen from the air will increase the output of fertilizers and the agricultural production. By the end of the Seven Year Plan, the chemical industry will produce about 30 to 31 million tons of mineral fertilizers; of which a considerable part will contain nitrogen obtained from the air. The author gives historical data on the development of obtaining low temperatures from snow and saltpeter up to solid helium. He describes in detail the creation of low temperatures in the widely used steam and gas compressor cooling plants. He explains the work of a rectifying column as shown in a colored diagram on page 2 of centerfold. For liquifying the air and keeping it at low temperatures, an air-cooling compressor plant with a "turbodetander"

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D048/D002

Cold is Working

23

(Russian transliteration), a special turbine unit for expanding compressed air, is being used, Due to the high efficiency of the turbine, developed by Academician P.L. Kapitza, only 20-25% of the compressed air must pass through the cooling plant to guarantee the work of the unit. All processes connected with the separation of the air take place at low temperatures. At present, more than 16 various types of systems for obtaining oxygen and nitrogen from the air are manufactured in the Soviet Union. The largest of them, the "BR-1", gives up to 360,000 cu m (or 500 tons) of oxygen per 24 hours. However, even such large systems are insufficient for concentration of furnace blasts at large metallurgical plants. In the new "BR-2" system (now being projected) the output will be doubled. At large air-separation systems, inert gases such as argon,

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Cold is Working

krypton, xenon and neon are extracted from the air and purified simultaneously with oxygen and nitrogen. With the exception of argon (0.93%), their content in the air is insignificant: krypton - 0.0001%, xenon - 0.000008 and neon - 0.0016%. To meet the requirements of industry in these gases, only large plants with an output of tenthousands of cu m air per hour are lucrative. The present cooling plants and units which are working with the use of low temperatures are remote controlled and partially automated. There are 4 diagrams and 1 on page 2 of centerfold.

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88012

S/170/60/003/012/009/015
B019/B056

11.9200

AUTHORS: Brodyanskiy, V. M., Leytes, I. L.

TITLE: The Temperature Gradient in a Ranque-Hilsch Tube

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 12, pp. 72-77

TEXT: The vortex tube schematically shown in Fig. 1a has first been described by Hilsch and Ranque. In this tube a helical flow is produced through a tangentially applied nozzle, which moves in the direction of choke 5. A part of this helical flow changes its direction and leaves the tube through diaphragm 2 with reduced temperature and enters cooling tube 4. Some papers dealing with the cooling effect of this tube are discussed at length. It is stated that, owing to the complicated events, no exact explanation is possible. On the basis of experimental data, a formula is then suggested for the technical calculation of the cooling effect:

$\Delta T_{cool} = (U_e^2 - U_i^2)A/2gc_p$ (1). Here U_e and U_i are the mean outer and inner flow rates passing through the diaphragm. The influence

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The Temperature Gradient in a Ranque-Hilsch Tube

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B019/B056

exerted by the initial temperature, by the diaphragm-diameter, and by the part played by pressure in the nozzle is investigated, and several examples of calculations are discussed. The authors thank Professor A. A. Gukhman and Professor Ye. Ya. Sokolov for valuable advice. There are 2 figures, 1 table, and 18 references: 9 Soviet.

ASSOCIATION: Energeticheskiy institut, g. Moskva (Institute of Power Engineering, Moscow)

SUBMITTED: July 13, 1960

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S/170/60/003/012/009/015
B019/B056

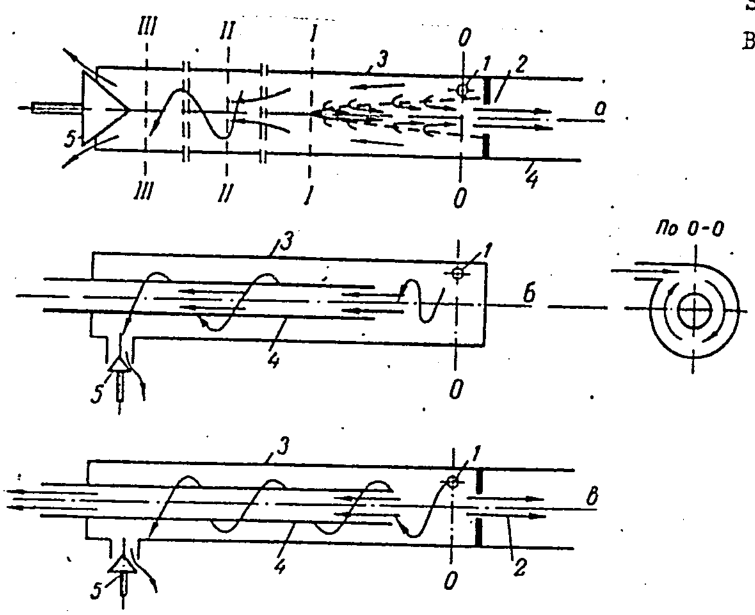

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Рис. 1. Схемы вихревых труб:

BRODYANSKIY, V.M., kand.tekhn.nauk

Concerning an ideal gas cooling cycle. Izv.vys.ucheb.zav.; energ. 4 no.4:98-102 Ap '61. (MIRA 14:5)

1. Moskovskiy ordena Lenina energeticheskiy institut.
(Refrigeration and refrigerating machinery)

36860
S/170/62/005/005/005/015
B104/B102

5.4190

AUTHORS: Brodyanskiy, V. M., Leytes, I. L.

TITLE: The dependence of the Rank effect on properties of real gases

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 5, 1962, 38-41

TEXT: In a previous paper (IFZh, no. 12, 72, 1960) the authors derived a formula for the cooling in a vortex tube: $\Delta T = (u_c^2 - u_\tau^2 - u_a^2)A/2gc_p$. The mean velocity u_c of the outflow from the nozzle, the mean axial velocity u_a of the internal flow and the mean tangential velocity u_τ depend on pressure and temperature outside the nozzle, the proportion of cold gas and the tube parameters. Data obtained by K. Elser et al. (Z. f. Naturforschung, 6a, 25, 1931) in regard to air, H_2, Ar, CH_4 and CO_2 are compared with calculations based on the above formula which well represents the dependence of the Rank effect on the gas properties (maximum divergence 10%). The thermal effect of a real gas is calculated

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from the modified formula $\Delta T_{cool} = (\Delta T_{ad} + \Delta T_{dr}) - (\Delta T_{a} + \Delta T_{\tau})$, where ΔT_{ad} is the temperature decrease accompanying adiabatic expansion from pressure p_1 to p_2, ΔT_{dr} is the temperature decrease when pressure is reduced from p_2 to p_{cool}, ΔT_{a} and ΔT_{τ} are the temperature decreases caused when a cold stream having the velocities u_a and u_{τ} is slowed down. Results obtained by means of this formula agree well with the experimental data. There is 1 table.

ASSOCIATION: Energeticheskiy institut, Moscow
(Institute of Power Engineering, Moscow)

SUBMITTED: December 12, 1961

BRODYANSKIY, V.M., kand.tekhn.nauk; MEDOVAR, L.Ye., inzh.

Using the principle of "exergy" for testing the refrigerating equipment. Khol. tekh. 38 no.5:41-47 S-O '61. (MIRA 15:1)

1. Moskovskiy energeticheskiy institut (for Brodyanskiy).
2. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti imeni A.I.Mikoyana (for Medovar).
(Refrigeration and refrigerating machinery)

BRODYANSKIY, V.M.; LEYTES, I.L.

Relationship between the value of the Rank effect and the properties of real gases. Inzh.-fiz.zhur. no.5:38-41 My '62. (MIRA 15:7)

1. Energeticheskiy institut, Moskva.

(Gas flow)
(Turbulence)

BRODYANSKIY, V.M., kand.tekhn.nauk; MARTYNOV, A.V., inzh.

Method for the thermodynamic analysis of losses in a steam ejector cooling system. Izv.vys.ucheb.zav.; energ. 5 no.5:76-83 My '62. (MIRA 15:5)

1. Moskovskiy ordena Lenina energeticheskiy institut.
(Refrigeration and refrigerating machinery)

BRODYANSKIY, V.M., kand.tekhn.nauk; BAZHENOV, M.I., inzh.; VOLKOV, P.V., inzh.; KRUSHINSKIY, M.M., inzh.; RERIKH, V.K., inzh.

Drying of oxygen by cooling. Prom.energ. 17 no.4:21-25 Ap '62. (MIRA 15:4)

(Oxygen—Drying)

BRODYANSKIY, V.M., kand.tekhn.nauk; MARTYNOV, A.V., inzh.

Thermodynamic analysis of losses in a steam-ejection refrigeration system. Izv.vys.ucheb.zav.; energ. 5 no.11:74-83 N '62. (MIRA 15:12)

1. Moskovskiy ordena Lenina energeticheskiy institut.
(Refrigeration and refrigerating machinery)

L 10692-63

ACCESSION NR: AP3001612 S/0064/63/000/004/0032/0036

44

AUTHOR: Brodyanskiy, V. M.; Leytes, I. L.; Marty*nov, A. V.; Semenov, V. P.; Estrin, S. M.

TITLE: Application of vortex effect in chemical engineering

SOURCE: Khimicheskaya promyshlennost', no. 4, 1963, 32-36

TOPIC TAGS: vortex effect, vortex tube

ABSTRACT: A survey of what has been done up to now with respect to the application of the vortex effect in chemical engineering. Authors define vortex effect as the division of gas into cold and hot flows during its expansion in the vortex tube. Various types of vortex tubes are discussed. Authors made a number of tests wherein they checked the characteristics of a vortex tube at different pressures under production-line conditions. This tube had a 40 mm diameter, two right-angled nozzles with spiral inlets. Interchangeable diaphragms of 18, 20, and 22 mm were used. The gas temperature at the inlet was 34-40C. Gas expenditure was 840-460 normal cubic meters per hour. The results are summarized in graphs which are discussed in detail. Treatment is mathematical.

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L 17164-63 EPF(c)/EWT(l)/EPF(n)-2/EWP(q)/EWT(m)/BDS AFFTC/ASD/ SSD Pr-4/Pu-4 JD/JW

ACCESSION NR: AP3004292 S/0170/63/006/007/0036/0042

AUTHOR: Brodyanskiy, V. M.

TITLE: Thermodynamic analysis of gas-liquefaction processes

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 7, 1963, 36-42

TOPIC TAGS: gas-liquefaction process, ideal process, exergetic method, refrigerating cycle, heat transfer loss, hydrogen, neon, helium

ABSTRACT: The article examines the method of thermodynamic analysis of gas liquefaction processes based on the use of "exergy" and gives a classification of the processes and the bases of the method for separate determination of losses in refrigerating processes in the liquefiable part of a gas and with their thermal interaction. Until recently the industrial application of these processes has embraced temperatures down to about 70-90K, sufficient to liquefy air and its components, as well as methane, fluorine and the oxides of carbon.

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L 17164-63

ACCESSION NR: AP3004292

Now the liquefaction of such gases as hydrogen, neon and helium, requiring extension of the area of effective temperatures to 4-20K, is also being developed on an industrial scale. The determination of the losses from irreversibility does not suffice for an allaround analysis of the processes. A general methodology required for finding the laws governing the efficiency of these processes and the factors affecting it may be based on the "exergetic" method worked out for analyzing low-temperature processes and refrigerating cycles. The article discusses the following gas-liquefaction processes: 1) ideal processes, wherein all the work expended goes to increase the exergy (efficiency) of the gas; hence the minimum work needed to liquefy 1 kg of gas is equal to the difference in its exergies at the final and initial points regardless of the course of the process; 2) industrial processes, involving the one-time use of gas compression before liquefaction and a supplementary refrigerating process. The article also discusses 1) losses in the compressible part of a gas when a) compressed in a compressor, b) refrigerated in a heat exchanger, c) throttled, and d) condensed; 2) losses in the refrigerating

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ACCESSION NR: AP3004292

process; 3) losses in heat transfer from compressible gas in cooling. Five graphs show ideal processes, dependence of loss of work on pressure for air, nitrogen, helium and hydrogen, and losses in heat exchange. Orig. has 5 graphs and one diagram of liquefaction process.

ASSOCIATION: Energeticheskiy institut, Moscow (Energy Institute)

SUBMITTED: 10Jul62 DATE ACQ: 08Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 012 OTHER: 006

Card 3/3

BRODYANSKIY, V.M.; LEYTES, I.L.; MARTYNOV, A.V.; SEMENOV, V.P.; ESTRIN, S.M.

Use of the vortex effect in chemical technology. Khim. prom. no.4:272-276 Ap '63. (MIRA 16:8)

BRODYANSKIY, V.M.; ISHKIN, I.P.

Thermodynamic analysis of processes of the liquefaction of gases. Inzh.-fiz.zhur. 6 no.10:19-26 O'63. (MIRA 16:11)

1. Energeticheskiy institut, Moskva.

BRODYANSKIY, V. M., kand. tekhn. nauk

Exegetic temperature scale. Izv. vys. ucheb. zav.; energ.7 no.5:65-72 My '64. (MIRA 17:7)

1. Moskovskiy ordena Lenina energeticheskiy institut.

BRODYANSKIY, V.M., kand. tekhn. nauk; GRACHEV, A.B., inzh.

Cooling of liquified gases by evacuating the vapor space. Trudy MEI no.48:97-102 '63. (MIRA 17:6)

MARTYNOV, A.V., inzh.; BRODYANSKIY, V.M., kand. tekhn. nauk

Separation of gas mixtures in a vortex tube. Trudy MEI no.48: 148-150 '63. (MIRA 17:6)

ACCESSION NR: AR4042226 S/0124/64/000/006/B047/B048

SOURCE: Ref. zh. Mekhanika, Abs. 6B288

AUTHOR: Marty*nov, A. V.; Brodyanskiy, V. M.

TITLE: The Rank-Hilsch effect during high gas pressures

CITED SOURCE: Tr. Konferentsiya po perspectivam razvitiya i vnedreniya kholodil'n. tekhn. v nar. kh-vo SSSR, 1962. M., Gostopgizdat, 1963, 229-233

TOPIC TAGS: gas pressure, vortex tube, gas throttling, Rank Hilsch effect

TRANSLATION: Theoretically investigates work of a vortex tube (vortex refrigerator) in the region of high gas pressures. Clarifies influence of the throtting effect on temperature characteristics of a vortex tube. Shows that with an initial pressure of up to 6 atm (abs) with accuracy sufficient for practical calculations it is possible to disregard influence of throttling of gas on the vortex effect. However with increase of initial pressure from a definite moment the influence of trottling becomes practically noticeable. Therefore for gases, having a positive

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ACCESSION NR: AR4042226

Joule-Thomson effect ($\alpha_i > 0$), the temperature effect with respect to a cold flow ($\Delta T_c = T_1 - T_c$) increases, and the temperature effect of a hot flow ($\Delta T_h = T_h - T_1$) decreases. Thus, for methane, with increase of initial pressure from 6 to 146 atm (abs), ΔT_c correspondingly increases from ~35° to ~60° (in the share of cold flow $\mu = 0.5$). Here ΔT_h simultaneously decreases from ~34° to 0°. Thus, with a value of μ smaller than a certain magnitude, the magnitude ΔT_h has a negative value, that is, the hot flow not only is not heated, but, to the contrary, is cooled. For gases having at normal temperature a negative Joule-Thomson effect (hydrogen, helium), throttling decreases the magnitude ΔT_c and increases ΔT_h. Assuming that with a subcritical and critical pressure drop expiration of gas from the nozzle of the vortex tube occurs with transonic or sonic speed, that distribution of tangential speeds of flow in the nozzle section is close to the law of revolution of a solid body, and that distribution of thermodynamic temperature in this section satisfies the law T = idem, the authors obtain a formula by which, with accuracy necessary for practical calculations, one can determine the magnitude of the temperature effect ΔT_c of a vortex tube

$$\Delta T_c = \Delta T_1 + \Delta T_t - \frac{A(U_\tau^2 + U_a^2)}{2gc_p}$$

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ACCESSION NR: AR4042226

where ΔT_1 is lowering of temperature with isentropic expansion of gas from initial pressure to p_k, ΔT_t is lowering of temperature due to further throttling to p_c; $\bar{U}_t$, $\bar{U}_a$ are, correspondingly, the mean values of tangential and axial speeds of cold flow. It is noted that values of the Rank-Hilsch temperature effect, obtained from this formula, sufficiently well coincide with experimental data both at low, and also at high gas pressures. There is conducted thermodynamic comparison of three processes of expansion of gas (throttling, expansion in vortex tube and expansion in a compressed gas machine). Shows that throttling in all cases is the least effective process. A vortex tube in efficiency is between the throttle and the compressed gas machine, it is 2.5 times as effective as the throttle. Notes that an essential advantage of vortex expansion before throttling is the fact that a vartex tube allows one to obtain, without application of machines, significant cooling of gases with a negative Joule-Thomson effect (hydrogen, helium). The greatest cooling of these gases can be reached with high initial pressures, using cascade expansion. Bibliography: 8 references.

SUB CODE: ME ENCL: 00

Card 3/3

BRODYANSKIY, V.M., kand. tekhn. nauk; MARTYNOV, A.V., inzh.

Temperature dependence of the Ranque-Hilsh effect. Teplcenergetika 11 no.6:76-78 Je '64. (MIRA 18:7)

1. Moskovskiy energeticheskiy institut.

ALEKSANDROVA, M.A.; ASINOVSKIY, E.I.; BALANDIN, V.V.; BRODYANSKIY, V.M., kand. tekhn. nauk; VAKHRAMEYEVA, Ye.A.; VERBA, M.I., kand. tekhn. nauk; VORONIN, T.A., kand. tekhn. nauk; GIRSHFEL'D, V.Ya., kand. tekhn. nauk; DEYCH, M.Ye., prof. doktor tekhn. nauk; IVIN, F.A.; LAPSHIN, M.I., kand. tekhn. nauk; LIPOV, Yu.M., kand. tekhn. nauk; LYUBARSKAYA, A.F.; MAKARENKO, I.D.; MIRIMOVA, V.M.; NEVLER, S.Ye.; ROZANOV, K.A., kand. tekhn. nauk; ROTACH, V.Ya., kand. tekhn. nauk; KHMEL'NITSKIY, R.Z., kand. tekhn. nauk; SHEVCHENKO, E.G.; BOGOMOLOV, B.A., red.; VAYNSHTEYN, K.N., spets. red.; LICHAK, S.K., spets. red.

[German-Russian heat engineering dictionary] Nemetsko-russkii teplotekhnicheskii slovar'. Moskva, Sovetskaia entsiklopediia, 1964. 512 p. (MIRA 18:1)

1. Moscow. Energeticheskiy institut. 2. Moskovskiy energeticheskiy institut (for all except Vaynshteyn, Lichak).

BRODYANSKIY, V.M., kand. tekhn. nauk, dotsent; GRACHEV, A.B., inzh.

Thermodynamic analysis of gas cooling units with displacers. Izv. vys. ucheb. zav.; energ. 8 no.7:74-79 Jl '65.

(MIRA 18:9)

1. Moskovskiy ordena Lenina energeticheskiy institut. Predstavlena kafedroy teploenergosnabzheniya promyshlennykh predpriyatiy.

L 37664-65 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(1) Pd-1

ACCESSION NR: AP5003328 S/0143/65/000/001/0115/0118

AUTHOR: Martynov, A. V. (Engineer); Brodyanskiy, V. M. (Candidate of technical sciences, Docent); Kurguzov, V. V.; Rvachev, L. I.

TITLE: Distribution of static pressure inside a cooled vortex tube

SOURCE: IVUZ. Energetika, no. 1, 1965, 115-118

TOPIC TAGS: vortex tube, cooled vortex tube

ABSTRACT: The pressure was measured at eight 0.3-mm-diameter holes in a 28-mm vortex tube which had a 5x9-mm nozzle admitting gas helixwise. The pressures were measured at the wall and in the axis of the stream. A pressure curve for various $\mu = G_c/G_1$, where G_c and G_1 are the quantities of cold and initial gas, respectively, is shown. It is found that the lowest pressure (and the highest gas velocity) occurs at the point of emergence of gas from the nozzle. The pressure increases as the stream turns, and then droops. The initial

Cord 1/2

L 37664-65

ACCESSION NR: AP5003328

pressures were 2.98, 3.95, and 4.95 bars. With constant expansion and diaphragm diameter (18 mm), the pressure was decreasing with m. Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power-Engineering Institute)

SUBMITTED: 24Feb64 ENCL: 00 SUB CODE: PR

NO REF SOV: 002 OTHER: 000

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