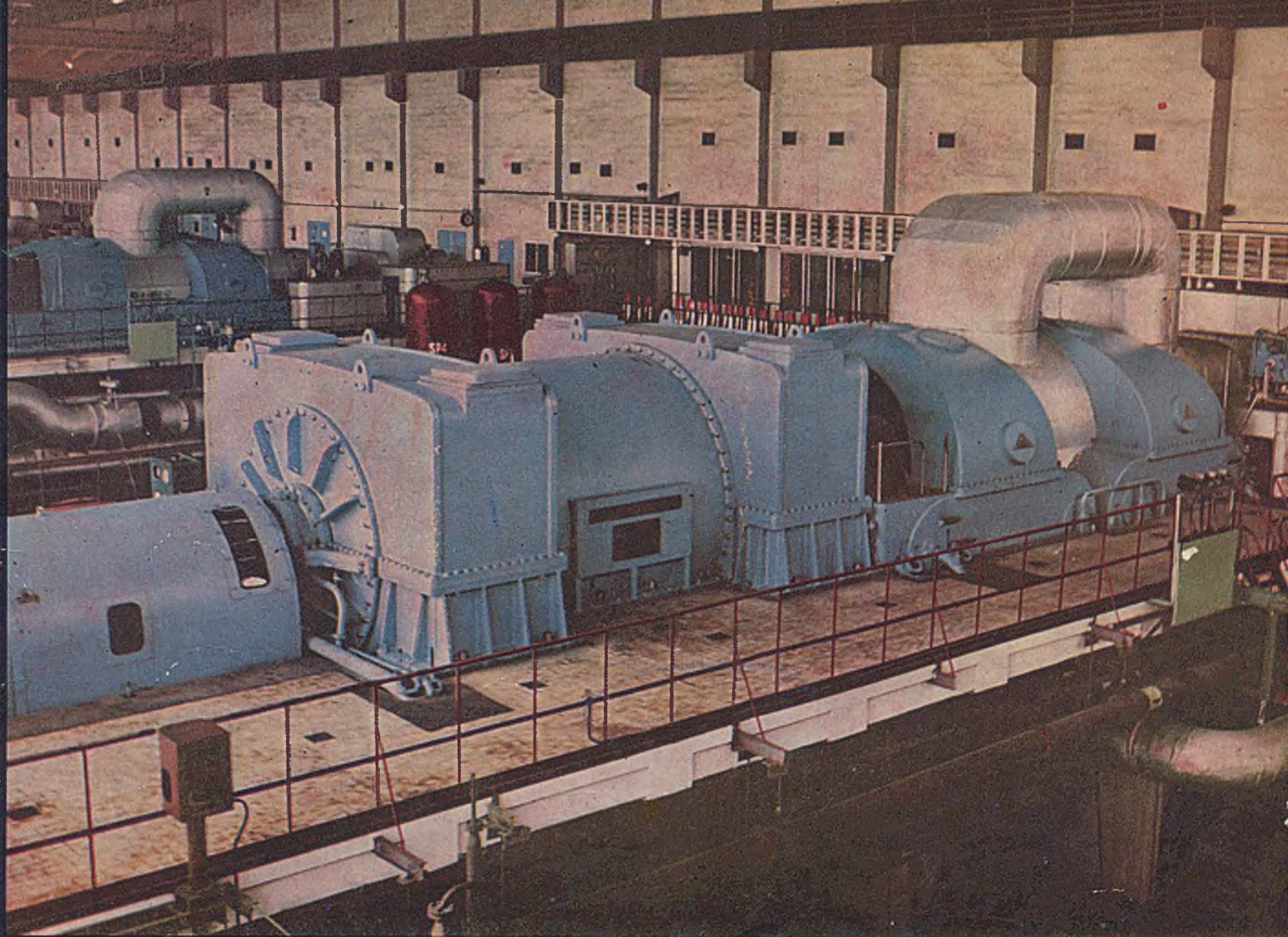


DoiMel

Elektrim



REFERENCE LISTS



"D O L M E L"

"DOLMEL — Dolnośląskie Zakłady Wytwórcze Maszyn Elektrycznych" — the sole manufacturers of large electrical machines in Poland, were set up in 1947. The development of the Factory was backed by intensive training of specialists, with a simultaneous enlarging of production range to include machines that hitherto had not been manufactured in this country. The mastering of modern machine production and especially of turbogenerators and traction machines was due, to a great extent, to the experience gained by the engineers, technicians and workers of our Plant at many leading foreign manufacturers, among others in the U.S.S.R. and the U.K.

The DOLMEL Works are the sole manufacturers in Poland of power and industrial turbogenerators, large a.c. and d.c. machines and traction machines.

In the course of nearly 15 years, the DOLMEL Works have passed a way of evolution from a 2 MW turbogenerator, built in 1953, to a 200 MW turbogenerator, built in 1967.

DOLMEL turbogenerators are manufactured basing on the Works' own design developments and also with the technical assistance from the „Elektrosiła” Works of the U.S.S.R. and under the British A.E.I. Company's licence for the manufacture of 120 MW turbogenerators.

The latest achievement is a new series of air-cooled turbogenerators in 0.5 MW to 40 MW output range. The turbogenerators in the output range up to 6 MW are 4-pole machines and the larger turbogenerators are 2-pole machines. All turbogenerators of this series may be made for 50 c.p.s. or 60 c.p.s. frequency and may be adapted for operation under all tropical climate conditions.

The turbogenerators of higher outputs are hydrogen-and water-hydrogen-cooled.

The DOLMEL Works manufacture also synchronous marine service alternators in the output range from 250 to 1600 kVA, 400 V, and from 500 to 900 r.p.m.—50 and 60 c.p.s.

In the field of induction and synchronous motors, a whole series of most modern constructions, intended for operation in electrical systems, in hard and brown coal mining, in chemical and steel milling plants a.s.o., has been developed and introduced into manufacture.

The 3-phase, slip-ring, induction colliery winder motors are produced of 400 to 1000 kW outputs in various r.p.m. ranges.

- The series "d" motors in the output range from 200 to 4000 kW, and above;
- the totally enclosed induction motors with tube-type cooling system from 320 up to 800 kW, 1000 r.p.m. The motors are intended for operation in moderate climate or may be adapted for operation under tropical climate conditions.

The DOLMEL Works manufacture synchronous and induction motors, designed as drives for pumps and rotary and piston compressors, in the output range from 400 to 7500 kW and from 230 to 3000 r.p.m. A great deal of motors for chemical industry are explosion-proof and in reinforced enclosure. The Factory manufactures also high-speed synchronous motors 3000 r.p.m. in the output range from 500 to 6000 kW. Motors of higher outputs and with parameters differing from catalogue are offered on individual inquiry.

In the field of d.c. machines our Works manufacture generators, colliery winder and steel milling drives, and moreover marine-service motors (such as propeller drives).

In the range of colliery winder machines our Works manufacture motors for single-rope winders (Koepe pulleys) — in the output range 1100 to 2400 kW—45 r.p.m. and for multi-rope tower-type winders — in the output range 2400 to 3400 kW and with appropriate speeds 90 to 70 r.p.m., with restricted transverse dimensions, which enables to lower the erection and mounting costs.

At present, a new series of motors for mine colliery winders is being developed, for 800 V supply voltage, intended for thyristor-type supply. D.C. steel mill motors of 830 to 3000 kW output and 600 to 40 r.p.m. range are manufactured entirely with laminated cores. The motors are adapted for rectifier-or thyristor-type supply.

In the range of traction motors the DOLMEL Works, in licence cooperation with English Electric, manufacture modern motors and auxiliary machines for universal electric locomotives.

The DOLMEL Works provide supervision of the erection of their machines at the Customers', and in the line of cooperation services the Works carry out machining of large elements on heavy lathes (machining length up to 14 m. and work-piece maximum diameter up to 1.5 m.) The weight of machined elements — up to 40 tn.

The DOLMEL Works regard it as their duty to keep on a close co-operation with many scientific centres, in particular, with the Electric Machinery Departments of Warsaw, the Silesian, Łódź and Gdańsk University Institutes; the Metallurgical and Mining Academy in Cracow; with the Electrical Engineering Institute, and especially, with its Electric Machines Department, Electrical Materials Department, Automation Department and Electric Traction Department; and in addition, with the Power Engineering Institute, Welding Institute, Paints and Lacquers Institute, and other outstanding scientific research establishments.

This wide association of our Plant with various Universities and nationally important institutes, gives us not only full priority but also permits the fast and systematic introduction of new constructional and technological solutions; and provides the opportunity to master very fast the new lines and problems in technical production conducive to constant improvement of our manufactured products.

The DOLMEL Works are provided with laboratories and testing stations, well equipped with the most modern apparatus and measuring instruments, and indeed, with modern machine-tool sets and production facilities.

The equipment of the Main Plant Laboratory includes:

- several complete measuring sets, for measuring and analysis of vibrations, enabling the determination of vibration amplitudes of 0.1μ — with a simultaneous analysis of harmonics,
- strain gauge apparatus with a level recorder and a switching-over facility for 36 measuring points, enabling to determine strains within machine parts and models,
- eight-loop oscillographs (with high sensitivity loops), enabling tests in transient state conditions, particularly useful for the description of machine starting-up condition characteristics and for the determination of turbogenerator parameters — on testing the resistance against surge short-circuits,
- d.c. and a.c. compensators of 0,05 class, serving for electrical measuring instruments calibration, for measurements of temperature distribution within machine parts, a.s.o.,
- all-purpose Siemens-Halske ferrometer, used for measurement of magnetic materials characteristics and properties,
- photomicrographic apparatus for testing of inner structure of metals and alloys,
- microhardness tester for measurement of particular metal crystals hardness,
- special measuring stations equipped with Shering type bridges and very high sensitivity Sullivan galvanometers — designed for testing insulating material properties,
- steeloscopes, spectrographs and other special instruments for chemical analysis of hardware materials,
- ultrasonic generators with variable frequency up to 3.5 Mc/s and isotopic X-ray units, enabling X-raying of up to 300 mm steel plates.

The DOLMEL Works have at their disposal three testing stations enabling careful testing of manufactured machines and devices.

The testing stations are well suited for undertaking all tests prescribed by technical specifications and Standards binding for machines manufactured in our Works, (PNE, PRS, GOST, VDE, B.S., Lloyd Register). Numerous testing stations, a considerable number of supply sources, and a relatively high power of machine-type sets, ensure for every of the existing inspection stations proper technical facilities and high inspection capacity.

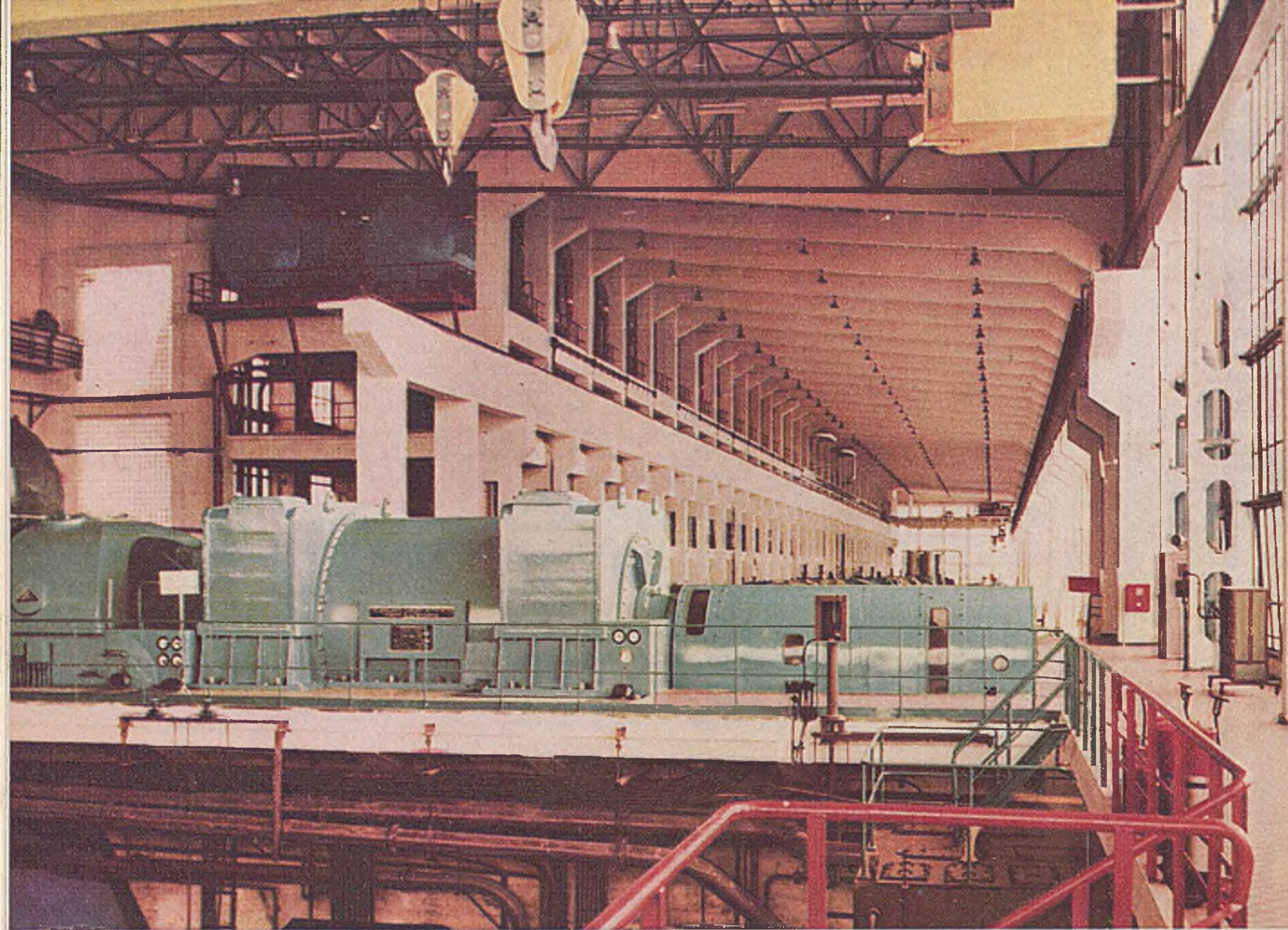
We possess also a special stand, rendering it possible to carry out overspeed tests of rotors of all turbogenerators and large electrical machines manufactured in our Works. These tests are performed at rotor rotational speed higher by 20 % than rated rotational speed of machines. On this stand also the dynamical balancing of rotors is carried out. With a view to the safety of the attending personnel — the aforementioned overspeed tests are carried out in a special reinforced concrete pit, covered with a 500-ton sliding-over slab.

The high production capacity of our Works their and all-round technological possibilities are a result, above all, of our modern machine tool sets, a considerable number of which are unique-type machines. The equipment includes among others:

- lathes with centre distance of up to 14,000 mm and maximum turning diameter 2,000 mm; suitable for working elements having weight under 100 tons,
- double-column milling machines for slotting turbogenerator rotors, having on each column one main spindle and two auxiliary spindles,
- turning and boring lathes with turning diameter of up to 6,000 mm.
- up-to-date winders of various kind, and baking machines in the coil winding department,
- tanks for vacuum impregnation, vertical and horizontal, with a length of up to 15,000 mm., and a vacuum system manufactured by Swiss Micafil A.G., making possible the impregnation at 0.1 mm. Hg. vacuum.

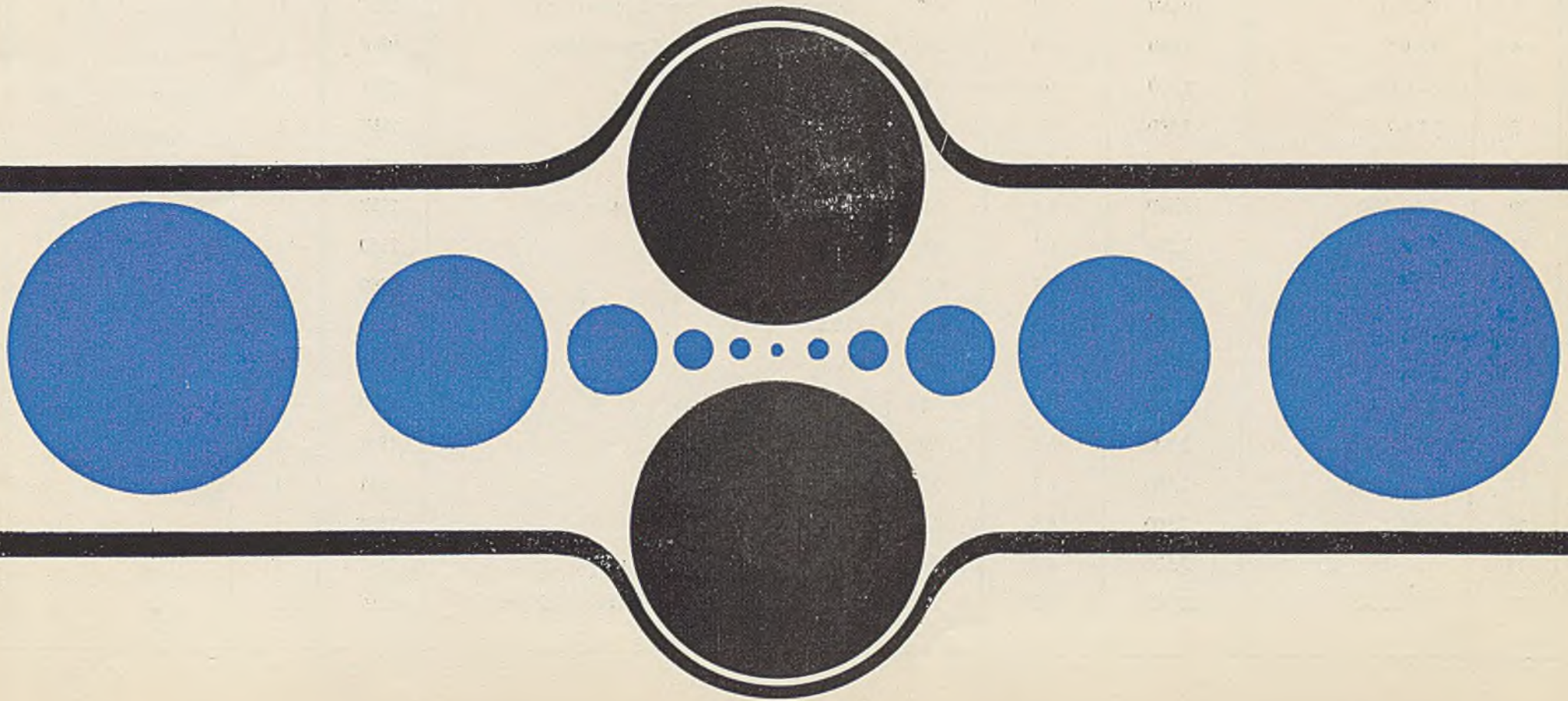
All machines intended for export are carefully tested by responsible experts of the Polish independent quality attesting authority POLCARGO — Expertise and Cargo Control — State Owned Enterprise in Gdynia, giving official certificates, attesting conformity of machine characteristics with drawings and specifications.

When ordering our products, please turn your attention to the fact that long-life and faultless operation of the machines can be achieved, first of all by the proper choice of machines and instruments, in conformity with the existing electrical operation conditions and by the use of machines within permissible duty conditions, described by basic technical parameters, specified in actual factory catalogues or in our tenders.



Type TGH-120, 120 MW, 13 800 V, p.f. = 0.8, 3000 r.p.m. turbogenerator, hydrogen pressure 2.1 at. gauge, installed in power block.

I. TURBOGENERATORS

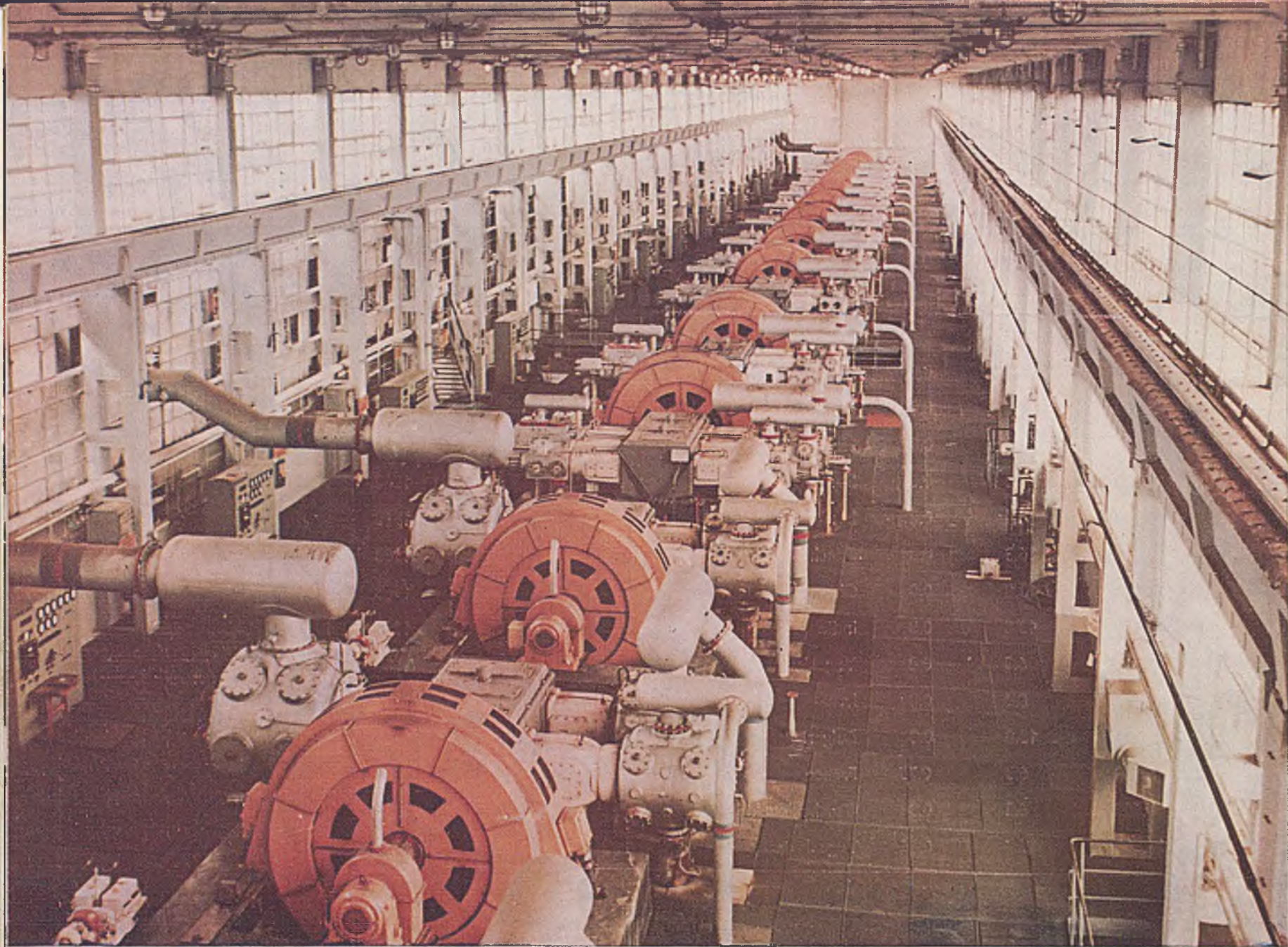


No.	Type of turbo-generator	Output kVA	Voltage kV	P.F.	Customer	Year of delivery	Number of machines	Remarks
1	GYt-22b	2,500	6.3	0.8	China	1954	1	with equipment
2	GYt-22b	2,500	6.3	0.8	China	1955	1	"
3	T2-25-2	31,250	6.3	0.8	Thermal-Electric Power Station "Żerań"	1956	2	"
4	T2-25-2	31,250	6.3	0.8	Thermal-Electric Power Station Łódź II	1956	1	"
5	T2-25-2	31,250	6.3	0.8	Thermal-Electric Power Station Łódź	1957	1	"
6	T2-4-2	5,000	6.3	0.8	Hardboard Factory at Czarna Woda	1958	1	"
7	GYt-22b	2,500	6.3	0.8	Iran	1959	2	"
8	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1959	2	"
9	TW2-30-2	37,500	6.3	0.8	China	1959	1	"
10	TW2-30-2	37,500	6.3	0.8	Thermal-Electric Power Station Łódź	1959	1	"
11	GYt-22b	2,500	6.3	0.8	Iran	1960	2	"
12	TG-2. 5-3000	3,125	6.3	0.8	China	1960	1	"
13	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1960	2	"
14	TW2-30-2	37,500	6.3	0.8	China	1960	3	"
15	TW-50-2	62,500	10.5	0.8	Power Station Konin	1960	2	"
16	TG-2-3000	2,500	6.3	0.8	Chemical Plant Żarów	1961	1	"
17	TG-2-3000	2,500	6.3	0.8	Vietnam	1961	1	"
18	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1961	3	"
19	T2-6-2	7,500	6.3	0.8	Synthetic Fibre Plant Szczecin	1961	1	"
20	TW2-30-2	37,500	6.3	0.8	Thermal-Electric Power Station Siekierki	1961	2	"

No.	Type of turbo-generator	Output kVA	Voltage kV	P.F.	Customer	Year of delivery	Number of machines	Remarks
21	TW-50-2	62,500	10.5	0.8	Power Station Konin	1961	1	with equipment
22	TW-50-2	62,500	10.5	0.8	Thermal-Electric Power Station Siekierki	1961	1	"
23	TW-50-2	62,500	10.5	0.8	China	1961	1	"
24	TW-50-2	62,500	10.5	0.8	Power Station Jaworzno	1961	1	"
25	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1962	2	"
26	T2-6-2	7,500	6.3	0.8	Morocco	1962	1	"
27	TGH-120	150,000	13.8	0.8	Power Station Konin	1962	1	"
28	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1963	1	"
29	TGH-55	68,750	10.5	0.8	India	1963	1	"
30	TGH-120	150,000	13.8	0.8	Power Station Konin	1963	1	"
31	TGH-120	150,000	13.8	0.8	Power Station Adamów	1963	2	"
32	TGH-120	150,000	13.8	0.8	Power Station Stalowa Wola	1963	1	"
33	TG-6-3000	7,500	10.5	0.8	U.S.S.R.	1964	3	"
34	TG-2-3000	2,500	6.3	0.8	Iran	1964	1	"
35	TG-2-3000	2,500	6.3	0.8	Ghana	1964	2	"
36	TG-3-3000	3,750	6.3	0.8	Indonesia	1964	2	"
37	TG-2-3000	2,500	6.3	0.8	Egypt	1964	1	"
38	T2-6-2	7,500	6.3	0.8	U.S.S.R.	1964	3	"
39	TGH-55	68,750	10.5	0.8	India	1964	1	"
40	TG-20	25,000	6.3	0.8	Thermal-Electric Power Station Bielsko Biała	1964	1	"

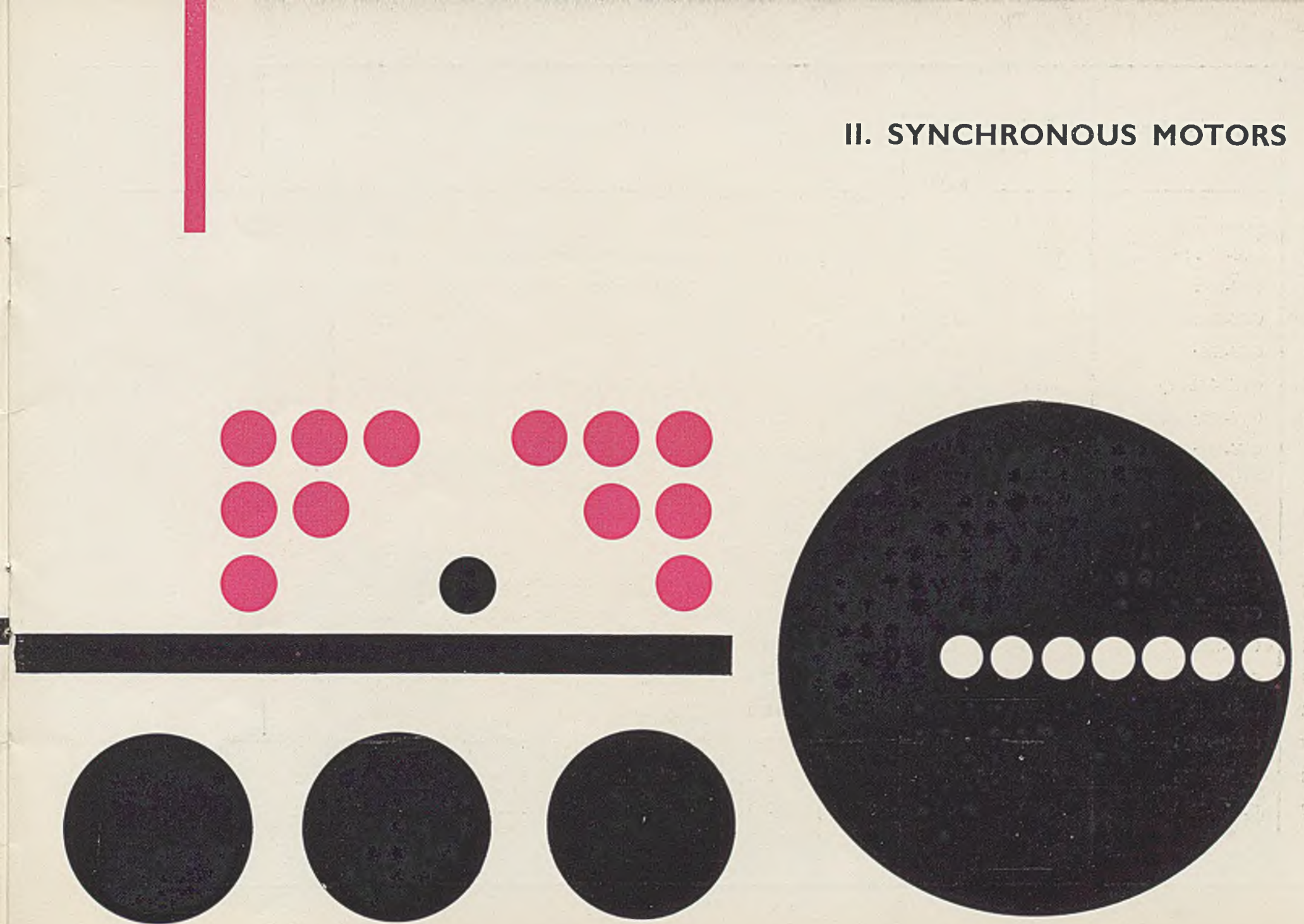
No.	Type of turbogenerator	Output kVA	Voltage kV	P.F.	Customer	Year of delivery	Number of machines	Remarks
41	TGH-120	150,000	13.8	0.8	Power Station Adamów	1964	1	with equipment
42	TGH-120	150,000	13.8	0.8	Power Station Stalowa Wola	1964	1	„
43	TGH-120	150,000	13.8	0.8	Power Station Adamów	1964	2	„
44	T2-6-2	7,500	6.3	0.8	Indonesia	1965	1	„
45	TGH-30	37,500	6.3	0.8	Power Station Blachownia	1965	1	„
46	TGH-120	150,000	13.8	0.8	Power Station Łaziska Górne	1965	1	„
47	TGH-120	150,000	13.8	0.8	Power Station Siersza	1965	1	„
48	TGH-120	150,000	13.8	0.8	Power Station Łaziska Górne	1965	1	„
49	TGH-120	150,000	13.8	0.8	Power Station Siersza	1965	1	„
50	TGH-120	150,000	13.8	0.8	Power Station Ostrołęka	1965	1	„
51	TGH-120	150,000	13.8	0.8	Power Station Łaziska	1965	1	„
52	TGH-120	150,000	13.8	0.8	Power Station Siersza	1966	1	„
53	TGH-120	150,000	13.8	0.8	Power Station Łagisza	1966	1	„
54	TGH-30	37,500	6.3	0.8	Power Station Blachownia	1966	1	„
55	T2-4-2ex	5,000	6.0	0.72	Spain	1966	1	„
56	TWW-200-2	235,300	15,75	0.85	Power Station Pątnów	1967	1	„
57	TGH-120	150,000	13.8	0.8	Power Station Siersza	1967	2	„
58	TGH-120	150,000	13.8	0.8	China	1967	1	„
59	TGH-120	150,000	13.8	0.8	Power Station Łagisza	1967	1	„
60	TGH-30	37,500	6.3	0.8	Power Station Blachownia	1967	1	„

No.	Type of turbogenerator	Output kVA	Voltage kV	P.F.	Customer	Year of delivery	Number of machines	Remarks
61	TGH-30	37,500	6.3	0.8	Power Station Łódź	1967	1	with equipment
62	GT2-6-03	7,500	6.3	0.8	Korea	1967	4	„
63	GT4n-2.5-50	2,500	0.4	0.8	Pakistan	1967	2	„
64	GT4n-2-50	2,000	0.4	0.8	Hrubieszów	1967	1	„
65	TG-2-3000	2,500	6.3	0.8	Iran	1967	3	„
66	T2-6-2	7,500	6.3	0.8	Morocco	1967	1	„
67	TG-2.5-3000	3,100	6.3	0.8	Iran	1968	1	„
68	GT4n-2.5-50	2,500	0.4	0.8	Iran	1968	4	„
69	T2-6-2	7,500	6.3	0.8	Czechoslovakia	1968	2	„
70	TGH-120	150,000	13.8	0.8	China	1968	1	„
71	TGH-120	150,000	13.8	0.8	India	1969	2	„
72	GT2-10-01	12,500	6.3	0.8	Yugoslavia	1969	4	„
73	GT4n-2-50	2,000	0.4	0.8	Iran	1969	1	„
74	TGH-120	150,000	13.8	0.8	Bulgaria	1969	1	„
75	GT2P-6-01	6,660	6.3	0.75	France	1969	1	„
76	T2-6-2	7,500	6.3	0.8	Czechoslovakia	1969	2	„
77	TWW-200-2	235,300	15.7	0.85	Yugoslavia	1970	1	„



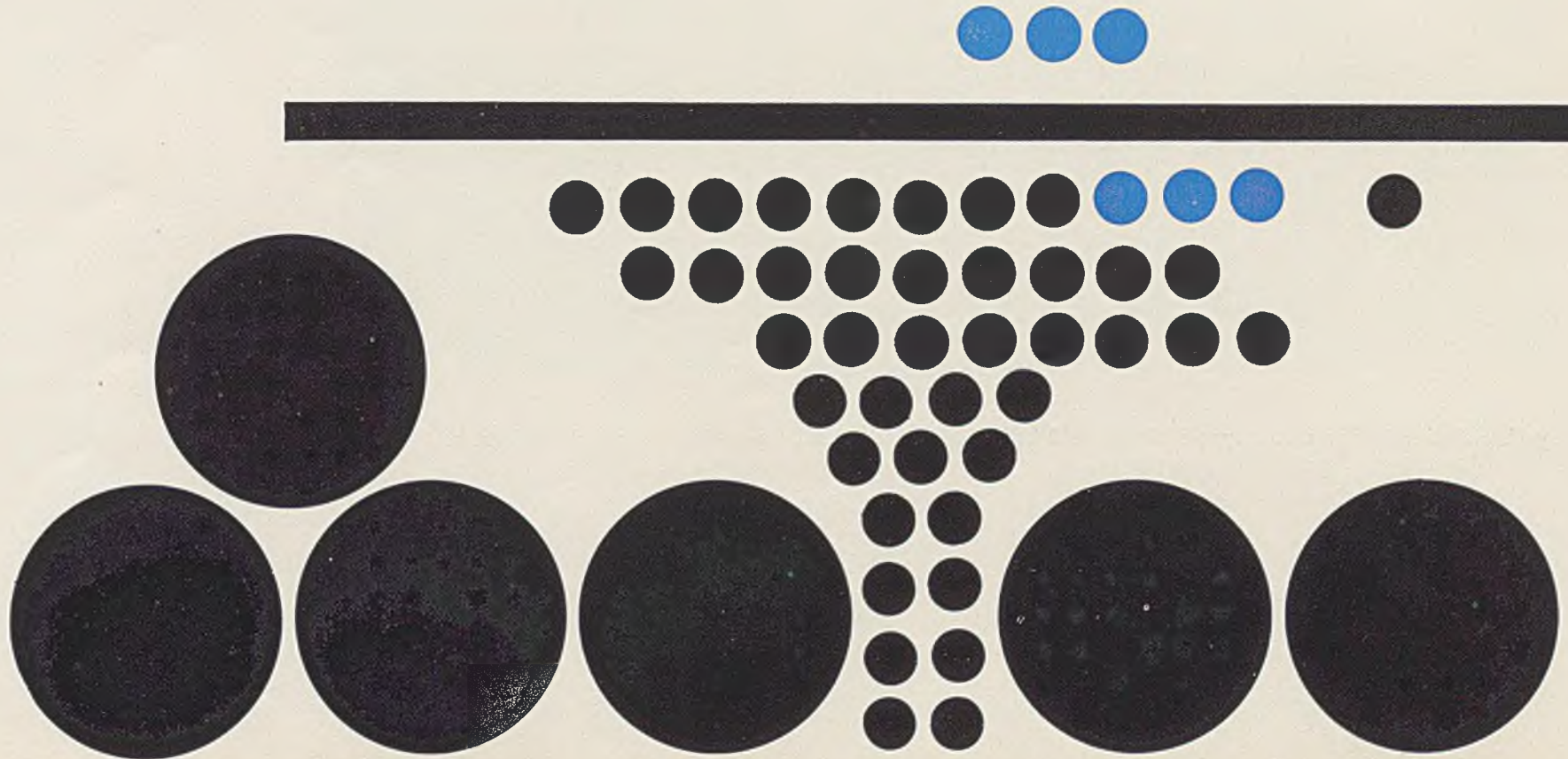
Type GAKW-1920s, synchronous motor 2200 kW, 6 kV, 50 c/s, 3000 r.p.m., explosion-proof, reinforced protection grade.

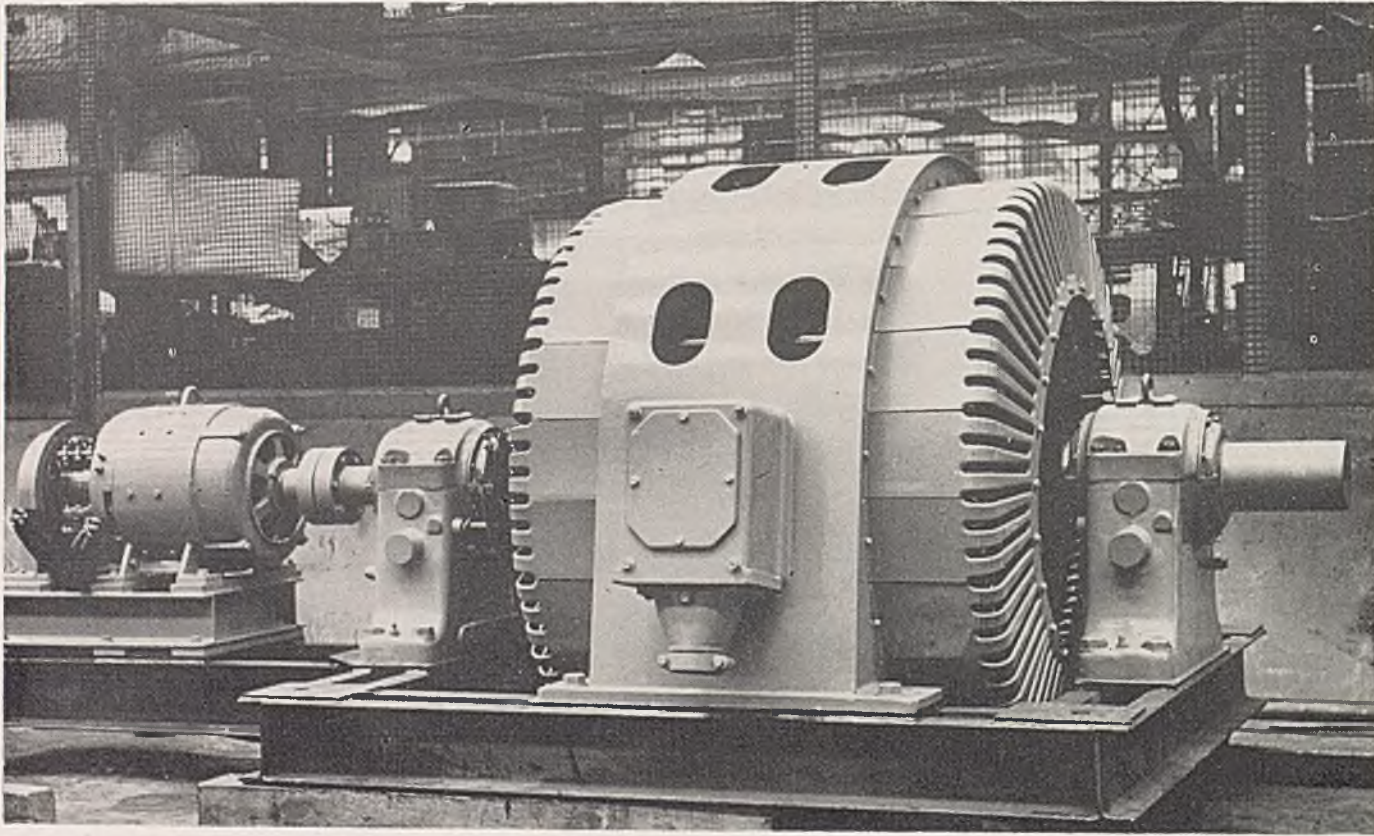
II. SYNCHRONOUS MOTORS



No.	Type of machine	Output kVA	Voltage kV	P.F.	Speed R.P.M.	Customer-country	Year of delivery	Num- ber of mach- ines	Remarks
1	GAd-1512	475	6.0	0.8	500	China	1960	3	
2	GYd-144t sp	1,630	6.0	0.9	1,500	German Federal Republic	1965	9	
3	GCD-124t	430	6.0	1.0	1,500	German Federal Republic	1965	1	
4	GCD-138s	400	6.0	0.8	750	U.S.S.R.	1966	3	
5	GCD-136r	400	6.0	0.8	1,000	U.S.S.R.	1966	3	
6	GYKp-2024 sp	6 750	6.0	0.9	250	German Federal Republic	1966	1	
7	GYd-154r	2,900	6.0	0.9	1,500	German Federal Republic	1967	1	
8	GYd-154r	2,850	6.0	0.9	1,500	German Federal Republic	1967	2	
9	GYd-144u	2,400	6.0	0.9	1,500	German Federal Republic	1967	1	
10	GCD-138s	370	6.0	0.8	750	U.S.S.R.	1967	3	
11	GCD-136s	370	6.0	0.8	1,000	U.S.S.R.	1967	3	
12	GYKp-2024t	5,200	6.0	0.8	250	Nitro-Compounds Plant Kędzierzyn	1967	3	
13	GAKw-2026	3,300	6.0	0.8	230	Nitro-Compounds Plant Puławy	1967	4	
14	GCD-136r	400	6.0	0.8	1,000	U.S.S.R.	1968	6	
15	GCD-138s	400	6.0	0.8	750	U.S.S.R.	1968	3	
16	GAd-1512	500	6.0	0.8	500	Yugoslavia	1968	1	
17	GAKw-2026	3,300	6.0	0.8	230	Nitro-Compounds Plant Puławy	1968	4	
18	GAKw-1816	1,600	6.0	0.8	375	Gas Works Zabrze	1968	2	
19	GAKw-2020	4,000	6.0	0.8	300	Nitro-Compounds Plant Tarnów	1969	2	

III. ASYNCHRONOUS MOTORS





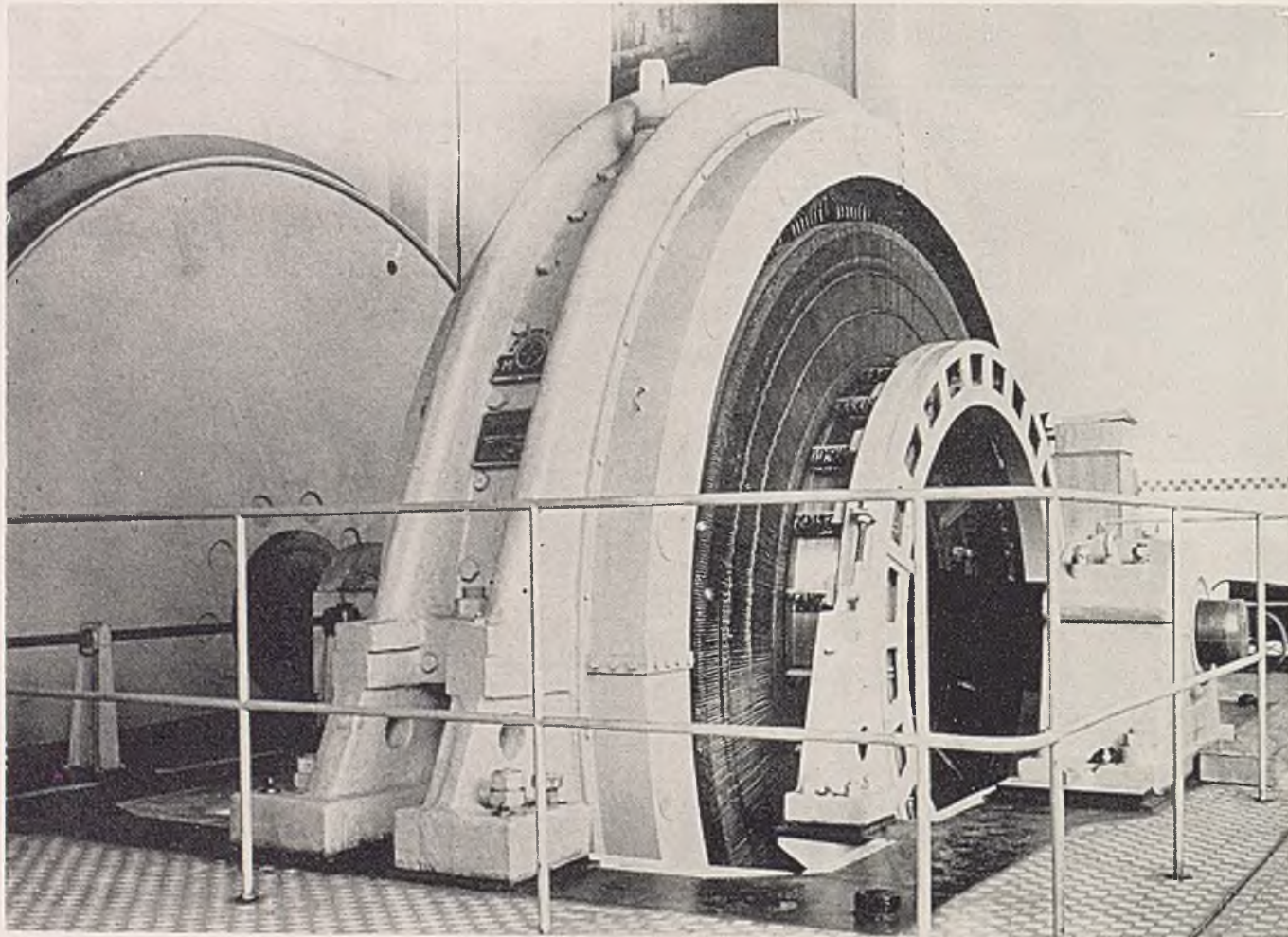
Synchronized induction motor type SAS-158, 1000 kW, 6000 V, 750 r.p.m., intended as a drive for ball mills.

No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-county	Year of delivery	Number of machines	Remarks
1	SAS-156	800	6.0	1,000	China	1959	6	with starters
2	SXU-148s	515	6.0	745	India	1960	1	
3	SXU-148	850	6.0	745	India	1960	1	
4	SCDd-1312s	250	3.0	485	Turkey	1960	1	
5	SAS-156	800	6.0	1,000	China	1960	8	with starters
6	SCUd-134s	800	6.0	1,480	China	1960	10	"
7	SCUd-134t	1,000	6.0	1,480	China	1960	19	"
8	SAS-158	1,000	6.0	750	China	1960	4	"
9	SAUd-1516	630	6.6/3.8	440	Brazil	1960	1	"
10	SBUd-144r	1,600	6.0	1,480	China	1961	10	"
11	SAS-158	1,000	6.0	750	Bulgaria	1961	2	"
12	SAS-158	1,000	6.0	750	China	1962	4	"
13	SXUDd-138t	630	6.0	740	India	1962	1	"
14	SAUd-1516 spec	630	6.6/3.8	365	Brazil	1962	2	"
15	SAUd-1516 spec	800	6.6/3.8	365	Brazil	1962	2	"
16	SXUd-138t	630	6.6	740	India	1963	1	"
17	SXUDd-138t	630	6.0	740	India	1963	1	
18	SAS-158	1,000	6.0	750	Bulgaria	1963	3	
19	SCUd-138t	630	3.0	750	Czechoslovakia	1964	2	
20	SZDr-126t	315	3.3	980	India	1964	5	



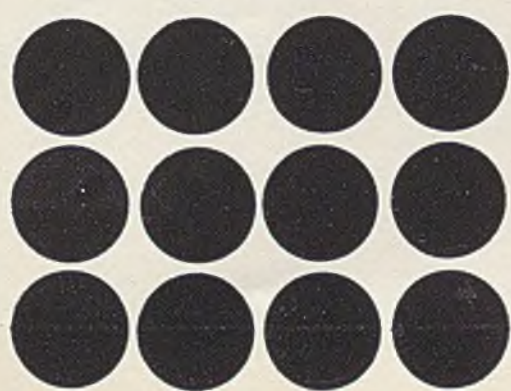
No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-country	Year of delivery	Number of machines	Remarks	
21	SZDr-126	315	6.6	980	India	1964	5	with starters	
22	SXUDd-138t	630	6.0	740	India	1964	2		
23	SXUd-138t	630	6.0	740	India	1964	1		
24	SZDr-128t	315	3.3	735	India	1964	4		
25	SYUDd-138t	630	6.6	740	India	1964	2		
26	SCDd-134r	630	6.6	1,480	India	1964	2		
27	SYUDd-138t	630	6.6	740	India	1965	2		
28	SAUw-1616r	800	3.3/6.6	440	Korea	1965	5		
29	SCDd-136s	500	6.0	980	Rumunia	1965	3		
30	SZUr-126s	315	6.0	980	Yugoslavia	1965	35		
31	SAS-1712	1,600	6.0	500	India	1966	3		
32	SAJv-1412s	500	6.3	485	Yugoslavia	1966	4		
33	SCUd-134s	800	6.3	1,480	German Federal Republic	1966	1		
34	SCUd-134u	1,000	6.3	1,485	German Federal Republic	1966	1		
35	SYJd-142th	3,150	6.0	2,980	Yugoslavia	1966	10		
36	SAS-158	1,000	6.0	750	Ghana	1966	3		
37	SYUDd-138t	630	6.6	740	India	1966	2		
38	SCUd-134r	630	6.0	1,480	Hungary	1966	8		
39	SCUd-134u	1,250	6.6	1,485	India	1967	4		with starters
40	SYJd-132t	800	6.6	2,970	India	1967	3		

No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-country	Year of delivery	Number of machines	Remarks
41	SYDd-1410	580	6.0	590	German Federal Republic	1967	2	
42	SZUr-126s	315	6.0	980	Yugoslavia	1967	28	
43	SYJdP-132r	920	6.0	2,970	Italy	1968	1	
44	SYJdP-132p	1,500	6.0	2,975	Italy	1968	1	
45	SYJd-142th	3,150	6.0	2,980	China	1968	4	
46	SYJd-142th	3,150	6.0	2,980	Yugoslavia	1968	4	
47	SAS-1714	2,000	6.0	514	Korea	1968	1	
48	SAS 1714	2,000	3.3	514	Korea	1968	1	
49	SYUh-158t	850	6.0	740	Syria	1968	1	with starters
50	SYJd-142u	3,400	6.6	2,980	India	1969	4	
51	SYJd-142u	3,400	6.0	2,980	Bulgaria	1969	2	
52	SZDr-138s	500	6.0	740	Finland	1969	2	
53	SAJV-1512	900	6.6	495	India	1969	4	
54	SAJV-1512	800	6.0	495	Bulgaria	1969	2	
55	SAS-1714	2,000	6.0	514	Korea	1969	4	
56	SAS-1832t	630	6.0	187	Syria	1969	2	
57	SZJr-168/10	1000/500	6.0	735/585	Yugoslavia	1970	3	
58	SYJd-142	3,150	6.0	2,980	Yugoslavia	1970	3	
59	SAUw-1616r	800	3.3/6.6	440	Korea	1970	1	



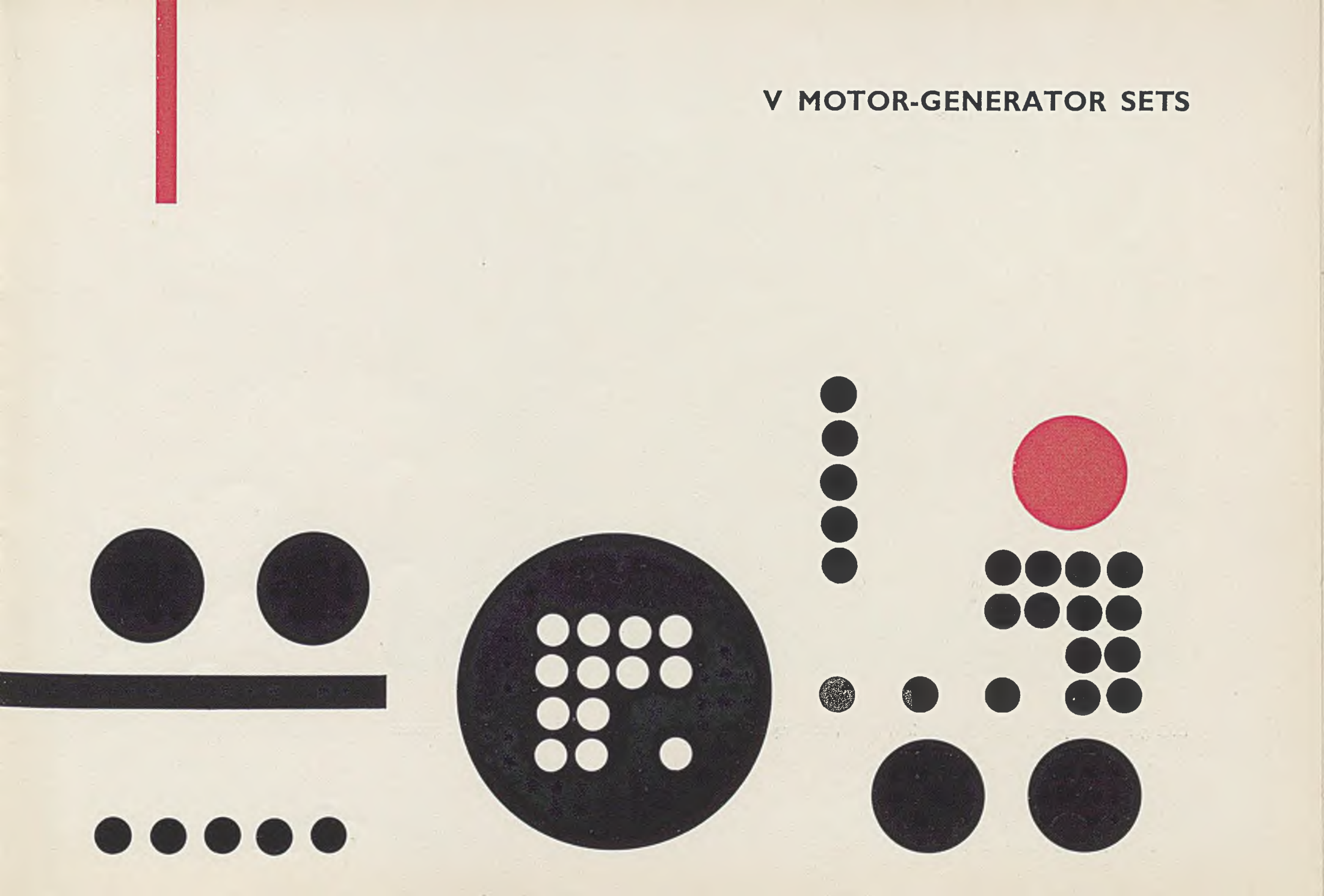
Hoisting machine d.c. drive motor type P-4100/24/550, 1600 kW, 650 V, 45 r.p.m., installed in a coal mine as Koepe pulley drive.

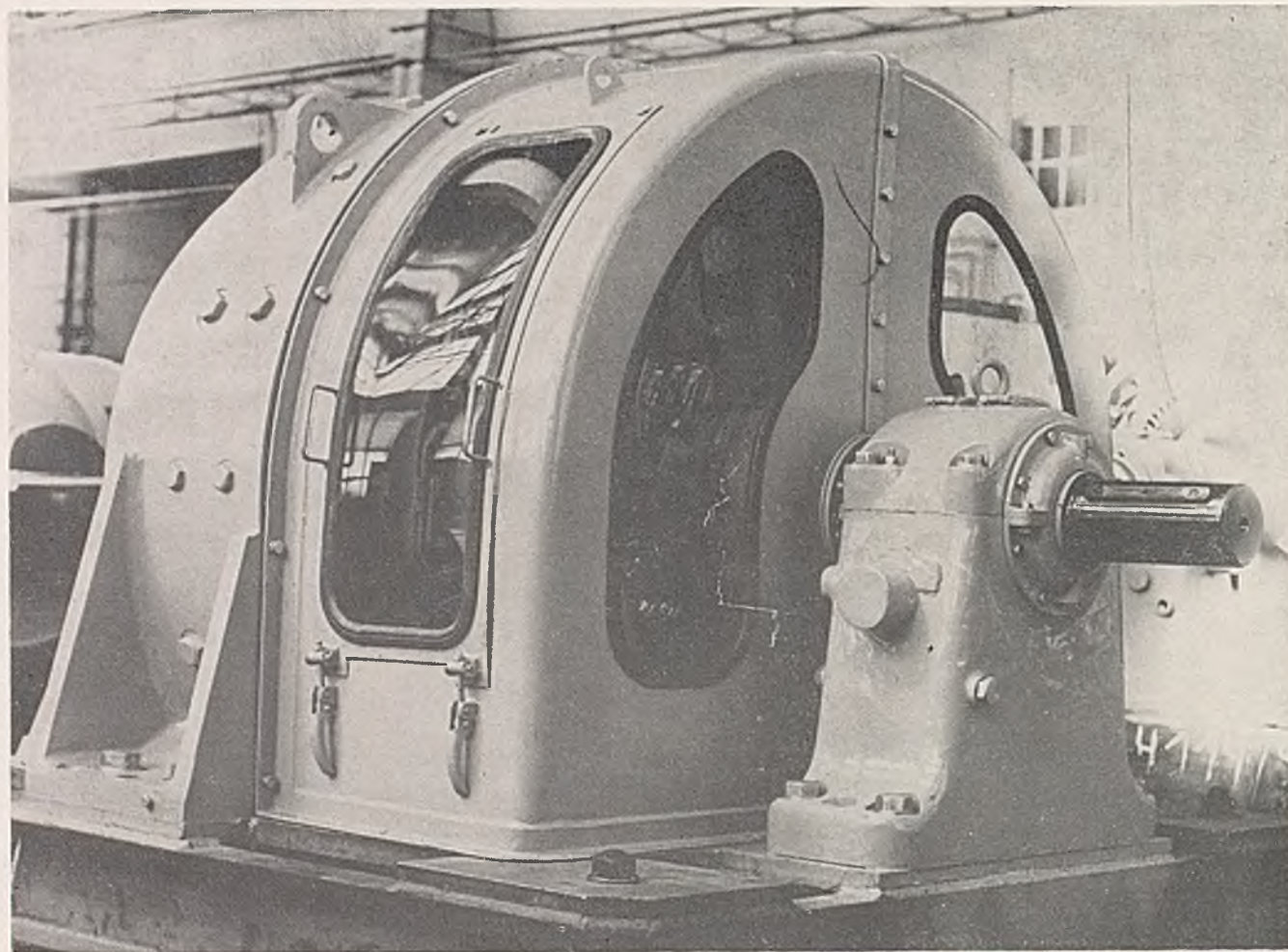
IV. D. C. MOTORS



No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-country	Year of delivery	Number of machines	Remarks
1	P-4100/24/550	1,600			China	1961	1	
2	P-870/8/570	660	750	600	Yugoslavia	1965	2	
3	P-1500/10/410	1,200	750	300	Yugoslavia	1965	1	
4	P-2300/14/420	2,500	750		Yugoslavia	1965	1	
5	PXOm-54a	24/48	220/440	565/1130	Yugoslavia	1965	2	
6	PXOm-54a/03/ts	24/48	220/440	565/1130	Syria	1968	5	
7	P-870/8/570	660	750	600/1200	Syria	1968	8	

V MOTOR-GENERATOR SETS



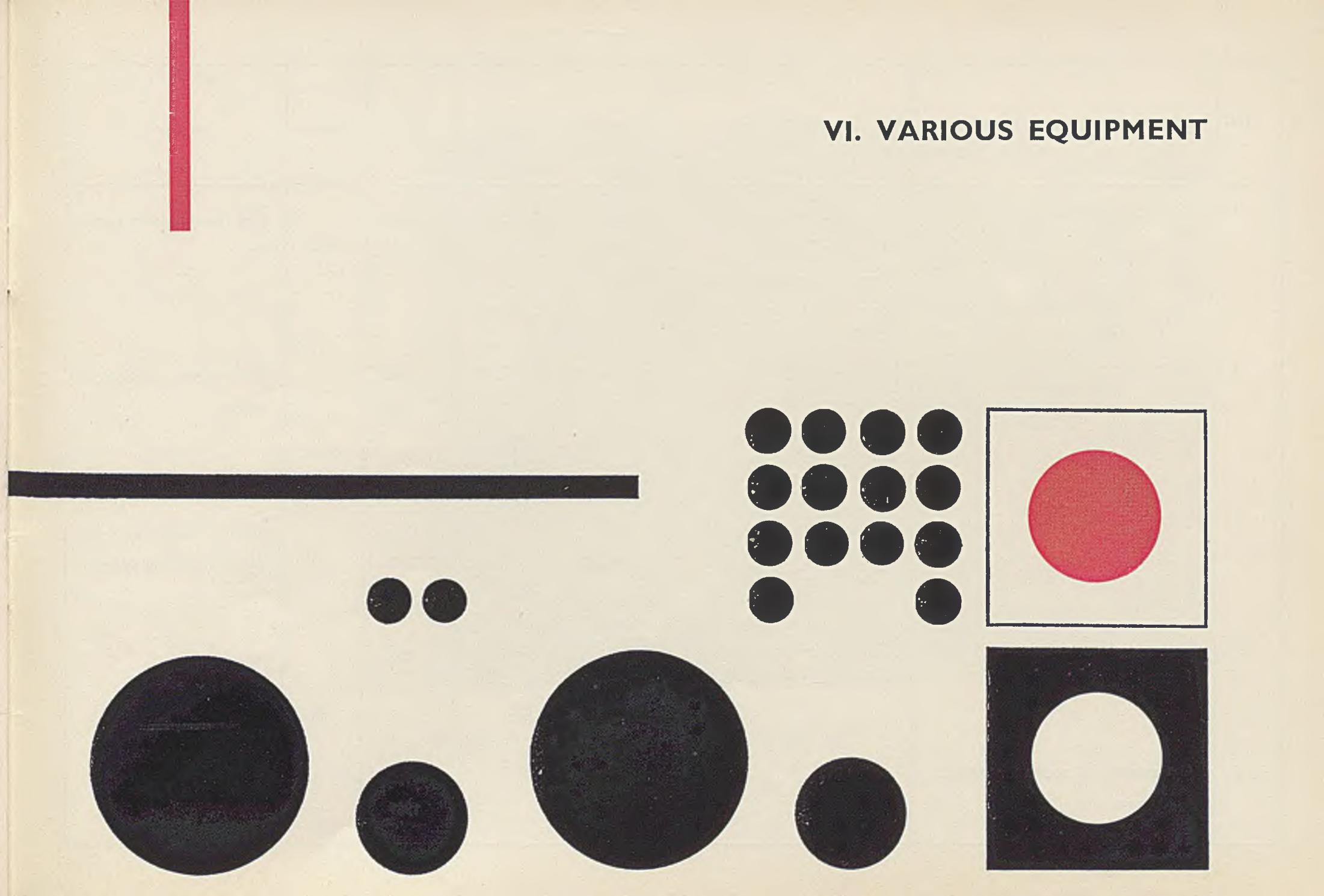


D.C. generator type 0,870/8/270, 680 kW, 460 V, 1000 r.p.m. intended for operation with Ward-Leonard systems

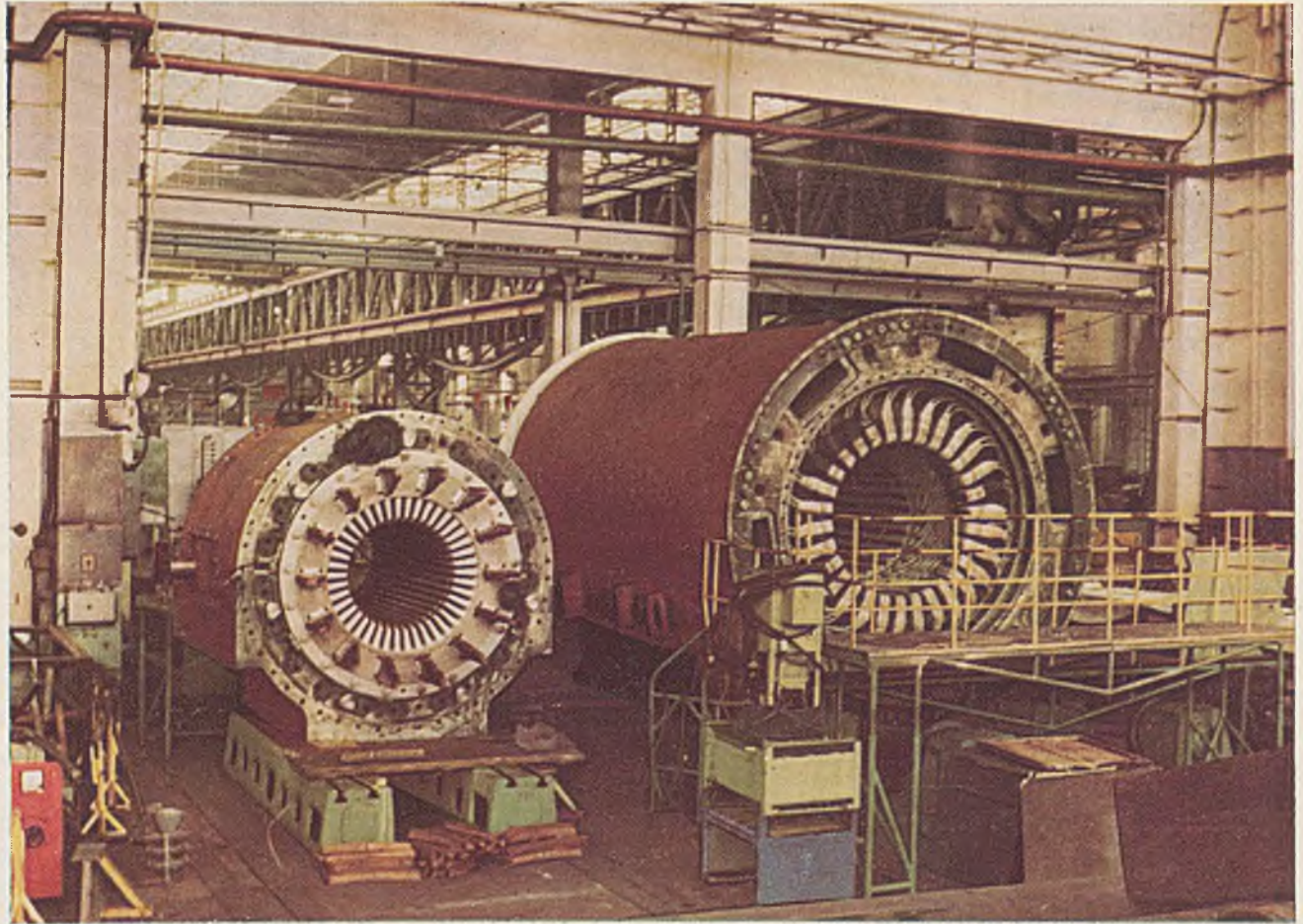
No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-country	Year of delivery	No. of machines	Remarks
1	Frequency converter 50/60 c.p.s.							
	a) motor GAd-1510 tr	680	6.3	600	Brazil	1960	2	
	b) generator GAd-1512 tr	600	0,48	600	Brazil	1960	2	
2	D.C. motor-generator set							
	a) motor GAd-148 tr	600	6.3	750	Brazil	1961	2	
	b) generator P-870/8/2700	500	0.250/0.127	750	Brazil	1961	2	
3	D.C. motor-generator set							
	a) motor GAd-178	2800			China	1963	2	
	b) generator P-1500/10/22	1300			China	1963	2	
4	D.C. motor-generator set							
	a) motor P-4100/24/550	1600	0,65	45	India	1964	1	
	b) generator P-1500/10/400/02	2200	0.65	500	India	1964	1	
	c) synchronous motor GYd-1712s/04	2400	6.6	500	India	1964	1	
5	D.C. motor-generator set							
	a) motor GYd-1712 s	2400			India	1965	2	
	b) generator P-1500/10/700	2200			India	1965	2	

No.	Type of machine	Output kW	Voltage kV	Speed R.P.M.	Customer-country	Year of delivery	No. of machines	Remarks
6	D.C. motor-generator set							
	a) d.c. motor PXOM-74b	75	0.220		Yugoslavia	1965	1	
	b) a.c. motor SCDu-116s				Yugoslavia	1965	2	
	c) d.c. generator PXOHn-84c	175			Yugoslavia	1965	2	
7	D.C. motor-generator set							
	a) motor P-4100/24/550	1600	0.65	45	India	1965	1	
	b) generator P-1500/10/400/02	2200	0.65	500	India	1965	1	
	c) synchronous motor GYd-1712s/04	2400	6.6	500	India	1965	1	

VI. VARIOUS EQUIPMENT



No.	Description of equipment or service	Specification	Customer-country	Year of delivery	Number	Remarks
1	Magnetic separators	Granulation of separated material 0—80 mm — drum separators 0—200 mm — overband magnets	Spain Austria Turkey China Iran Yugoslavia India U.S.S.R. Czechoslovakia Hungary	since 1959	229	With control and protection devices
2	Lifting magnets	Lifting capacity chips—over 0.1 ton blocks—up to 9 tons plates—up to 15 tons	India Bulgaria Korea China Syria Yugoslavia Turkey Cuba Czechoslovakia Egypt	since 1959	82	With control and protection devices
3	Self-excited marine generators	250, 320 and 400 kVA 500 r.p.m.	Spain Yugoslavia U.S.S.R. Bulgaria	since 1963	320	With excitation unit and voltage regulation system
4	Rotary welding sets, driven by a combustion engine	Welding current controlled within 50—300 A range	Turkey Egypt Pakistan Cuba Vietnam Iran Bulgaria	since 1966	615	
5	Overspeeding of rotors for TH-60-2 generators	60.000 kW	Rumania	1968 1969	1 1	



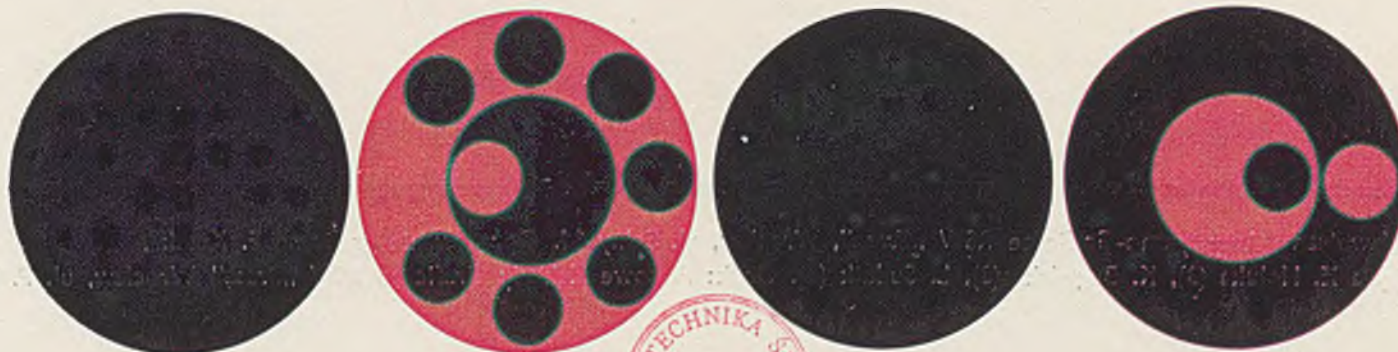
200 MW and 120 MW generator stators at Winding Shop.

EXPORT OF OUR PRODUCTS IS REALISED THROUGH THE FOLLOWING FOREIGN TRADE ENTERPRISES:

1. Polish Foreign Trade Company for Electrotechnical Equipment „ELEKTRIM”, Warszawa, ul. Czackiego 15/17
2. „CEKOP” — Polish Exporters of Industrial Plants, Warszawa, ul. Kościelna 12
3. „CENTROMOR” — Central Import and Export Office for Ships and Marine Equipment, Gdańsk ul. Okopowa 5
4. „CENTROZAP” — Foreign Trade Enterprise, Katowice, ul. Ligonja 7.
5. „METAEXPORT” — Foreign Trade Enterprise, Warszawa, ul. Mokotowska 49

**OUR WORKS DELIVER ALSO ELECTRICAL MACHINERY IN EXPORT, TROPICAL
AND SPECIAL EXECUTION, NAMELY:**

- adapted for non-typical voltage
- with non-typical shaft ends
- adapted for 60 c.p.s. frequency
- any other as requested





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