

The Urgent need is to strengthen the protection of energy objects by Air Defense Systems

General comments after massive attacks in March-April 2024:

After receiving the full information the list of damaged equipment will be updated.
Urgency of first priority is highlighted in green.

List of equipment damaged during air strikes and needed to be replaced by Tsentrenergo

#	Item name	Quantity	Priority	Estimated Cost/Unit (Euros, excl. VAT)*	Estimated total value (Euros, excl. VAT)*
1	Generator TFB-200	2	1 Urgent	10 000 000	20 000 000
2	Autotransformer: АДЦТН-200000/330/110-74У	2	1 Urgent	1 568 750	3 137 500
3	Transformer oil Shell Diala S4 ZX-1	200 ton	1 Urgent	2 508	501 600
4	Voltage transformer 3НОМ-35-63У1	3	1 Urgent	9 690	29 070
5	35 kV surge arrester PEKLIM R 48-YV 036 , pcs	3	1 Urgent	348	1 044
6	35 kV disconnect switch РНД3-2-35/1000 , 3-phase set	1	1 Urgent	8 000	8 000
7	330 kV surge arrester PEKLIM P 276-XH 362, 3-phase set	1	1 Urgent	7 650	7 650
8	Generator TFB-200	2	2 By 01.04.2025	10 000 000	20 000 000
9	Generator TFB-200M	1	2 By 01.04.2025	10 000 000	10 000 000
10	330 kV autotransformer АДЦТН-125000/330/110-77У1	1	2 By 01.04.2025	1 568 750	1 568 750
11	110 kV transformer bushing	3	2 By 01.04.2025	25 446	76 338
12	Overhead crane	2	2 By 01.04.2025	1 040 668	2 081 336
13	Electric motor 1500 rpm, 200 kW	2	3 By 01.09.2025	7 650	15 300
14	Electric motor 1500 rpm, 100 kW	2	3 By 01.09.2025	7 650	15 300
15	Electric motor 1500 rpm, 21 kW	2	3 By 01.09.2025	763	1 526
16	Electric motor 1500 rpm, 11 kW	3	3 By 01.09.2025	479	1 437
17	Electric motor 750 rpm, 28 kW	2	3 By 01.09.2025	1 822	3 644
18	Electric motor 2985 rpm, 4000 kW	1	3 By 01.09.2025	417 500	417 500
19	Electric motor 2985 rpm, 3800 kW	2	3 By 01.09.2025	417 500	835 000
20	Electric motor 1500 rpm, 18.51 kW	6	3 By 01.09.2025	763	4 578
21	Electric motor 1500 rpm, 20 kW	2	3 By 01.09.2025	763	1 526
22	Electric motor 375 rpm, 1700 kW	1	3 By 01.09.2025	417 500	417 500

№	Item name	Quantity	Estimated Cost/Unit (Euros, excl. VAT)*	Estimated total value (Euros, excl. VAT)*
1	Generator ТГВ-300, pcs	3	12 000 000	36 000 000
2	Block transformer ТДЦ-400000/330, pcs	2	5 647 500	11 295 000
3	Transformer for own needs ТРДНС-32000/35, pcs	1	492 400	492 400
4	Transformer oil, tons	200	2 508	501 600
5	Oil TP-22s, tons	300	2 100	630 000
6	Feeding electric pump unit ПЕ 600-300, pcs	2	721 000	1 442 000
7	Turbocharger electric pump unit ОСПТ-1150, pcs	2	721 000	1 442 000
8	Turbine oil pump, pcs	4	14 000	56 000
9	Emergency turbine oil pump, pcs.	4	900	3 600
10	Increased turbine oil pump, pcs.	4	763	3 052
11	Emergency oil pump, reinforced turbine, pcs.	2	763	1 526
12	Gas cooling pump, pcs.	4	14 000	56 000
13	Brush ring apparatus, pcs.	3	72 240	216 720
14	Turbine section covering, m2	21600	17	367 200
15	glazing with corrugated board permanent, temporary ends rows A, Б, В, Г m2	5300	9	47 700

PJSC Ukrhydroenergo's HPP Restoration

Preliminary list of the equipment needed for restoration



No.	Infrastructure	Equipment	Unit	Quantity	Lost/installed capacity	*Priority of restoration	**Proposals on further actions	Possibility of equipment commissioning by Autumn-Winter period of 2024-2025 (+/-)	Possibility of equipment commissioning by Autumn-Winter period of 2025-2026 (+/-)	Deadline for supply of equipment to ensure performance of the assignments (columns 9,10)	Comments (possible manufacturer)
1	2	3	4	5	6	7	8	9	10	11	12
"Kremenchuk HPP" branch											
1	Generation	Compressor Alup 341 No. 2, No. 3	pcs.	2	-	2	Repair + new elements	+			Compressors International
"Seredniodniprovska HPP" branch											
1	Generation	Hydro unit No. 5 (oil head, upper bracket, stator, rotor, winding)	pcs.	1	50 MW	1	Inspection, diagnostics and overhaul	+			JEM
2	Generation	Hydro generator No.5 excitation system	pcs.	1	50 MW	1	New	+			ABB, ALSTOM
3	Generation	Hydro generator No.6 excitation system	pcs.	1	50 MW	1	New	+			ABB, ALSTOM
4	Generation	Electrical protection for hydro units Nos. 5, 6 and the block, current transformers, voltage transformers				1	New	+			
5	Generation	Block No.3 control system (HU Nos. 5, 6)	pcs.	1	100 MW	1	Inspection, diagnostics and overhaul	+			Emerson, Enpaselectro
6	Generation	Block No. 3 oil pressure device (HU Nos. 5, 6)	pcs.	1	100 MW	1	Inspection, diagnostics, partial replacement	+			
7	Generation	"Ovation" control system				1	Diagnostics, overhaul, partial replacement	+			Emerson, Enpaselectro
8	Generation	Electrical measurement system of hydro units No. 5, No. 6 PECA 300	pcs.	2		1	New	+			Enpaselectro

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"Kaniv HPP" branch											
1	Generation	Power transformer ТРД-90000/110 Block No.5	pcs.	1	55,5/66 MW	1	Testing/Repair			+	ATEF
2	Generation	SF6 block circuit-breaker BT-5 GL-312F1	pcs.	1		1	New		+		ABB, ALSTOM
3	Generation	Transformer disconnecter T-5 three-phase 800A S2DAT	pcs.	1		1	New		+		ABB
4	Generation	II bus section ТП-110 kV (busbar)	km	2		1	New		+		
5	Generation	Overhead span ГЕС-БРУ-110 kV (Bushing-2)	km	3		1	Testing/Repair		+		
6	Generation	Support structure of II bus section ТП-110 kV	pcs.	1		1	New		+		
7	Generation	Single-phase current transformer IMB 123 Block No.5	pcs.	3		1	New		+		ABB
8	Generation	Single-phase current transformer IMB 123 Block No.4	pcs.	1		1	New		+		ABB
9	Generation	Power transformer ТРД-90000/110 Block No.4	pcs.	1	74/88 MW	1	Testing/Repair		+		ATEF
10	Generation	Г-17 – Г-21 generators excitation system power cabinet	Set	5		1	Inspection/Testing		+		ABB, ALSTOM
11	Generation	Excitation transformers of Resibloc TB-16 – TB-21 type	pcs.	6		1	Inspection/Testing		+		ABB, ALSTOM
12	Generation	Auxiliary transformer 10/0,4 kV 630 kVA T-15-3, Board 15CO	pcs.	1		2	Restoration		+		
13	Generation	Power transformer ТРД-90000/110 Block No.6	pcs.	1	44/88 MW	1	Inspection/Testing		+		ZTZ
14	Generation	Earthing disconnecter 3OH-110M-II УХЛ1 Block No. 5	pcs.	3		1	New		+		ABB
15	Generation	Cells KPY-6,3 kV Block No.5 (8 cells)	Set	1		1	Inspection/ Testing/Repair		+		Amper
16	Generation	BF-14, BF-16 – BF-23 generator circuit breakers cells	pcs.	9		1	Inspection/ Testing/Repair		+		
17	Generation	Block No.4 4TH-2	pcs.	1		1	Inspection/ Testing/Repair		+		ABB, ALSTOM
18	Generation	Block No.4/ 3PY-6,3kV signalization, control cabinets of Г-13 (CAB213)	pcs.	4		1	Inspection/ Testing/Repair		+		Emerson
19	Generation	Block No.5/3PY-6,3kV/Excitation cabinets, excitation transformers Г-17- Г-20	Set	4		1	Testing/Repair		+		ABB, ALSTOM
20	Generation	Block No.4,6/3PY-6,3kV/Excitation AVR cabinets Г-13-16, 21-24	Set	8		1	Testing/Repair/ Replacement		+		ABB, ALSTOM

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Preliminary list of the equipment needed for restoration



21	Generation	Block No.5/3PY-6,3kV/Excitation AVR cabinets Г-17-20(+ T3 temperature control cabinet)	Set	4			Testing/Repair/ Replacement		+		ABB
22	Generation	Block No.4/KPY-6,3kV/4TH-2	pcs.	1			New	+			ABM Amper
23	Generation	Block No.4/ 3PY-6,3kV/ Hydromechanical protections, control, signalization Г-13-16	pcs.	4			Testing/Repair/ Replacement	+			Emerson
24	Generation	Block No.5/ 3PY-6,3kV/ Hydromechanical protections, control, signalization Г-17-20	pcs.	12			New		+		Emerson
25	Generation	Block No.5/ 3PY-6,3kV/ SCADA block control system	pcs.	2			New		+		Emerson
26	Generation	Block No.5/ KPY-6,3kV/BK-18, BK-19, 5TH-3	шт	3			Testing/Repair/ Replacement		+		ABM Amper
27	Generation	Block No.5/ 3PY-6,3kV/ Electrical protection Г-17-20	Set	3			Testing/Repair/ Replacement		+		Enpaselectro, ABB
28	Generation	Block No.5/ 3PY-6,3kV/ Electrical protection 65	Set	1			Testing/Repair/ Replacement		+		Enpaselectro
29	Generation	Block No.5-6/ ТП-110kV, 3PY-6,3kV / Cable connections	Set	2			New	+			KECC
"Dnipro HPP" branch											
1	Generation	Power transformer ТТ11-12	pcs.	1	280 MVA	1	inspection and repair	+			ZTZ
2	Generation	Power transformer ТТ13-14	pcs.	1	280 MVA	2	inspection and overhaul	+			ZTZ
3	Generation	Power transformer ТТ15-16	pcs.	1	280 MVA	2	new		+		ZTZ
4	Generation	Power transformer ТТ17-18	pcs.	1	280 MVA	3	inspection and overhaul		+		ZTZ
5	Generation	Power transformer T3	pcs.	1	6300 kVA	1	inspection - repair or new	+			ZTZ
6	Generation	Power transformer T4	pcs.	1	6300 kVA	2	inspection and overhaul		+		ZTZ
7	Generation	Circuit-breaker EB ТТ 11-12	pcs.	1		1	restoration		+		ABB, ALSTOM
8	Generation	Circuit-breaker EB ТТ 13-14	pcs.	1		2	new		+		ABB, ALSTOM
9	Generation	Circuit-breaker EB ТТ 15-16	pcs.	1		2	new		+		ABB, ALSTOM
10	Generation	Circuit-breaker EB ТТ 17-18	pcs.	1		3	new		+		ABB, ALSTOM
11	Generation	Surge arrester ТТ 11-12	pcs.	1		1	restoration	+			ABB, ALSTOM
12	Generation	Surge arrester ТТ 13-14	pcs.	1		2	new		+		ABB, ALSTOM

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13	Generation	Surge arrester IT 15-16	pcs.	1		2	new		+		ABB, ALSTOM
14	Generation	Surge arrester IT 17-18	pcs.	1		3	new		+		ABB, ALSTOM
15	Generation	Surge arrester Л1	pcs.	1		1	restoration		+		ABB, ALSTOM
16	Generation	Surge arrester Л2	pcs.	1		2	new		+		ABB, ALSTOM
17	Generation	Disconnecter Л1-01	pcs.	1		1	restoration		+		ABB, ALSTOM
18	Generation	Disconnecter Л1-02	pcs.	1		2	new		+		ABB, ALSTOM
19	Generation	Disconnecter Л2-01	pcs.	1		2	new		+		ABB, ALSTOM
20	Generation	Disconnecter Л2-02	pcs.	1		3	new		+		ABB, ALSTOM
21	Generation	Voltage transformer TH Л1	pcs.	1		1	restoration		+		ABB
22	Generation	Voltage transformer TH Л2	pcs.	1		2	new		+		ABB
23	Generation	Current transformer IT11-12	pcs.	1		1	restoration		+		ABB
24	Generation	Current transformer IT13-14	pcs.	1		2	new		+		ABB
25	Generation	Current transformer IT15-16	pcs.	1		2	new		+		ABB
26	Generation	Current transformer IT17-18	pcs.	1		3	new		+		ABB
27	Generation	OPY-150 kV. Л1 line cell	pcs.	1		1	Busbar, support - repair + new		+		
28	Generation	OPY-150 kV. Л2 line cell	pcs.	1		2	Busbar, support - repair + new		+		
29	Generation	Gantry crane Service bridge H5 ЛГЭС-2	pcs.	1		1	repair		+		
30	Generation	Service bridge crane runways	pcs.	1		1	repair		+		
31	Generation	Tailrace gate set No.1	pcs.	1		2	repair		+		Ukrsteelconstruction
32	Generation	Tailrace gate set No.2	pcs.	1		2	repair		+		Ukrsteelconstruction
33	Generation	Tailrace gate set No.3	pcs.	1		2	repair		+		Ukrsteelconstruction
34	Generation	Tailrace gate set No.4	pcs.	1		2	repair		+		Ukrsteelconstruction
35	Generation	Tailrace gate set No.5	pcs.	1		2	repair		+		Ukrsteelconstruction
36	Generation	Semigantry unit crane ЛБ No.2	pcs.	1		1	repair		+		Ukrsteelconstruction
37	Generation	Semigantry unit crane ЛБ No.1	pcs.	1		1	repair		+		Ukrsteelconstruction
38	Generation	Unit cranes runways	pcs.	1		1	repair		+		
39	Generation	Unit cranes power trolleys	pcs.	1		1	repair + new elements		+		
40	Generation	Lifting beam for handling a rotor	pcs.	1		2	new		+		Ukrsteelconstruction
41	Generation	Hydraulic turbine with equipment set, № 11	pcs.	1	122 MW	1	diagnostics + repair		+		UEM
42	Generation	Hydraulic turbine with equipment set, № 12	pcs.	1	107 MW	1	diagnostics + repair		+		UEM
43	Generation	Hydraulic turbine with equipment set, № 13	pcs.	1	122 MW	2	diagnostics		+		UEM
44	Generation	Hydraulic turbine with equipment set, № 14	pcs.	1	has been under reconstruction	2	diagnostics		+		UEM
45	Generation	Hydraulic turbine with equipment set, № 15	pcs.	1	122 MW	2	diagnostics		+		UEM
46	Generation	Hydraulic turbine with equipment set, № 16	pcs.	1	122 MW	2	diagnostics		+		UEM
47	Generation	Hydraulic turbine with equipment set, № 17	pcs.	1	122 MW	3	diagnostics		+		UEM
48	Generation	Hydraulic turbine with equipment set, № 18	pcs.	1	122 MW	3	diagnostics		+		UEM
49	Generation	Hydro generator with equipment set (protection, excitation system), No. 11	pcs.	1	140 MVA	1	diagnostics		+		UEM

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50	Generation	Hydro generator with equipment set (protection, excitation system), No. 12	pcs.	1	130,6 MVA	1	diagnostics	+			UEM
51	Generation	Hydro generator with equipment set (protection, excitation system), No. 13	pcs.	1	140 MVA	2	diagnostics	+			UEM
52	Generation	Hydro generator with equipment set (protection, excitation system), No. 14	pcs.	1	has been under reconstruction	2	new		+		UEM
53	Generation	Hydro generator with equipment set (protection, excitation system), No. 15	pcs.	1	140 MVA	2	diagnostics - repair/new		+		UEM
54	Generation	Hydro generator with equipment set (protection, excitation system), No. 16	pcs.	1	140 MVA	2	diagnostics - repair/new		+		UEM
55	Generation	Hydro generator with equipment set (protection, excitation system), No. 17	pcs.	1	140 MVA	3	new		+		UEM
56	Generation	Hydro generator with equipment set (protection, excitation system), No. 18	pcs.	1	140 MVA	3	new		+		UEM
57	Generation	DC panel BV1, BV2, BV3	pcs.	1		1	new	+			Elektrotechnik Corporation
58	Generation	Speed governor of HU 11	pcs.	1		1	diagnostics, repair	+			ALSTOM
59	Generation	Speed governor of HU 12	pcs.	1		1	diagnostics, repair	+			ALSTOM
60	Generation	Speed governor of HU 13	pcs.	1		1	diagnostics, repair or new	+			ALSTOM
61	Generation	Speed governor of HU 14	pcs.	1		2	new		+		ALSTOM
62	Generation	Speed governor of HU 15	pcs.	1		2	new		+		ALSTOM
63	Generation	Speed governor of HU 16	pcs.	1			diagnostics, repair or new		+		ALSTOM
64	Generation	Speed governor of HU 17	pcs.	1			new		+		ALSTOM
65	Generation	Speed governor of HU 18	pcs.	1			new		+		ALSTOM
66	Generation	Station-wide, control and protection device	pcs.	1		1	diagnostics, repair or new	+			Emerson
67	Generation	control and protection device /11	pcs.	1		1	diagnostics, repair or new	+			Emerson
68	Generation	control and protection device /12	pcs.	1		2	new		+		Emerson
69	Generation	Commercial accounting of HPP-2	pcs.	1		1	repair + new elements	+			Emerson
70	Generation	6 kV engineering grid service station	pcs.	1		2	new		+		Emerson
71	Generation	station level controller	pcs.	1		1	repair with replacement of elements	+			Emerson
72	Generation	RECON recorder /11	pcs.	1		1	new	+			Emerson
73	Generation	RECON recorder /12	pcs.	1		2	new		+		Emerson
74	Generation	System for managing and monitoring station-wide needs	pcs.	1		1	repair with replacement of elements	+			Emerson
75	Generation	IT 11-12 block monitoring and control system	pcs.	1		1	repair with replacement of elements	+			Emerson
76	Generation	IT 13-14 block monitoring and control system	pcs.	1		2	new		+		Emerson
77	Generation	IT 15-16 block monitoring and control system	pcs.	1		2	new		+		Emerson
78	Generation	IT 17-18 block monitoring and control system	pcs.	1		3	new		+		UEM

List of equipment damaged during air strikes and needed to be replaced by NPC Ukrenergo

No	Territorial Network Maintenance Administration (TNMA)	Substation	Connection	Damaged equipment	Technical specifications of the equipment	Type of equivalent equipment to replace the damaged one	A unit of measurement	The required quantity		
1	Eastern	SS 330 kV [REDACTED]	CT SV 1-3	Current transformer 330kV	Gas-insulated. Rated voltage - 330 kV. Transformation ratio - 2000/1. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-362 Siemens	3 phase set	1		
2			3AT	Autotransformer 330 kV	Three-phase. Power - 200 MVA. LV/CH/IL voltages - 330/110/35 kV	ATDTN - 200000/330/110/35 kV ZTR	pcs	1		
3			CT 3AT	Current transformer 330kV	Current transformer 330kV	Rated voltage - 330 kV. Transformation ratio - 2000/1. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-363 Siemens	3 phase set	1	
4			CT 3SCH330	Voltage transformer 330kV	Voltage transformer 330kV	Rated voltage - 330 kV	SVS 362 Trench (Siemens)	phase	3	
5			CT 1SH330	Voltage transformer 330kV	Voltage transformer 330kV	Rated voltage - 330 kV	SVS 362 Trench (Siemens)	phase	3	
6			CT 1AT	Current transformer 330kV	Current transformer 330kV	Rated voltage - 330 kV. Transformation ratio - 2000/1. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-362 Siemens	3 phase set	1	
7			CT 3SSH110	Voltage transformer 110kV	Voltage transformer 110kV	Rated voltage - 110 kV	SVS 123 Trench (Siemens)	phase	3	
8			MV-110 Skhidna-Pivdenkabel		Circuit breaker 110 kV	Circuit breaker 110 kV	Rated voltage - 110 kV. Rated current - 2000A. Current off. Short-circuit current - 50 kA	Siemens 3AP1FG145	3 phase set	1
9					Current transformer 110kV	Current transformer 110kV	Rated voltage - 110 kV. Transformation ratio - 1000-2000/5. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-123 Siemens	3 phase set	1
10			MV-110 TEC-3 NO. 1		Circuit breaker 110 kV	Circuit breaker 110 kV	Rated voltage - 110 kV. Rated current - 2000A. Current off. Short-circuit current - 50 kA	Siemens 3AP1FG145	3 phase set	1
11					Current transformer 110kV	Current transformer 110kV	Rated voltage - 110 kV. Transformation ratio - 1000-2000/5. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-123 Siemens	3 phase set	1
12			MV-110 SV 1-2		Circuit breaker 110 kV	Circuit breaker 110 kV	Rated voltage - 110 kV. Rated current - 2000A. Current off. Short-circuit current - 50 kA	Siemens 3AP1FG145	3 phase set	1
13					Current transformer 110kV	Current transformer 110kV	Rated voltage - 110 kV. Transformation ratio - 1000-2000/5. Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-123 Siemens	3 phase set	1
14			3SZh110 arresters		Discharge arrester 110 kV	Discharge arrester 110 kV	Rated voltage - 110 kV	3EL2 108-2PJ31-4TA1-Z Siemens	3 phase set	1
15			330kV 3AT arresters		Discharge arrester 330 kV	Discharge arrester 330 kV	Rated voltage - 330 kV	3EL2-288-3PM42-4NA Siemens	3 phase set	1

16	Eastern	SS 330 kV [REDACTED]	2AT	Autotransformer 330 kV	Three-phase ^{SEP} Power - 200 MVA ^{SEP} HV/LV/LI voltages - 330/110/6 kV	ATDTN -200000/330/110/6 ^{SEP} ZTR	pcs	1	
17			3AT	Autotransformer 330 kV	Three-phase ^{SEP} Power - 200 MVA ^{SEP} HV/LV/LI voltages - 330/110/6 kV	ATDTN -200000/330/110/6 ^{SEP} ZTR	pcs	1	
18			Booster 2 BT	Regulation transformer 6 kV	Type - LTDN - 40000 \6 ^{SEP} Rated voltage - 6 kV ^{SEP} Rated power - 40 MVA	LTDN - 40000 \6 ^{SEP} ZTR	pcs	1	
19			SA-330 3AT	Surge arrester 330kV	3EL-288-3PM42-4NA ^{SEP} Rated voltage - 330 kV	3EL-288-3PM42-4NA	3 phase set	1	
20			CT-110 kV 1SCH	Voltage transformer 110 kV	NKF-110 U1	SVS-123	3 phase set		
21				Circuit breaker 110kV	U-110-2000-50-Y1	Siemens 3AP1FG145, 50kA	3 phase set	1	
22			34 SC	Current transformer 110kV	Rated voltage - 110 kV ^{SEP} Transformation ratio - 1000-2000/5 ^{SEP} Accuracy class - 0.2S/0.2S/10P/10P/10P/10P	SAS-123 ^{SEP} Siemens	3 phase set	1	
23			SS 330 kV [REDACTED]	1AT	Autotransformer 330 kV	Three-phase ^{SEP} Power - 200 MVA ^{SEP} HV/LV/LI voltages - 330/110/6 kV	ATDTH-200000/330/110/6 ^{SEP} 3TP	pcs	1

24	Eastern	SS 330kV [REDACTED]	PV L-CENTER-1	Circuit breaker 150 kV	Rated voltage - 150 kV ⁽¹⁾ Rated current - 3150A ⁽¹⁾ Current off. Short-circuit current - 40 kA	LTB-170 D1/B ⁽¹⁾ HITACHI-ABB	3 phase set	1
25			PV L-COF-2	Circuit breaker 150 kV	Rated voltage - 150 kV ⁽¹⁾ Rated current - 3150A ⁽¹⁾ Current off. Short-circuit current - 40 kA	LTB-170 D1/B ⁽¹⁾ HITACHI-ABB	3 phase set	1
26			PV L-Pris-2	Circuit breaker 150 kV	Rated voltage - 150 kV ⁽¹⁾ Rated current - 3150A ⁽¹⁾ Current off. Short-circuit current - 40 kA	LTB-170 D1/B ⁽¹⁾ HITACHI-ABB	3 phase set	1
27			TS PV L-PRCH-2 f.A	Current transformer 150 kV	Gas-insulated ⁽¹⁾ Rated voltage - 150 kV ⁽¹⁾ Transformation ratio - 1200/5 ⁽¹⁾ Accuracy class - 0.2S/10P/10P/10P	TG 170 ⁽¹⁾ HITACHI-ABB	phase	3
28			RV TN-1 f.B	Discharge arrester 150kV	Rated voltage - 150 kV	3EL3 138-2PM31-4NE1 ⁽¹⁾ Siemens	phase	3
29			L-COF-2-1 f.A	Disconnecter 150 kV, with one earthing switch	Rated voltage - 150 kV ⁽¹⁾ Rated current - 2000A	S2DAT ⁽¹⁾ GE (ALSTOM)	3 phase set	1
30			TN-1A	Voltage transformer 150kV	Rated voltage - 150 kV	SVS 170 ⁽¹⁾ Trench (Siemens)	phase	3

31	Western	SS 750kV [REDACTED]	AT-2, phase B	Autotransformer 750 kV	Single-phase. Rated capacity - 333000 kVA. HV/MV/LV voltages - 750/330/15.75 kV	AODTsTN333000/750/330 ZTR	phase	1	
32		SS 330 kV [REDACTED]	AT-1	Bushing 330 kV	1) GMTP-45-330/1000-u1 (AT-1 f. A) IEEE.686.343.008 2) GMTPA-45-330/1000-U1 (AT-1 f. B) 2Shchts.800.093.01 3) GKTII-45-330/1000-O1 (AT-1 f. C) IEEE.686353.001	ETFt-1175-363-B E9 (art. no. 327921)	pcs	3	
33			SA-110 AT-1	Surge arrester 110 kV	Rated voltage of the arrester (Ur) - 108 kV Line discharge class - 2	3EL2 108-2PJ31-4TA1-Z Siemens	3 phase set	1	
34				AT-1	Autotransformer 330 kV	Three-phase. Capacity - 125 000 kVA. HV/MV/LV voltages - 330/110/10 kV	ATDTN -125000/330/110/10 ZTR	pcs	1
35			SS 330 kV [REDACTED]	VDT-1	Regulating transformer 35 kV	Three-phase. Power - 40 000 kVA. HV/LV voltages - 11/11±10x1.5% kV	LTDN-40000/10 ZTR	pcs	1
36				RVS-110 AT-1	Discharge arresters 110kV	Rated voltage of the arrester (Ur) - 108 kV Line discharge class - 2	3EL2 108-2PJ31-4TA1-Z Siemens	3 phase set	1

37	Southern	SS 330kV [REDACTED]	AT-1	Bushing 330 kV	Type GSB 362\1600\0.66B Rated voltage - 330 kV _{SEP} Rated current - 1600A	No.	pcs	1
38		SS 330kV [REDACTED]	2T	Bushing 110 kV	110 kV 800A bushing type BRIT R-110-550\800 No. KN 1.9.005-RY Rated voltage - 110 kV _{SEP} Rated current - 800A	EBRGL-126-800-2360	pcs	2
39		SS 330kV [REDACTED]	5AT	Autotransformer 330 kV	Type ATDTN-200000/330/110/10, three-phase, capacity - 200 000 kVA _{SEP} HV/MV/LV voltages - 330/110/10 kV	ATDTN -200000/330/110/10 _{SEP} ZTR	set	1
40		SS 330kV [REDACTED]	2AT	Autotransformer 330 kV	Type ATDTN-200000/330/110/10, three-phase, capacity - 200 000 kVA _{SEP} HV/MV/LV voltages - 330/110/10 kV	ATDTN -200000/330/110/10 _{SEP} ZTR	set	1
41		SS 330kV [REDACTED]	2AT	Bushing 330 kV	Type GMT II - 45-330/1000 U1 Rated voltage - 330 kV _{SEP} Rated current - 1000A	DTOI-363\1000\T600	pcs	1
42		SS 330kV [REDACTED]	2AT	Bushing 110 kV	Type GMTB-90-110/2000 UHL1 Rated voltage - 110 kV _{SEP} Rated current - 2000A	GBRGL-126\2000-2460	pcs	1
43		SS 330kV [REDACTED]	SA-330-2AT	Discharge arresters 330kV	Type RVMG-330 Rated voltage (Ur) - 330 kV _{SEP} Line discharge class - 2	PEXLIM Q288-YH 362, 3EL2-288-3PM42-4NA1 362, 3EQ1 288-2PP32-4NF1	pcs	3
44		SS 330kV [REDACTED]	R-VT-330-1C	Disconnecter 330kV, with one earthing switch	Type RNDZ-1b-330/3200 Rated voltage - 330 kV _{SEP} Rated current - 3200 (2000) A	CBD-E 362-2000	3 phase set	1
45		SS 330kV [REDACTED]	VT-330-1C	Voltage transformer 330 kV	Type TEMP-362 Gas-insulated anti-resonant _{SEP} Nominal voltage - 330000/ $\sqrt{3}$ / 100/ $\sqrt{3}$ / 100 / 100/ $\sqrt{3}$ Power of secondary windings not less than 100VA		pcs	3
46		SS 330kV [REDACTED]	AT-1	Autotransformer 330kV	Type ATDTN-250000/330/110/35, three-phase, capacity - 250 000 kVA _{SEP} HV/MV/LV voltages - 330/150/35 kV	ATDTSN -200000/330/150/35 _{SEP} ZTR	set	1
47		SS 330kV [REDACTED]	SA-150-1AT	Surge arrester 150kV	Type PEXLIM Q 198 XH 245 Rated voltage (Ur) - 245 kV _{SEP} Line discharge class - 2	3EL3 276-4PL52-4XE1	pcs	3

48	Southern	SS 330kV [REDACTED]	AT-332-2	Disconnecter 330kV, with two grounding knives	Type RNDZ-2-330-3200 Rated voltage - 330 kV _{SEP} Rated current - 3200 (2000) A	CBD-E 362-2000	3 phase set	1
49		SS 330kV [REDACTED]	SA-AT-331	Surge arrester 330kV	Type PEXLIM Q288-YH 362 Rated voltage (Ur) - 362 kV _{SEP} Line discharge class - 2	3EL2-288-3PM42-4NA1 362, 3EQ1 288-2PP32-4NF1	pcs	3
50		SS 330kV [REDACTED]	L-223-01, L-223-1	Disconnecter 330kV, with two earthing switches	Type S2DAT2T-330\3150 Rated voltage - 330 kV _{SEP} Rated current - 3150 (2000) A	CBD-E 362-2000	3 phase set	2
51		SS 330kV [REDACTED]	EV-L-223\1	Circuit breaker 330 kV	Type GL-315 Rated voltage - 330 kV _{SEP} Rated current - 3150A _{SEP} Current disconnect. Short-circuit current - 50 kA	LTB-420, 3AP2 FI-420	3 phase set	1
52		SS 330kV [REDACTED]	BP-AT-333	Discharge arresters 330kV	Type RVMG-330 Rated voltage (Ur) - 362 kV _{SEP} Line discharge class - 2	PEXLIM Q288-YH 362 ,3EL2-288-3PM42-4NA1 362, 3EQ1 288-2PP32-4NF1	pcs	3
53		SS 750kV [REDACTED]	RV-RSh-Don, RV-L-Don	Discharge arresters 750 kV	Type RVMK-750M Rated voltage (Ur) - 750 kV _{SEP} Line discharge class - 2	SB 612/20.5-II, 3EQ3 612-5PU53-4NE1, TEKSLIM T588-AH800ME	pcs	6
54		SS 750kV [REDACTED]	L-Don\1, L-Don\2	Circuit breaker 750 kV	Type LTB-800E-4000-40 Rated voltage - 750 kV _{SEP} Rated current - 4000A _{SEP} Current disconnect. Short-circuit current - 40 kA	No.	3 phase set	2
55		SS 750kV [REDACTED]	1TN-L-Dn, 2TN-L-Dn	Voltage transformer 750 kV	Type NDE-750-72U1 Gas-insulated anti-resonant _{SEP} Nominal voltage - 750000/V3 / 100/V3 / 100 / 100/V3 Power of secondary windings not less than 100VA		pcs	6
56		SS 330kV [REDACTED]	AB-1	Accumulator battery	Type SK-10 Battery voltage - 230 V _{SEP} Cell voltage - 2 V _{SEP} Capacity - 360 Ah _{SEP} Service life - not less than 20 years		set	1

57	Northern	SS 750 kV [REDACTED]	V ROM-ChNPP	Circuit breaker 750 kV	Rated voltage - 750 kV _{SEP} Rated current - 4000A _{SEP} Current off. Short-circuit current - 40 kA gas-insulated	GL 318	set	1
58			CT B-750 CHNPP	Current transformer 750 kV	Gas-fired _{SEP} Rated voltage - 330 kV _{SEP} Transformation ratio - 4000-3000-2000-1500/1 _{SEP} Accuracy class - 0.2S/0.2S/5P/5P/5P/5P	SAS-800	phase	1
59			R ROM ChNPP	Disconnecter 750 kV	Unom - 750 kV _{SEP} In - 3150A _{SEP} with one earthing switch	analog of RPG-1-750/3150	3 phase set	1
60			SA-750 ROM-ChNPP	Surge arrester 750 kV	Rated voltage of the arrester (Ur) - 612 kV _{SEP} Line discharge class - 2	3EQ4 612-4PV57-4XZ9-Z	3 phase set	1
61		SS 330 kV [REDACTED]	RV-330 AT-2	Discharge arrester 330 kV	Rated voltage of the surge arrester (Ur) - 288 kV _{SEP} Line discharge class - 2		3 phase set	1
62		SS 330 kV [REDACTED]	RV-330 1AT	Discharge arrester 330 kV	Rated voltage of the surge arrester (Ur) - 288 kV _{SEP} Line discharge class - 2		3 phase set	1
63			RV-150 1AT	Discharge arrester 150 kV	Rated voltage of the surge arrester (Ur) - 138 kV _{SEP} Line discharge class - 3	3EL3 138-2PM31-4NE1 _{SEP} Siemens	3 phase set	1
64		SS 750 kV [REDACTED]	RV-330 AT-2	Discharge arrester 330 kV	Rated voltage of the arrester (Ur) - 288 kV _{SEP} Line discharge class - 2	3EL2-288-3PM42-4NA Siemens _{SEP} SB 288/20.4-I TRIDELTA _{SEP} PEXLIM Q 288-XH 362 HITACHI-ABB	3 phase set	1
65		SS 750 kV [REDACTED]	RV-150 AT-2	Discharge arrester 150 kV	Rated voltage of the arrester (Ur) - 108 kV _{SEP} Line discharge class - 2	3EL2 108-2PJ31-4TA1-Z _{SEP} Siemens	3 phase set	1
66		SS 750 kV [REDACTED]	Reserve-2	Circuit breaker 110 kV	Rated voltage - 110 kV _{SEP} Rated current - 4000A _{SEP} Current off. Short-circuit current - 40 kA gas-insulated	LTB 145 D1/B	3 phase set	1
67	SS 750 kV [REDACTED]	CU L-SU NPP	Current transformer 750 kV	Gas-insulated _{SEP} Rated voltage - 330 kV _{SEP} Transformation ratio - 4000-3000-2000-1500/1 _{SEP} Accuracy class - 0.2S/0.2S/5P/5P/5P/5P	SAS-800	phase	1	

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List of damaged equipment from the missile strike on 22.03.24



№ Equipment	
Unit-1	
1	SF6 Circuit Breaker type LTB145D1/B
2	Current transformer type IMB 123
3	Transformer type TDC 125000/110
4	Line + descents type (AC 240)
5	Single-pole earthing knife of transformer type ZON-110M-I UHL1
6	Conductor type TZMEP-10 (6 KV)
7	Measurement and control equipment & automatics (type and quantity to be specified)
8	Pipelines of the fire extinguishing system Du-159
9	Hydraulic couplings type VOITH 620 SVNL 33G
10	Ejectors type EP-3-2A

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List of damaged equipment from the missile strike on 22.03.24



Unit-2

1	Turbogenerator - TVF-120-2-U3
2	Thyristor excitation system for the turbine generator type SVTG-3.85/375-1KS2T2.5-AR24-UHL4
3	A set of panels of electrical protection and automation based on PM RPA "Diamant"
4	Conductor of generator type IPB-AI-E-15, 75-8000-460-UHL1
5	SF6 Circuit Breaker type GL-312 F1/4031
6	Surge arrester type PEXLIM R108-YV123
7	SF6 Circuit Breaker type LTB145D1/B
8	Line + descents type (AC 300)
9	Transformer type TRDNS-25000/10
10	Conductor type TZMEP-10 (6 KV)
11	Measurement and control equipment & automatics (type and quantity to be specified)
12	Pipelines of the fire extinguishing system Du-159
13	Ejectors type EP-3-2A
14	Hydraulic coupling type VOITH 620 SVNL 33G
15	Electric drives Exlar GSX30-06-02-MFA-MN1-238-AR-L2-XM-47985

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List of damaged equipment from the missile strike on 22.03.24



Unit-3

1	Pipeline of network water with a diameter of 1200 mm and tees
2	Gate valves DN800 type 30s927nzh
3	Pumping units type 500D-22; D1600-30
4	Cable products (type and quantity to be specified)
5	Measurement and control equipment & automatics (type and quantity to be specified)

Transformer 10T

- | | |
|---|--|
| 1 | Descent from the disconnecter (AC 240) |
| 2 | Conductor type TZMEP-10 (6 KV) |

Second power supply of transformer 20T

- | | |
|---|--|
| 1 | SF6 Circuit Breaker type GL-312 F1/4031 |
| 2 | Current transformer type TFZM -123 II-IV U1 |
| 3 | Disconnecter type (SDF 145/1600) |
| 4 | Single-pole earthing knife of transformer type ZON-110M-I UHL1 |

The list of destroyed (damaged) equipment will be supplemented as the rubble is cleared

List of needed equipment to recover DTEK Energy Thermal Power Plants

Producers of equipment

DTEK would appreciate the support to restore the destroyed thermal generation by the provision of grant financing required to produce critically needed equipment, indicated below:



#	Priority	Infrastructure	TPP	Item name and specification	Unit	Quantity	Unit price, mln \$	Costs, mln \$	Recovery date (if the equipment is delivered on the specified date)	Potential supplier**	Impact
1	1	Generation		Power unit transformer 250 MVA 220 kV / 15.75 kV	pcs	2	2.5	5	July 2024 (01.06.2024)	ZTR (Ukraine), GE, Siemens	+242 MW of generating capacity, electricity and heat supply for 193.6 thousand people
2	1	Generation		Power unit transformer 250 MVA 330 kV / 15.75 kV	pc	1	2.5	2.5	July 2024 (01.06.2024)	ZTR (Ukraine), GE, Siemens	+150 MW of generating capacity, electricity and heat supply for 120 thousand people
3	1	Transmission		Autotransformer 240 MVA / 330 kV / 220 kV / Yauto/d-11	pc	1	2.3	2.3	May 2024 (01.05.2024)	ZTR (Ukraine), GE, Siemens	Ensuring the transmission of electricity between lines with different voltage classes and improving grid reliability
4	1	Transmission		Autotransformer 210 MVA / 400 kV / 330 kV / Yauto/d-11	pcs	3	2.6	7.8	July 2024 (01.07.2024)	ZTR (Ukraine), GE, Siemens	Ensuring the transmission of electricity between lines with different voltage classes and improving grid reliability
5	1	Transmission		Autotransformer 133 MVA / 400 kV / 220 kV / Yauto/d-11	pc	1	2.3	2.3	October (01.10.2024)	ZTR (Ukraine), GE, Siemens	Ensuring the transmission of electricity between lines with different voltage classes and improving grid reliability
6	1	Transmission		Autotransformer 250 MVA / 330 kV / 150 kV	pcs	2	3.5	7	June 2024 (01.05.2024)	ZTR (Ukraine), GE, Siemens	Ensuring the transmission of electricity between lines with different voltage classes and improving grid reliability
7	1	Generation		Power unit transformer 400 MVA / 154 kV / 20 kV	pc	1	3.4	3.4	November 2024 (01.10.2024)	ZTR (Ukraine), GE, Siemens	+290 MW of generating capacity, electricity and heat supply for 232 thousand people
8	1	Generation		Power unit control system + TCS + turbine excitation system	pcs	2	2.1	4.2	May 2024 (01.05.2024)	ABB, Siemens, Emerson, Schneider Electric	Critically needed for the repair of power units No. 3-4
9	1	Generation		Power unit transformer 250 MVA / 150 kV / 18 kV	pc	1	2.9	2.9	May 2024 (01.05.2024)	ZTR (Ukraine), GE, Siemens	+124 MW of generating capacity, electricity and heat supply for 99.2 thousand people
10	1	Transmission		Autotransformer 400 MVA / 330 kV / 150 kV	pcs	2	3.2	6.4	September 2024 (15.09.2024)	ZTR (Ukraine), GE, Siemens	Ensuring the transmission of electricity between lines with different voltage classes and improving grid reliability
11	2	Generation		Auxiliary transformer 35 MVA	pcs	5	0.55	2.75	May 2024 (10.05.2024)	ZTR (Ukraine), GE, Siemens	+565 MW of generating capacity, electricity and heat supply for 452 thousand people
12	2	Generation		Equipment to recover power unit #9	pc	1	11.6	11.6	2025 (01.12.2024)	ABB, Siemens, Emerson, Schneider Electric	+185 MW of generating capacity, electricity and heat supply for 148 thousand people
13	2	Generation		Power unit transformer 200 MVA / 220 kV	pc	1	1.95	1.95	2025 (01.12.2024)	ZTR (Ukraine), GE, Siemens	+160 MW of generating capacity, electricity and heat supply for 128 thousand people
14	2	Generation		Equipment to recover power unit #8	pc	1	4.83	4.83	2025 (01.12.2024)	ABB, Siemens, Emerson	(№13)
15	2	Generation		Auxiliary transformer 32 MVA / 20 kV / 6,3 kV	pc	1	0.55	0.55	December 2024 (01.12.2024)	ZTR (Ukraine), GE, Siemens	Possibility to operate the station through powering its own needs
16	2	Generation		Start-up and backup transformer 32 MVA / 150 kV / 6,3 kV / 6,3 kV	pc	1	0.55	0.55	December 2024 (01.12.2024)	ZTR (Ukraine), GE, Siemens	Possibility to operate the station through powering its own needs
17	2	Generation		Excitation transformer 20 kV / 1 kV	pc	1	0.1	0.1	June (01.06.2024)	ABB	Restoration of power unit operation capability
18	2	Generation		Auxiliary transformer 40 MVA	pc	1	0.8	0.8	October 2024 (01.10.2024)	ZTR (Ukraine), GE, Siemens	Possibility to operate the station through powering its own needs
19	3	Generation		Generator 200 MW	pcs	2	16	32	2025 (01.05.2024)	Ukrainian Energy Machines, GE, Siemens	+329 MW of generating capacity, electricity and heat supply for 263 thousand people
20	3	Generation		Generator 300 MW	pc	1	24	24	November 2024 (01.06.2024)	Ukrainian Energy Machines, GE, Siemens	+290 MW of generating capacity, electricity and heat supply for 232 thousand people
21	3	Generation		Turbine 300 MW	pc	1	30	30	2025 (2025)	Ukrainian Energy Machines, GE, Siemens	(№21)
22	3	Generation		Generator 300 MW	pcs	2	24	48	2025 (2025)	Ukrainian Energy Machines, GE, Siemens	+438 MW of generating capacity, electricity and heat supply for 350 thousand people
23	3	Generation		Turbine 300 MW	pc	1	30	30	2025 (2025)	Ukrainian Energy Machines, GE, Siemens	(№22)

List of needed equipment to resume operations in Naftogaz Group entities



Item No.	Industry	Item name and specification	Unit	Quantity	Potential supplier	Impact
1	Distribution	ERW steel pipe (DN250-1000)	m	750	AB Metal Group	
2	Distribution	Polyethylene pipes for combustible gas distribution PE 100 SDR-17.6	m (coil)	520	AB Metal Group	
3	Distribution	Flanged ball valve, full bore 11c336n PN16 with reducer	pcs.	24	AB Metal Group	
4	Distribution	Ball valve DN 350-1000 PN 25 (flanged)	pcs.	48	AB Metal Group	Provision of natural gas to households
5	Distribution	Flanged welded ball valve, full bore 11c337n DN250-300 PN25 with reducer	pcs.	24	AB Metal Group	
6	Distribution	Ball valve DN 400—600 PN 25	pcs.	28	AB Metal Group	
7	Distribution	Welded ball valve with installation above ground level DN 700	pcs.	6	AB Metal Group	
1	Production	Propane freeze-out unit Q=100-6000 tcm/day	pcs.	8	Enerflex / QB Jonson / Propak Systems	Commodity gas quality assurance and improved gas condensate & LPG extraction
2	Production	Gas piston compressor with gas piston drive , Qg = 58-540 tcm/day	pcs.	10	EGS, Enerflex	
3	Production	Gas piston compressor with gas piston engine drive	pcs.	5	EGS, Enerflex	Maintaining and ramping-up gas production
4	Production	Gas turbine drive with centrifugal compressor	pcs.	6	SolarTurbines	
1	Heating	Disconnecter 110kW Disconnecter 110kW PД3-1-110/1000	pcs.	7	ABB	
2	Heating	Disconnecter 110kW Disconnecter 110kW PД3-2-110/1000	pcs.	9	ABB	
3	Heating	Vacuum circuit breaker BP35HC outdoor installation, electromagnetically operated, with locking in the working position. Remote control.	pcs.	11	ABB / Schneider Electric	Ensuring reliable heat supply
4	Heating	Vacuum circuit breaker 6-10 kW BP1	pcs.	50	ABB / Schneider Electric	
5	Heating	Core switch BPC-110	pcs.	7	ABB / Schneider Electric	
6	Heating	Pump type CE 1250-140-11 with electric motor, skid-mounted	pcs.	7	Wilo	

List of needed equipment to resume operations in Naftogaz Group entities



Item No.	Industry	Item name and specification	Unit	Quantity	Potential supplier	Impact
1	Heating	Network pump CE 800/100	set	1	Wilo SE/ Grundfos	Ensuring reliable heat supply
2	Heating	Network pump CE 1250/140	set	3	Wilo SE/ Grundfos	
3	Heating	Water treatment system for heat supply system in modular design, system capacity: 100 cubic metres/hour	system	1	ECOSOFT SPC Ltd.	
1	Heating	ABB Gas circuit breaker type LTB 170 D1/B or GENERAL ENERGY GL313 F1/4031P	set	6	GENERAL ENERGY	Ensuring reliable heat supply
2	Heating	154 kV disconnecter type PД3-2-150/1000 Y1, with drive	set	14	GENERAL ENERGY / ABB	
3	Heating	Current transformer IBM (170 kV) or series TФ3M-170-I Y1, 600/5	set	6	GENERAL ENERGY / ABB	
4	Heating	Voltage transformer EMF (154 kV)	set	2	ABB	
5	Heating	Surge arrester PEXLIM Q144-XH170	set	3	Hitachi Energy	
1	Heating	Power transformer 500 kVa, 6300/23V, Connection scheme wye-wye-5 and Wye-delta-100	Unit	1	LLC "ELTECHKOMP"	Ensuring reliable heat supply
2	Heating	Network pump Д-1250-125 1250tph, Head 125m 1480R/min, 630kW Voltage 6000V	Unit	1	UKRNASOSPROM	
3	Heating	Pressure regulator ITRON 3000 m3/h, Inlet pressure 0.6 bar, Outlet pressure 0.25 bar, Number of reduction lines-2	Unit	1	LLC "EPC "Yevropyrad"	

List of needed equipment to resume operations in Naftogaz Group entities



Item No.	Industry	Item name and specification	Unit	Quantity	Potential supplier	Impact
1	Heating	Power transformer ТРДHC-32000/35-Y1	pcs.	1	PJSC "Zaporozhtransformator"	
2	Heating	Lube oil cooler МП-21	pcs.	4	Spetzpromarmatura	
3	Heating	Wilo Atmos GIGA-N 40/160-4/2 pump set	pcs.	1	Spetzpromarmatura	
4	Heating	Wilo Atmos GIGA-N 50/200-11/2 pump set	pcs.	2	Spetzpromarmatura	
5	Heating	Wilo SCP-200-360-HB stainless pump set	pcs.	1	Spetzpromarmatura	
6	Heating	Wilo Atmos GIGA-B 125/305-37/4-P6 pump set	pcs.	2	Spetzpromarmatura	
7	Heating	Wilo Atmos GIGA-B 80/170-30/2 pump set	pcs.	1	Spetzpromarmatura	
8	Heating	Wilo Atmos GIGA-B 65/215-22/2 pump set	pcs.	2	Spetzpromarmatura	Ensuring reliable heat supply
9	Heating	Pumping group: Wilo Yonos GIGA-N 50/200-18,5/2-R1 pump - 3 pcs with control device	pcs.	1	Spetzpromarmatura	
10	Heating	Wilo SCP 200/460HA-160/4-FC pump set	pcs.	1	Spetzpromarmatura	
11	Heating	Wilo FA10.65E pump (with FK202H-4/22 drive, EMU pump, horizontal installation)	pcs.	4	Spetzpromarmatura	
12	Heating	Wilo Atmos GIGA-N 80/200-30/2 pump set	pcs.	3	Spetzpromarmatura	
13	Heating	Wilo SCP 250/700DV-630/4/6kV-R1/E1-FC pump set with 6000 V frequency converter	pcs.	2	Spetzpromarmatura	

List of needed equipment to resume operations in Naftogaz Group entities



Item No.	Industry	Item name and specification	Unit	Quantity	Potential supplier	Impact
1	Storage	Above-ground ball valve DN100 PN150 (ANSI 900) with pneumatic actuator	pcs.	58	LLC "VKM-ARMATURA" / LLC "NVP"ARMA-T" / LLC OIL AND GAS EQUIPMENT PLANT / «MIK», LLC	
2	Storage	Fountain-type fitting	pcs.	6		
3	Storage	Casing Head Assembly	pcs.	6		
4	Storage	Gate valve 2 9/16" (65 mm) 3000 psi (21Mpa)	pcs.	50	M-EC LTD / LLC THE TRADING HOUSE ZAPIRNA ARMATYRA / LTD SPA SOUZENERGOMASH / «MIK», LLC / LLC "EKOTRANSOIL"	
5	Storage	Gate valve 4 1/16" (100 mm) 3000 psi (21Mpa)	pcs.	50		
6	Storage	Manual ram blow-out preventer 7 1/16" x 3000 PSI	pcs.	3	LLC Rost.energoinvest	
7	Storage	High performance motor pump (60 l/s) with discharge hose L=300m.	pcs.	2	LLC AGROSPECTECH PLUS / LLC IC POZHMASHINA	Provision of natural gas to households, Storage of gas from foreign partners
8	Storage	Portable Petrol Welding Generator (200A)	pcs.	2	Honda Power Products	
9	Storage	Special off-road vehicle with a high-pressure pump	pcs.	2		
11	Storage	All-terrain steamer truck	pcs.	1	UKR TRUCK, LLC / LLC IC POZHMASHINA	
10	Storage	All-terrain tank truck (volume 10-12 m3)	pcs.	2	UKR TRUCK, LLC	
12	Storage	Lifting unit for well workover with a lifting capacity of 60-80 tonnes.	pcs.	2	Kharkiv Plant of Transport Equipment LLC / Discovery Drilling Equipment (DDE) / National Oilwell Varco / Service King Mfg / STREICHER	
13	Storage	Cementing unit for repairing wells	pcs.	3	UKR TRUCK, LLC / LLC IC POZHMASHINA	
14	Storage	Gas turbine gas pumping unit of 25-32 MW	pcs.	2	Baker Hughes, Solar, Siemens	