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EMERGENCY DIESEL GENERATOR PACKAGE DP-1
Data Sheet

Document No	F3-431-EL-DSH-EMG-0001	Rev. No/ Date	00 / 27.03.2023	Page No 4

CLIENT:	BOTAS	DOCUMENT NO:	F3-431-EL-DSH-EMG-0001	REV NO:	00
LOCATION:	Turkey	EQUIPMENT TITLE:	Emergency Diesel Generator Package DP-1 Data Sheet		
SERVICE:	Electrical Power Generation	ITEM NO:	431-GEN-810	NO. REQUIRED:	1
PROJECT:	Kuzey Marmara Underground Gas Storage Expansion (Phase III)	P.O. NO:	-	P.O. DATE:	-
PROJ. NO:	IKN 2019/430389	ENQUIRY NO:	-	PAGE:	4 OF 6

CONSTRUCTION

1.	APPLICABLE STANDARD:	**IEC 60034**	19.	MAIN TERMINAL BOX IP RATING:	**IP21**
2.	ALTERNATOR DEGREE OF PROTECTION:	**IP45 (KK-TQ-BOTAS-0024)**	20.	NUMBER OF POWER CABLES:	**Refer Note 10**
3.	WINDING TEMPERATURE DETECTION:	**PT100**	21.	POWER CABLE SIZE:	**Refer Note 10**
4.	VIBRATION DETECTORS REQUIRED:	**No**	22.	NUMBER OF POWER CABLES:	**Refer Note 10**
5.	PREFORMED FOR EARTHING APPARATUS:	**Yes**	23.	CABLE ENTRY:	**Bottom or side**
6.	SPACE HEATER:	**Yes**	24.	HAZARDOUS AREA CLASSIFICATION:	**N/A**
7.	PAINTING SPECIFICATION:	**Refer Note 5**	25.	HAZARDOUS AREA CLASSIFICATION:	**N/A**
8.	TYPE OF COOLING:	**Alternator to be air cooled**	26.	TYPE OF STARTING SYSTEM:	**BATTERY STARTING**
9.	COOLING SYSTEM:	**Closed circuit with radiator**	27.	NOISE LEVEL:	**75dBA @ 1m WITH ACOUSTIC ENCLOSURE**
10.	SPEED	**≤ 1500 rpm**	28.	ACOUSTIC AND ENVIROMENTAL ENCLOSURE	**IP55**

DRIVEN MACHINE

11.	GENERATOR Cont. rated power	200KVA (KK-TQ-BOTAS-0069)	29.	Power at 110 %:		kW
12.	Emergency Power	kVA	30.	Power at 100 %:		kW
13.	Allowed Overrun	% / h	31.	Fuel consumption:	50% 75%	l/h
14.	Rotating Speed:	rpm	32.		100% 110%	l/h
15.	Coupling Type		33.	Heat emission	Radiation and convection:	kW
16.	Rotation Facing Coupling: Clockwise	Anticlockwise	34.	out of Cooling Medium		kW
17.	Bore/Stroke	mm	35.	out of Intercooler Air		kW
18	Rated Torque	Nm				Nm

INSPECTION AND TESTING

36. ENGINE Mfr. ROUTINE SHOP TEST & TEST CERTIFICATES
37. FUEL CONSUMPTION & GOVERNING TEST AT ENGINE VEDOR'S SHOP
38. FULL LOAD TEST FOR 4 HOURS OF ENGINE GENERATOR SET AT PACKAGER'S/ ENGINE VENDOR'S SHOP
39. NO LOAD MECHANICAL RUN TEST AT PCKAGER'S/ DRIVEN EQUIPMENT Mfr. SHOP

NOTES

1. Auto transfer scheme shall be required for generator and shall be capable of running in parallel with the main incoming supply.
2. Refer to Specification for Emergency Diesel Generators, document no. F3-000-ME-SPC-MEP-0005.
3. For details of paint preparation and finish, refer to the Specification for Paint and Protective Coating, document no. F3-000-PI-SPC-PNT-0001.
4. Generator shall start automatically if mains voltage fall below 80% (for 2 secs). Generator Stop, Tripped, Alarm, Available & Operational Status signals to and from DCS shall be provided via a hardwired link.
5. Emergency shutdown signals shall be hardwired directly from the Emergency Shutdown (ESD) System.
6. Generators shall have protection included as part of switchboard Incoming circuit breaker.
7. For details of load requirements, refer to the Electrical Load List DP-2, document no. F3-431-EL-LST-ELO-0001.
8. Refer to Cable List DP-2, document no. F3-431-EL-LST-PCL-0002 for details.
9. F&G dedectors shall be specified for EDG package (inside of enclosure)
10. EXHAUST is critical type and stainless steel.
11. The DG set shall be designed for black start condition. The battery bank shall be sized for six (6) consecutive starts and shall be supplied with all the necessary cabling and battery stand.'
12. 'The exciter capacity shall be at least 20 % more than the maximum requirement at any time.'
13. Air intake and exhaust are specified in the EDG group view
14. 'The generator terminal voltage shall be adjustable with a continuously variable potentiometer. The adjustment range shall be + 10% of the nominal voltage
15. The generator shall be capable of withstanding without injury the effects of a continuous current unbalance corresponding to a negative-phase sequence current of 8% of the rated current for cylindrical rotor machines and 10% for salient pole machines provided none of the phase current exceeds rated current
16. Degree of protection for generator control panel shall be min IP21.

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PROJECT:	Kuzey Marmara Underground Gas Storage Expansion (Phase III)	P.O. NO:	-	P.O. DATE:	-
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VENDOR DATA (Refer Note 1)

1.	MANUFACTURER:		62.	COOLING WATER DESIGN PRESSURE (Min / Max):	bar g
2.	TYPE:		63.	LEAK DETECTION SYSTEM:	
3.	DEGREE OF PROTECTION:	IP	64.	WINDING TEMPERATURE SENSORS (Type / No. of):	
4.	FRAME SIZE (IEC):		65.	VIBRATION DETECTORS (Type / No. of):	
5.	ROTOR TYPE (SALIENT POLE / CYLINDRICAL):		66.	HEAT EXCHANGER MATERIAL:	
6.	SYNCHRONOUS SPEED:	rpm	67.	BEARING DRIVE END (Type / No. of):	
7.	DIRECTION OF ROTATION (Facing Shaft End):	CW / CCW	68.	BEARING NON DRIVE END (Type / No. of):	
8.	OVERALL DIMENSIONS (L x W x H):	mm	69.	THRUST BEARING (Type / No. of):	
9.	DIMENSIONAL DRAWING No:		70.	ALLOWED AXIAL THRUST:	N
10.	WEIGHT OF OVERALL MACHINE:	kg	71.	BEARING LUBRICATION SYSTEM (Incl. / Not Incl.):	
11.	WEIGHT OF ROTOR:	kg	72.	LUBRICANT:	ISO VG
12.	WEIGHT OF EXCITER:	kg	73.	BEARING TEMPERATURE DETECTORS (Type / No. of):	
13.	WEIGHT OF HEAT EXCHANGER (Dry):	kg	74.	LUBRICATION OIL PRESSURE:	bar g
14.	WEIGHT OF COOLANT:	kg	75.	LUBRICATION OIL TEMPERATURE:	°C
15.	PRIME MOVER - MOMENT OF INTERTIA J=GD² / 4	kg m²	76.	SOUND PRESSURE LEVEL:	dBA
16.	GENERATOR - MOMENT OF INTERTIA J=GD² / 4	kg m²	77.	COUPLING TYPE:	
17.	RATED VOLTAGE:	V	78.	PAINTING SPECIFICATION:	
18.	RATED FREQUENCY:	Hz			
19.	RATED POWER OUTPUT:	kVA		**EXCITER**	
20.	RATED POWER FACTOR:		79.	TYPE AND MANUFACTURER:	
21.	DUTY TYPE:		80.	RATED CURRENT:	A
22.	RATED CURRENT:	A	81.	RATED VOLTAGE:	V
23.	MAX. ALLOWABLE NEG.PHASE SEQ. CURRENT:	%	82.	EXCITATION POWER SOURCE:	
24.	MAX. ALLOWABLE CONT. OF HARMONICS (THD):	%	83.	INSULATION CLASS (STATOR / ROTOR):	
25.	EFFICIENCY AT 1/1 AND 3/4 LOAD:	%	84.	TEMPERATURE RISE CLASS (STATOR / ROTOR):	
26.	FIELD CURRENT NO LOAD:	A	85.	PILOT EXCITOR RATED CURRENT:	A
27.	FIELD CURRENT RATED LOAD:	A	86.	PILOT EXCITOR RATED VOLTAGE:	V
28.	INSULATION CLASS (STATOR / ROTOR):				
29.	TEMP. RISE CLASS (STATOR / ROTOR):			**AUTOMATIC VOLTAGE REGULATOR (AVR)**	
30.	OVERLOAD CAPABILITY (HOURS):	%	87.	TYPE AND MANUFACTURER:	
31.	OVERLOAD CAPABILITY (MINUTES):	%	88.	VOLTAGE STABILITY, FULL OPERATING RANGE	±%
32.	OVERLOAD CAPABILITY (SECS):	%	89.	VOLTAGE DRIFT, FULL OPERATING RANGE:	±%
33.	SUSTAINED SHORT CIRCUIT (FOR SECONDS)	%	90.	VOLTAGE SET POINTS ADJUSTMENT:	
34.	SHORT CIRCUIT RATIO:		91.	CURRENT LIMITATION:	
35.	DIR. AXIS SUB TRANSIENT REACTANCE (X"d) - Unsat:	% ±	92.	OVER / UNDER EXCITATION LIMITER:	
36.	DIR. AXIS SUB TRANSIENT REACTANCE (X"d) - Sat:	% ±			
37.	QUAD AXIS SUB-TRANSIENT REACTANCE (X"q):	% ±		**SYSTEM RESPONSE**	
38.	DIR. AXIS TRANSIENT REACTANCE (X'd) - Unsat:	% ±	93.	VOLTAGE RESPONSE (MAXIMUM DEVIATION / RECOVERY TIME)	
39.	DIR. AXIS SUB TRANSIENT REACTANCE (X'd) - Sat:	% ±	94.	LOAD CHANGE FROM 50 TO 0%:	% / Sec
40.	QUAD AXIS TRANSIENT REACTANCE (X'q):	% ±	95.	LOAD CHANGE FROM 100 TO 50%:	% / Sec
41.	DIR. AXIS SYNC REACTANCE (Xd) - Unsat:	% ±	96.	LOAD CHANGE FROM 0 TO 50%:	% / Sec
42.	NEG. PHASE SEQUENCE REACTANCE (X2) - Unsat:	% ±			
43.	NEG. PHASE SEQUENCE REACTANCE (X2) - Sat:	% ±	97.	FREQUENCY RESPONSE (MAXIMUM DEVIATION / RECOVERY TIME)	
44.	ZERO. SEQUENCE REACTANCE (X0) - Unsat:	% ±	98.	SUDDEN LOAD CHANGE FROM 50 TO 0%:	% / Sec
45.	ZERO. SEQUENCE REACTANCE (X0) - sat:	% ±	99.	SUDDEN LOAD CHANGE FROM 100 TO 50%:	% / Sec
46.	STATOR WINDING LEAK REACTANCE (X1):	% ±	100.	SUDDEN LOAD CHANGE FROM 0 TO 50%:	% / Sec
47.	ZERO. SEQUENCE RESISTANCE:	% ±	101.	SUDDEN LOAD CHANGE FROM 50 TO 100%:	% / Sec
48.	STATOR WINDING DC RESISTANCE (Rsdc):	% ±	102.		
49.	NEGATIVE PHASE SEQUENCE WINDING RESISTANCE:	% ±		**NEUTRAL EARTHING**	
50.	POSITIVE PHASE SEQUENCE WINDING RESISTANCE:	% ±	103.	EARTHING RESISTOR:	
51.	DIR. AXIS S.C. SUB-TRANSIENT TIME CONSTANT (T"d):	Secs	104.	TYPE AND MANUFACTURER:	
52.	DIR. AXIS O.C. SUB-TRANSIENT TIME CONSTANT (T"do):	Secs	105.	RESISTANCE:	Ohms(s)
53.	QUAD. AXIS S.C. SUB-TRANS TIME CONSTANT (T"q):	Secs	106.	RESISTOR RATING:	A for Sec
54.	QUAD. AXIS O.C. SUB-TRANS TIME CONSTANT (T'qo):	Secs	107.	DEGREE OF PROTECTION: IP	
55.	DIRECT AXIS S.C. TRANSIENT TIME CONSTANT (T'd):	Secs	108.	CABLE ENTRY (Bottom / Top / Side):	
56.	DIRECT AXIS O.C. TRANSIENT TIME CONSTANT (T'do):	Secs			
57.	ARMATURE D.C. TIME CONSTANT (Ta):	Secs			
58.	COOLING METHOD:				
59.	COOLING WATER FLOW RATE (Min / Max):	m³/hr			
60.	COOLING WATER DESIGN TEMPERATURE:	°C			