Technical datasheet
neoTower® 50.0 LPG [S; HT; CV]

GHP HELLAS
AIR CONDITIONING WITH NATURAL GAS

Product designation		50.0 Standard	50.0 High Temperature	50.0 Caloric Value
		Technical data		
Rated output - electrical [1]	kW_{el}	50,0	50,0	50,0
Rated output - thermal [2]	kW_{th}	87,0	77,3	95,3
Power modulation - electrical	kW_{el}	25,0 - 50,0	25,0 - 50,0	25,0 - 50,0
Power modulation - thermal	kW_{th}	55,1 - 87,0	52,7 - 77,3	61,4 - 95,3
Energy input	kWh_{HI}	149,11	151,86	153,60
Liquefied Petroleum gas input	kg/h	11,59	11,80	11,93
Liquefied Petroleum gas input	l/h	21,46	21,85	22,10
CHP coefficient		0,57	0,65	0,52
f Primary energy factor [3]		0,276	0,349	0,304
PES	%	26,9	21,5	27,9
ErP energy efficiency label [4]		n.a.	n.a.	n.a.
Sound pressure level L_{pA} [5]	dB(A)	65	65	65
Sound power level L_{wA}	dB(A)	83	83	83
Maintenance interval	op. hrs.	3.000	3.000	3.000
		Efficiency ratios		
Electrical efficiency ratio η_{el}	%	33,5	32,9	32,6
Thermal efficiency ratio η_{th}	%	58,4	50,9	62,0
Total efficiency ratio η_{total}	%	91,9	83,9	94,6
		Heat extraction		
Flow temperature ± 5 °C	°C	80	93	80
Return flow temperature ± 5 °C	°C	25-65	35-83	25-65
min./max. ambient temperature	°C	5/30	5/30	5/30
Pressure rating - water side	PN	6	6	6
		Electrical energy generation		
Nominal voltage	V	400	400	400
Frequency	Hz	50	50	50
Nominal effective power PnG	kW_{el}	50,0	50,0	50,0
Apparent power $S_{E\ max}$	kVA	62,5	62,5	62,5
Nominal voltage UnG	V	400	400	400
Frequency	Hz	50	50	50
Cos ϕ uncompensated		synchronous	synchronous	synchronous
Reactive power compensation [6]	kVar	synchronous	synchronous	synchronous
Number of steps		synchronous	synchronous	synchronous
Degree of choking or resonance frequency		synchronous	synchronous	synchronous
Cos ϕ acc. to VDE-AR-N 4105 quadrants II, III [6]		0,80 - 1,00	0,80 - 1,00	0,80 - 1,00
Rated alternating current Ir	A	90,2	90,2	90,2
Rated alternating current Ir cos ϕ 1	A	72,2	72,2	72,2
Rated apparent power SrE	kVA	62,5	62,5	62,5
Short-circuit alternating current Alternator Ik"	A	1.170,0	1.170,0	1.170,0
Grid short circuit power with UnG Sk“	kVA	1.060,0	1.060,0	1.060,0
Start-up current Ik approx.	A	no start-up-current: Battery starter system		
		Motor		
Motor manufacturer		MAN	MAN	MAN
Number of cylinders		4	4	4
Displacement	l	4,6	4,6	4,6
Air-fuel ratio λ		1,0	1,0	1,0
Engine oil - RMB/ENGINE Oil	l	175	175	175

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			Generator	
Generator manufacturer		MARELLI	MARELLI	MARELLI
Generator type		synchronous	synchronous	synchronous
Motor start-up		not provided	not provided	not provided
Speed	rpm	1.500	1.500	1.500
			Supply and exhaust air	
Combustion air requirement	m³/h	183,00	183,00	183,00
Module ventilation flow rate	m³/h	1100,00	1100,00	1100,00
Total air requirement of module	m³/h	1283,00	1283,00	1283,00
Permissible counter-pressure of exhaust air system max. (7)	Pa	150	150	150
min./max. intake air temperature	°C	5/30	5/30	5/30
Min. cross section without hydraulic resistance	cm²	2.000	2.000	2.000
			Flue gas	
Flue gas temperature (8) / max.	°C	95 / < 150	95 / < 150	60 / < 110
Flue gas mass flow rate - damp	kg/h	193	193	193
Flue gas volume flow - dry	Nm³/h	156	156	156
Delivery pressure flue gas max.	Pa	500	500	500
Delivery pressure flue gas cascades max.	Pa	500	500	500
Emissions Nox	mg/kWh	< 240	< 240	< 240
			Dimensions & weight (50.0 Caloric Value without condensing module)	
Dimensions of module L x W x H	mm	2.531x800x1.961	2.531x800x1.961	2.531x800x1.961
Weight approx. (including operating resources)	kg	2.250	2.250	2.250
			ErP-Label	
ErP energy efficiency label (4)		n.a.	n.a.	n.a.
ErP energy input (4)	kWh_{Hs}	165,51	168,56	170,50
ErP efficiency ratio - electrical $\eta_{el,HS}$ (4)	%	30,2	29,7	29,3
ErP efficiency ratio - thermal $\eta_{th,HS}$ (4)	%	52,6	45,9	55,9
ErP efficiency ratio - total $\eta_{total,HS}$ (4)	%	82,8	75,5	85,2
Room controller category (4)		2	2	2
$P_{designh}$ (4)	kW_{el}	33,7	29,9	36,9
Q_{HE} (4)	kWh	46.734	42.291	52.704
P_{SB} electrical power requirement - standby (4)	kW_{el}	0,07	0,07	0,07
Electrical power requirement - partial load (4)	kW_{el}	0,66	0,66	0,66
$P\ el_{max}$ Electrical power requirement - full load (4)	kW_{el}	0,96	0,96	0,96
P_{stby_CHP} Thermal standing losses (4)	kW_{th}	0,87	0,87	0,87
Electrical power requirement - standby (4)	kW_{el}	0,07	0,07	0,07
η S =ηson -Σ(F1-F5) (4)		149,0	146,3	144,6
Net output - electrical	kW_{el}	49,04	49,04	49,04

1) Performance data in accordance with ISO 3046/I-2002, tolerance 5%

2) Thermal performance data tolerance 8%

3) f_{pe}-current = 2.8 displacement mix per DIN V 1859, DIN V 4701-10, GEG (attachment 4 to § 22 section 1) vaild from 11.2020

4) In accordance with EU Regulation 811/2013; 813/2013

5) Test bench measurement at 1 m interval in front of the CHP

6) Only when using the optional compensation (integrated in neoTower® 2.0, 3.3 and 4.0 / not required for neoTower® 50.0)

7) Exhaust air (without flue gas) does not have to be extracted “via the roof”

8) At a return temperature of 35 ° C and optimum operating conditions, tolerance 5%

Product designation	50.0 Standard + High Temperature + Caloric Value
Control cabinet	Fully equipped for seamless CHP unit operation with all necessary measurement and control equipment in bivalent operation. Dimensions control cabinet 800x800x300 mm; Approx. weight: 61 kg Connection cable CHP control cabinet standard 3m
Electrical connections	Supply line to control cabinet: 5x35mm² Cu up to max. 50m (fuse 100 A slow blow) max. terminal area 50mm²
	Temperature sensor cable: min. 2-08 JY(ST)Y up to 15 m length (2x1,5 mm² up to 40 m length)
	Control cables pump: 3x1,5 mm²; RJ45 Patch cable in CHP connector
Reactive current compensation	synchronous
Gas pressure [mbar / hPa]	Gas resting pressure before gas regulator: 20 - 50 (for NG and LPG)
	Flow pressure ≥ 18 (for NG and LPG)
Regulations and standards	Complies with the pertinent EU Directives for CE certification
Connections	Gas: 1" internal thread
	Heating supply line: 2" male thread / PN 6.0
	Heating return line: 2" male thread / PN 6.0
	Flue gas: DN80 PN10, DN100 after silencer
	Exhaust air: DN200; accepted back pressure to be considerd!
	Note: It is important to ensure that all terminals are connected via a flexible connection, in order to ensure vibration isolation.
	Residual pressure head secondary pump 3,5m
Method of operation	Mains parallel without emergency power, heat operated
	Use of electricity: Own requirement and infeed into the grid of the energy supply company, optional electricity-optimised modulation
	Heat usage automatically regulated in monovalent or bivalent operation with buffer tank; optionally heat-optimised modulation
Indicators and switches/buttons	Operation of the internal control and monitoring programs via central control unit (touchscreen for quick access to important functions)
	Back-lit graphical colour display with visualised system diagram and indicators for: temperature memory, motor, return line, hot water, interior, oil, flue gas, indicator for current power, water pressure, operation hours, generated energy, maintenance instructions and error notifications
	Switches/buttons: master switch, Emergency stop, Electric vehicle (Efz) charging data button, maintenance button
RMB/Report	Global live data tracking visualised in installation diagram, individual password protection, data logging with daily, weekly, monthly and annual report in graphical format, remote maintenance, remote monitoring, evaluation and reporting
Water quality	Motor circuit: 40% glycol, 60% water per VDI Regulation 2035. Operational pressure warm: 2.0 bar. Operational pressure cold: 1.8 bar. Primary pressure expenssion vessel cold: 1.0 bar. Heating circuit (“secondary circuit”): free from mechanical impurities and as a minimum in accordance with quality requirements of the Group 2, VDI Regulation 2035 Conductivity < 100µS/cm Water hardness < 1° dH 8.2 > pH-Wert < 9 Deviations cause severe damages!

Deviating values depending on environmental and operating conditions.

Technical modification, design deviation and errors excepted.