

43 MW 2018 Unused MWM TG2032-16 Natural Gas
Generators



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data

Design conditions

Comb. air temperature / rel. Humidity:	[°C] / [%]	33 / 70
Altitude:	[m]	90
Exhaust temp. after heat exchanger:	[°C]	120
NO _x Emission (tolerance - 8%):	[mg/Nm ³ @5%O ₂]	250

Genset:

Engine:	TCG2032V16	
Speed:	[1/min]	1000
Configuration / number of cylinders:	[-]	V / 16
Bore / Stroke / Displacement:	[mm]/[mm]/[dm ³]	260 / 320 / 272
Compression ratio:	[-]	12,0
Mean piston speed:	[m/s]	10,7
Mean lube oil consumption at full load:	[g/kWh]	0,3
Engine-management-system:	[-]	TEM EVO

Generator:	Marelli MJH 800 MC6	
Voltage / voltage range / cos Phi:	[V] / [%] / [-]	10500 ±10 / 1
Speed / frequency:	[1/min] / [Hz]	1000 / 50

Fuel gas data: ²⁾

Methane number:	[-]	86
Lower calorific value:	[kWh/Nm ³]	10,13
Gas density:	[kg/Nm ³]	0,82
Acc. to gas analysis		
Analysis: CO ₂	[Vol%]	3,83
N ₂	[Vol%]	0,65
O ₂	[Vol%]	0,00
H ₂	[Vol%]	0,00
CO	[Vol%]	0,00
CH ₄	[Vol%]	88,03
C ₂ H ₄	[Vol%]	0,00
C ₂ H ₆	[Vol%]	7,24
C ₃ H ₈	[Vol%]	0,00
C ₃ H ₆	[Vol%]	0,23
C ₄ H ₁₀	[Vol%]	0,00
C ₄ H ₈	[Vol%]	0,00
C ₄ H ₆	[Vol%]	0,00
C ₅ H ₁₂	[Vol%]	0,00
C ₅ H ₈	[Vol%]	0,00
H ₂ S	[Vol%]	0,00

Energy balance

Load:	[%]	100	75	50
Electrical power COP acc. ISO 8528-1:	[kW]	4300	3225	2150
Engine jacket water heat:	[kW ±8%]	1608	1197	831
Intercooler LT heat:	[kW ±8%]	366	260	168
Lube oil heat:	[kW ±8%]	497	415	358
Exhaust heat with temp. after heat exchanger:	[kW ±8%]	2455	2024	1548
Exhaust temperature:	[°C ±25°C]	459	486	515
Exhaust mass flow, wet:	[kg/h]	23847	18164	12803
Combustion mass air flow:	[kg/h]	23029	17529	12346
Radiation heat engine / generator:	[kW ±8%]	215 / 95	209 / 81	208 / 72
Fuel consumption:	[kW±5%]	10129	7863	5651
Electrical / thermal efficiency:	[%]	42,5 / 45,0	41,0 / 46,3	38,0 / 48,4
Total efficiency:	[%]	87,5	87,3	86,4

System parameters ¹⁾

Ventilation air flow (comb. air incl.) with ΔT = 15K	[kg/h]	120700
Combustion air temperature minimum / design:	[°C]	5 / 33
Exhaust back pressure from / to:	[mbar]	30 / 50
Maximum pressure loss in front of air cleaner:	[mbar]	5
Zero-pressure gas control unit selectable from / to: ²⁾	[mbar]	20 / 200
Pre-pressure gas control unit selectable from / to: ²⁾	[bar]	0,5 / 10
Air bottle, volume / pressure	[dm ³] / [bar]	2000 / 30
Starter motor:	[dm ³ /s] / [bar]	800 / 16
Lube oil content engine / base frame:	[dm ³] / [bar]	1850 / -
Dry weight engine / genset:	[kg]	24890 / 51200

Cooling system

Glycol content engine jacket water / intercooler:	[% Vol.]	35 / 35
Water volume engine jacket / intercooler:	[dm ³]	570 / 51
KVS / Cv value engine jacket water / intercooler:	[m ³ /h]	90 / 62
Jacket water coolant temperature in / out:	[°C]	78 / 91
Intercooler coolant temperature in / out:	[°C]	43 / 49
Engine jacket water flow rate from / to:	[m ³ /h]	100 / 120
Water flow rate engine jacket water / intercooler:	[m ³ /h]	114 / 65
Water pressure loss engine jacket water / intercooler:	[bar]	1,6 / 1,1
Lube oil temp. engine inlet max. / lube oil flow rate:	[°C] / [m ³ /h]	80 / 125



Harnessing Energy for Life

1) See also "Layout of power plant"; 2) See also Techn. Circular 0199-99-3017; 332611EC T 5767

Frequency band [Hz]	25	31,5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1,25k	1,6k	2k	2,5k	3,15k	4k	5k	6,3k	8k	10k	12,5k	16k	1,4k	S
Air-borne noise ³⁾ L _{WA,1m} [dB(A)]	102,1	100,6	104	108,4	109,4	113	117	115,6	121,3	119,9	116,2	114,2	110,4	109,4	111,1	109,5	109,5	111,9	115,3	111	112,4	116,6	111,4	116,8	111,4	105,6	104,6	107	102,9	125	215
Exhaust noise ⁴⁾ L _{WA,1m} [dB(A)]	118,4	125,5	141,4	124,6	143	128,6	130,1	133	131,5	128	127,7	128,3	127,2	127,7	127,3	126,1	125,5	124,1	124,2	124,5	123,1	123	124,9	122,4	120,5	118,5	120,6	116,6	137,1	16,9 ⁵⁾	

3) DIN EN ISO 3746 (S₁=1m) 4) Measured in exhaust pipe (S = 250Hz; ±5dB; f = 250Hz; ±3dB) L_{WA}: Sound power level S: Area of measurement surface (S₁=1m²) 5) DIN 45635-11, Appendix A

Description & Additional Notes

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Technical data



Com.-no.: 1280023

TESTBED-RESULTS for engine and gen. set

Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3 No.: 5379	Governor:	TEM EVO No.: STG 1004 029702-40	Turbo-charger type:	A 140 H(39)
Output:	4386 kW			Spark plug type:	1228 4236	No.:	STG	No.:	HT 510 109
NOx max:	500 mg/m ³ (i.N.)			Ignition point:	27,0 ° bTDC	No.:	STG	No.:	HT 510 110

Output		Fuel consumption				Lubr. oil		cooling water				Intakeair / Mixture	Mixture	Comp. chamber set	Supercharging system				Exhaust gas emission							
f cps	Pe(mech)	quantity m ³	press. bar (abs)	barometric mbar	methane number MN	η	press.	temp.	press.	temp. input	temp. output	press.	temp. input	temp. output	temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m ³ (i.N.)	
U Volt	Pe (el.) kW	time sec	temp. °C	HI heating value kWh/m ³ (i.N.)	Q _{Z11} kW	Q _{Z12} kW	°C	°C	bar	°C	°C	bar	°C	°C	°C	°C	°C	°C	mbar	%	mbar	mbar	°C	%	mg/m ³ (i.N.)	
50	4386	20,62	4,388	1010	89,0	42,1	70	6	76	4,3	78	90	4,3	40	45	25	219	49	317	3062	72	2742	44	457	9,6	476
10500	4300	300	28,8	10,136	9827	9705										24	222	46	319	3069		2729	46	456	9,6	492
50	4386	20,66	4,383	1009	89,0	42,1	70	6,1	76	4,3	78	90	4,2	40	45	26	220	50	317	3065	71	2743	49	457	9,65	492
10500	4300	300	29,1	10,133	9819	9697										24	222	46	319	3072		2729	47	456	9,6	488
50	2064	11,20	4,431	1009	89,0	39,0	70	6,2	76	4,3	82	88	4,3	40	43	26	128	46	302	1265	57	960	13	536	9,05	499
10500	2000	300	30,2	10,136	5365	5293										24	129	44	304	1267		949	12	540	9	488

11304 ZA camshaft offset 56,6°

Mannheim, the 19.07.2018

Customer:

Testing association:

Manufacturer:

MWM GmbH
Abnahme
Motoren - Aaaregatz
Trivic

Power to DIN 6271 / ISO 3046 / 1

1st line: row A; 2nd line: row B



Harnessing Energy for Life

Description & Additional Notes

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Technical data



Com.-no.: 1280024		TESTBED-RESULTS for engine and gen. set																								
Speed: 1000 1/min	Fuel: natural gas	Ignition system: Altronic ZS3 No.: 5386					Governor: TEM EVO No.: STG 1005 030058-40					Turbo-charger type: A 140 H(39) No.: HT 510 111														
Output: 4386 kW		Spark plug type: 1228 4236					No.: STG					No.: HT 510 107														
NOx max: 500 mg/m³(i.N.)		Ignition point: 27,0 ° bTDC																								
Output		Fuel consumption						Lubr. oil		cooling water						Intakeair / Mixture	Mixture			Comp. chamber set	Supercharging system				Exhaust gas emission	
f cps	Pe(mech)	quantity m³	press. bar (abs)	barometric mbar	methane number MN	η based to MN	press.	temp. °C	high temp.-circuit			low temp. circuit			temp. °C	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m³ (i.N.)	
U Volt	Pe (el.) kW								time sec	temp. °C	Hi heating value kWh/m³ (i.N.)	Q z11 kW	Q z12 kW	temp. input °C												temp. output °C
50	4386	20,61	4,378	1002	86,0	42,0	70	6	76	4,3	78	91	3,2	40	45	25	219	50	311	3108	73	2734	49	454	9,75	463
10500	4300	97,9	300	25,3	10,057	9838	9735									24	227	46	306	3112		2781	46	455	9,7	463
50	4386	20,69	4,377	1002	86,0	42,0	70	6	76	4,3	78	91	3,3	40	45	25	220	50	311	3114	72	2737	47	455	9,7	471
10500	4300	97,9	300	25,9	10,048	9841	9738									25	228	46	306	3118		2784	46	455	9,7	490
50	2064	11,21	4,431	1002	86,0	38,9	70	6	76	4,3	81	87	3,2	40	43	27	132	47	302	1306	57	949	13	534	9	480
10500	2000	96,9	300	27,2	10,028	5366	5305									27	136	44	297	1306		989	12	537	9	468
11304 ZA camshaft offset		57,8 °																								
															Mannheim, the		30.07.2018									
															Customer:											
															Testing association: MWM GmbH											
															Manufacturer: Abnahme Motoren - Aggregate Ofenloch											

Power to DIN 6271 / ISO 3046 / 1 1st line: row A; 2nd line: row B

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.: 1280025		TESTBED-RESULTS for engine and gen. set									
Speed: 1000 1/min	Fuel: natural gas	Ignition system: Altronic ZS3 No.: 5492				Governor: TEM EVO No.: STG 1005 030059-40				Turbo-charger type: A 140 H(66) No.: HT 510 702	
Output: 4386 kW		Spark plug type: 1228 4236				No.: STG				No.: HT 510 699	
NOx max: 500 mg/m³(i.N.)		Ignition point: 27,0 ° bTDC									

Output			Fuel consumption					Lubr. oil		cooling water				Intakeair / Mixture	Mixture	Comp. chamber set	Supercharging system				Exhaust gas emission						
n	F	Pe	quantity m³	press. bar (abs)	barometric mbar	methane number MN	η	based to MN	press.	temp.	press.	temp. input	temp. output	press.	temp. input	temp. output	temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m³ (i.N.)
1/min	N	kW	time sec	temp. °C	Hi heating value kWh/m³ (i.N.)	Q _{ZU} kW	Q _{ZU} kW		°C	bar	°C	°C	°C	bar	°C	°C	°C	°C	°C	°C	mbar	%	mbar	mbar	°C	%	
1000	40860	4386	21,03	4,234	1001	85,1	42,7	70	6,1	76	3,7	78	89	2,4	40	45	25	210	49	300	2976	74	2630	49	461	9,45	477
			300	28,7	10,122	9658	9556										25	216	48	301	2977		2638	49	465	9,45	488
1000	40860	4386	21,04	4,234	1001	85,2	42,7	70	6,1	76	3,7	78	89	2,4	40	45	25	210	49	300	2980	74	2632	49	461	9,45	477
			300	28,7	10,117	9658	9566										25	216	48	301	2981		2639	48	465	9,45	486
1000	20640	2064	11,28	4,419	1001	85,0	38,6	70	6,2	76	3,7	82	86	2,4	41	44	25	123	47	289	1241	59	918	13	544	8,8	486
			300	29,3	10,126	5400	5341										26	129	46	290	1235		925	13	549	8,8	476

11304 ZA camshaft offset 57,4°

Customer:	Mannheim, the	11.08.2018
Testing association:	MWM GmbH	
Manufacturer:	Abnahme Motoren - Aggregat	Gaetke

Power to DIN 6271 / ISO 3046 / 1 1st line: row A; 2nd line: row B



Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.:		1280026		TESTBED-RESULTS for engine and gen. set																						
Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3	Governor:	TEM EVO	Turbo-charger type:	A 140 H(39)																	
Output:	4386 kW			No.:	5520	No.:	STG 1005 030060-40	No.:	HT 510 689																	
NOx max:	500 mg/m ³ (i.N.)			Spark plug type:	1228 4236	No.:	STG	No.:	HT 510 113																	
Output		Fuel consumption					Lubr. oil		cooling water					Intakeair / Mixture		Mixture		Comp. chamber set		Supercharging system				Exhaust gas emission		
f cps	Pe(mech)	η Gen.	quantity m ³	press. bar (abs)	barometric mbar	methane number MN	η based to MN	press.	temp.	high temp.-circuit			low temp. circuit			temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m ³ (i.N.)
U Volt	Pe (el.) kW									time sec	temp. °C	Hi heating value kWh/m ³ (i.N.)	Q zLI kW	Q zLI kW	press.											
50	4386	97,9	20,86	4,220	993	92,0	42,1	6,1	76	3,8	78	90	3,4	40	45	25	213	49	300	2965	75	2620	47	459	9,65	499
10500	4300		300	18	10,077	9856	9714			70	3,8	78	90	3,4	40	45	25	219	47	301	2966		2612	46	462	9,55
50	4386	97,9	20,78	4,234	993	92,0	42,1	6,1	76	3,8	78	90	3,4	40	45	25	213	48	300	2967	75	2622	47	459	9,6	500
10500	4300		300	17,9	10,079	9855	9713			70	3,8	78	90	3,4	40	45	25	219	47	301	2969		2615	46	462	9,55
50	2064	96,9	11,38	4,268	993	91,0	38,9	6,1	76	3,9	84	90	3,4	40	43	26	125	46	287	1225	59	902	13	540	8,95	490
10500	2000		300	20,9	10,081	5388	5308			70	3,9	84	90	3,4	40	43	27	127	44	288	1221		898	12	548	8,9
11304 ZA camshaft offset		57,5 °																								
							Mannheim, the										07.09.2018									
							Customer:																			
							Testing association:										MWM GmbH									
							Manufacturer:										Abnahme Motoren - Aggregat Häcker									

Power to DIN 6271 / ISO 3046 / 1

1st line: row A; 2nd line: row B



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.: 1280027

TESTBED-RESULTS for engine and gen. set

Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3 No.: 5534	Governor:	TEM EVO No.: STG 1007 030342-40	Turbo-charger type:	A 140 H(39)
Output:	4386 kW			Spark plug type:	1228 4236	No.:	STG	No.:	HT 510 134
NOx max:	500 mg/m ³ (i.N.)			Ignition point:	27,0 ° bTDC	No.:	STG	No.:	HT 510 705

Output			Fuel consumption					Lubr. oil		cooling water						Intakeair / Mixture	Mixture			Comp. chamber set	Supercharging system				Exhaust gas emission		
n	F	Pe	quantity		barometric mbar	methane number MN	η based to MN	press.	temp.	high temp.-circuit			low temp. circuit			temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m ³ (i.N.)	
			m ³	time sec						press. bar (abs)	Hi heating value kWh/m ³ (i.N.)	Q _{ZU} kW	Q _{ZU} kW	temp. °C	temp. input °C												temp. output °C
1000	40860	4386	19,64	4,405	1006	83,0	42,5	70	6,2	76	3,6	78	89	2,8	40	44	25	206	51	304	2999	77	2670	48	461	9,45	474
			300	21,1	10,200	9699	9617																				
1000	40860	4386	19,67	4,405	1006	83,0	42,4	70	6,2	76	3,6	78	89	2,8	40	44	25	206	51	304	3004	77	2674	48	461	9,5	473
			300	21,5	10,214	9714	9632																				
1000	20640	2064	11,7	4,301	1006	84,0	37,5	70	6,3	76	3,2	82	86	2,9	41	43	27	124	48	292	1259	62	951	13	543	8,75	479
			300	25,3	10,209	5567	5510																				

11304 ZA camshaft offset 57,3°

Mannheim, the 03.09.2018

Customer:

Testing association:

Manufacturer:

MWM GmbH

Abnahme
Mannheim - Aggregate

Gaedtke

Power to DIN 6271 / ISO 3046 / 1

1st line: row A; 2nd line: row B



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.: 1280028		TESTBED-RESULTS for engine and gen. set																									
Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3	Governor:	TEM EVO	Turbo-charger type:	A 140 H(39)																		
Output:	4386 kW			No.:	5613	No.:	STG 1007 030344-40	No.:	HT 511 750																		
NOx max:	500 mg/m ³ (i.N.)			Spark plug type:	1228 4236	No.:	STG	No.:	HT 511 037																		
				Ignition point:	27,0 ° bTDC																						
Output		Fuel consumption					Lubr. oil		cooling water				Intakeair / Mixture	Mixture		Comp. chamber set	Supercharging system				Exhaust gas emission						
f cps	Pe(mech) kW	quantity m ³	press. bar (abs)	barometric mbar	methane number MN	η based to MN	press.	temp.	press.	temp. input	temp. output	press.	temp. input	temp. output	temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m ³ (i.N.)		
50	4386	19,37	4,395	997	84,0	42,4									25	213	48	305	3031	73	2695	46	438	9,8	470		
10500	4300	97,9	300	14,5	10,156	9723	9635	70	6	76	4	77	89	2,8	39	44	25	218	46	304	3036		2723	48	460	9,75	482
50	4386	19,34	4,397	997	84,0	42,4									25	213	49	305	3037	73	2700	46	437	9,8	467		
10500	4300	97,9	300	14,2	10,161	9727	9639	70	6	76	4	77	89	2,8	39	44	25	219	46	304	3048		2728	48	460	9,75	480
50	2064	10,43	4,440	999	83,0	39,4									25	126	45	297	1257	57	931	12	516	9,15	461		
10500	2000	96,9	300	15,4	10,178	5282	5234	70	6	76	3,9	81	87	2,8	39	42	26	130	43	296	1258		974	12	523	9,1	470
		11304 ZA camshaft offset		57,5°																							
										Mannheim, the		18.11.2018															
										Customer:																	
										Testing association:		MWM GmbH															
										Manufacturer:		Abnahme Moto - Aggregate															
Power to DIN 6271 / ISO 3046 / 1										1st line: row A; 2nd line: row B																	



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.:	1280029	TESTBED-RESULTS for engine and gen. set																			
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Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3	Governor:	TEM EVO	Turbo-charger type:	A 140 H(39)
Output:	4386 kW			No.:	5616	No.:	STG 1007 030338-40	No.:	HT 512 662
NOx max:	500 mg/m ³ (i.N.)			Spark plug type:	1228 4236	No.:	STG	No.:	HT 512 661
				Ignition point:	27,0 ° bTDC				

Output		Fuel consumption					Lubr. oil		cooling water						Intakeair / Mixture	Mixture			Comp. chamber set			Supercharging system				Exhaust gas emission	
f cps	Pe(mech) kW	quantity m ³	press. bar (abs)	barometric mbar	methane number MN	η based to MN	press.	temp.	high temp.-circuit			low temp. circuit			temp.	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	governor position %	press. receiver mbar	press. after turbo mbar	temp. after turbo °C	O2 dry Vol. %	NOx based to 5% O2 mg/m ³ (i.N.)		
U Volt	Pe (el.) kW	η Gen. in %	time sec	temp. °C	Hi heating value kWh/m ³ (i.N.)	Q _{ZU} kW	Q _{ZU} kW	°C	bar	°C	°C	°C	bar	°C	°C	°C	°C	°C	°C	mbar	%	mbar	mbar	°C	%	mg/m ³ (i.N.)	
50	4386	97,9	19,58	4,318	995	84,0	42,6	70	6,1	76	4	78	90	3	40	45	24	216	49	316	3051	74	2721	48	447	9,9	494
10500	4300		300	14,2	10,160	9671	9584	70	6,1	76	4	78	90	3	40	45	26	224	47	309	3057		2677	48	453	9,85	490
50	4386	97,9	19,6	4,311	994	84,0	42,7	70	6,1	76	4	78	90	2,9	40	45	24	217	50	316	3062	74	2734	48	447	9,9	483
10500	4300		300	14,2	10,158	9662	9575	70	6,1	76	4	78	90	2,9	40	45	26	225	47	309	3067		2690	47	452	9,85	487
50	2064	96,9	10,97	4,258	992	84,0	39,1	70	6,1	76	4	84	89	3,1	40	43	24	127	46	304	1277	59	970	13	525	9,15	488
10500	2000		300	14,1	10,130	5329	5277	70	6,1	76	4	84	89	3,1	40	43	26	130	44	297	1277		924	12	532	9,15	473

11304 ZA camshaft offset 56,8°

Mannheim, the 11.11.2018

Customer:

Testing association:

MWM GmbH

Manufacturer:

Abnahme
Motoren - Aggregate

Häcker

Power to DIN 6271 / ISO 3046 / 1

1st line: row A; 2nd line: row B



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



Com.-no.: 1280030

TESTBED-RESULTS for engine and gen. set

Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3	Governor:	TEM EVO	Turbo-charger type:	A 140 H(39)
Output:	4386 kW			No.:	5688	No.:	STG 1008 030672-40	No.:	HT 512 224
NOx max:	500 mg/m ³ (i.N.)			Spark plug type:	1228 4236	No.:	STG	No.:	HT 512 663
				Ignition point:	27,0 ° bTDC				



Harnessing Energy for Life

Output		Fuel consumption					Lubr. oil		cooling water				Intakeair / Mixture	Mixture	Comp. chamber set	Supercharging system				Exhaust gas emission							
f cps	Pe(mech)	quantity	press.	barometric	methane	η	press	temp.	press.	temp.	temp.	press.	temp.	temp.	temp.	temp.	temp.	temp.	temp.	temp.	temp.	O2	NOx				
U Volt	Pe (el.)	time	temp.	HI heating	Q _{ZU}	Q _{ZU}	based	°C	bar	°C	°C	bar	°C	°C	°C	°C	°C	°C	°C	°C	°C	dry	based				
	kW	sec	°C	value	kW	kW	to MN															Vol.	to 5% O2				
		in %		(L.N.)																		mg/m ³	(i.N.)				
50	4386	97,9	19,06	4,329	987	84,0	42,5	70	6	76	3,9	78	89	2,9	40	45	25	216	50	309	3041	74	2727	48	448	9,95	472
10500	4300		300	7,9	10,207	9696	9608											25	222	48	313	3045		2728	47	449	9,9
50	4386	97,9	19,12	4,300	987	84,0	42,5	70	6	76	3,9	78	89	2,9	40	45	25	216	49	309	3043	73	2726	48	449	9,9	476
10500	4300		300	6,6	10,207	9706	9618											26	223	47	313	3046		2727	47	449	9,85
50	2064	96,9	10,22	4,416	986	83,0	39,2	70	6,1	76	3,9	82	88	2,9	40	42	25	128	46	300	1264	57	965	13	527	9,25	501
10500	2000		300	8,2	10,242	5315	5267											27	131	44	304	1264		968	11	534	9,2

11304 ZA camshaft offset 57,5°

Mannheim, the 01.12.2018

Customer:

Testing association:

MWM GmbH

Manufacturer:

Abnahme
Mannheim - Aggregate
Ofenloch

Power to DIN 6271 / ISO 3046 / 1

1st line: row A; 2nd line: row B

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Technical data



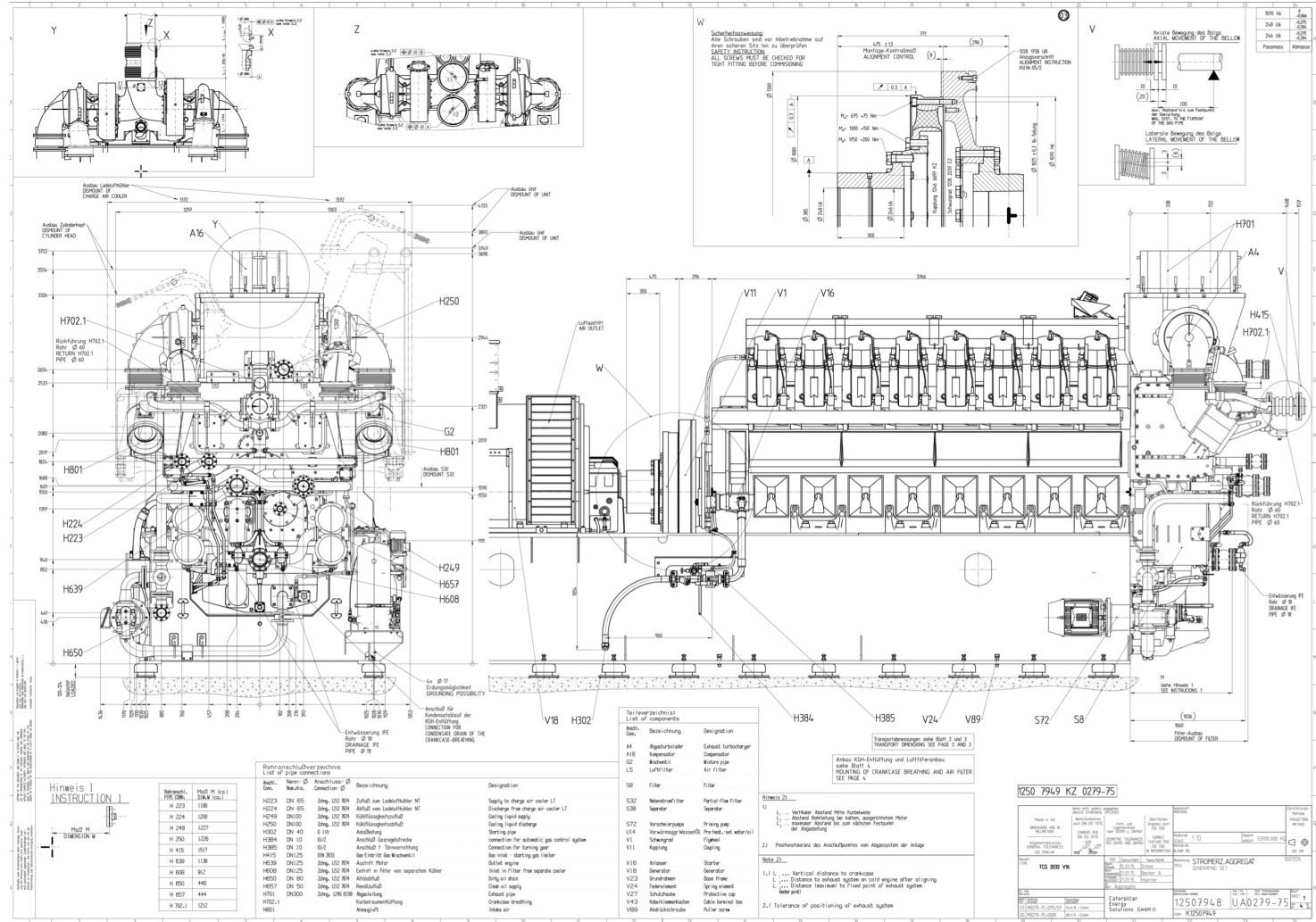
Com.-no.: 1280031		TESTBED-RESULTS for engine and gen. set																										
Speed:	1000 1/min	Fuel:	natural gas	Ignition system:	Altronic ZS3 No.: 5696	Governor:	TEM EVO No.: STG 1008 030671-40	Turbo-charger type:	A 140 H(39) No.: HT 511 440																			
Output:	4386 kW			Spark plug type:	1228 4236	No.:	STG	No.:	HT 511 884																			
NOx max:	500 mg/m³(i.N.)			Ignition point:	27,0 ° bTDC																							
Output		Fuel consumption					Lubr. oil		cooling water				Intakeair / Mixture	Mixture		Comp. chamber set	Supercharging system				Exhaust gas emission							
f cps	Pe(mech)	quantity	press.	barometric	methane	η	press.	temp.	press.	temp.	temp.	press.	temp.	temp.	temp.	temp.	temp.	press.	governor	press.	press.	temp.	O2	NOx				
U Volt	Pe (eL) kW	time sec	temp. °C	HI heating value kWh/m³ (i.N.)	Q z11 kW	Q z11 kW based to MN	°C	bar	°C	°C	°C	bar	°C	°C	°C	°C	°C	temp. before mixture cooler °C	temp. after mixture cooler °C	temp. set point °C	press. before mixture cooler mbar	%	mbar	mbar	°C	%	mg/m³ (i.N.)	
50	4386	18,44	4,438	1011	84,0	42,6												25	211	49	312	3013	73	2703	47	452	9,8	476
10500	4300	97,9	300	5	10,164	9675	70	6,3	76	4,2	78	90	3,7	40	45			25	216	46	310	3018		2679	46	454	9,75	495
50	4386	18,47	4,436	1011	84,0	42,6												25	211	49	312	3016	73	2708	48	452	9,85	482
10500	4300	97,9	300	5,1	10,159	9678	70	6,3	76	4,2	78	90	3,7	40	45			25	216	46	310	3022		2684	46	454	9,75	479
50	2064	9,998	4,481	1010	84,0	39,6												26	127	46	301	1250	57	960	13	531	9,35	474
10500	2000	96,9	300	6,4	10,160	5267	70	6,3	76	4,2	82	87	3,6	40	43			26	129	44	299	1253		940	12	534	9,25	461
11304 ZA camshaft offset 57,5 °																												
															Mannheim, the		13.12.2018											
															Customer:													
															Testing association: MWM GmbH													
															Manufacturer: <i>Abnahme</i> <i>Motorer/Aggredate</i> Ofenloch													
Power to DIN 6271 / ISO 3046 / 1															1st line: row A; 2nd line: row B													



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generator Engineering Drawing



Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Packing List

1	压缩空气系统 Compressed air system				
	活塞式空压机 Piston type air compressor	1000L/min;30bar;	台	1	12062.5
	储气罐 Gas storage tank	2000L;30Bar;配安全阀,预留检修人孔	台	2	4625.0
2	散热器 Radiators				
	散热器 Cooler radiator	标配	台	1	70000
3	电气及控制系统 Electrical and Control Systems				
	辅助动力柜 (HAS) Auxiliary power cabinet (HAS)	H*W*D=2100*2000*600mm (HAS)	面	1	23725
	集装控制柜 ZAS Integrated control cabinet	H*W*D=2100*1600*600mm (FUS)	面	1	14625



Harnessing Energy for Life

Description & Additional Notes

43 MW 2018 Unused MWM TG2032-16 Natural Gas Generators

Packing List

序号 No.	名称 Name	规格/型号 Specification/Model	单位 Unit	数量 Quantity
—	主机设备供货清单 Main Equipment Supply list			
1	发电机组 Genset			
1.1	发动机 Base engine	TCG2032V16/1000rpm	台	1
1.2	发电机 Base alternator	4300KW/10.5KV/50Hz	套	1
1.3	联轴器 coupling		套	1
1.4	底座 Base frame		套	1
1.5	避震脚 Shock absorber		台	1
1.6	空气油清器 Air cleaner		套	1
2	燃气系统 Gas system			
2.1	燃气零压力控制系统 Zero-pressure gas control train	DN125/PN1.6	套	1
2.2	波纹管 Inlet manifold	DN125/PN1.6	个	1
3	缸套水冷却系统 Sensors engine cooling circuit			
3.1	水泵 pump	500mbar	个	1
3.2	膨胀水箱 Expansion tank	随机, G1;max. 6bar, 120° C	个	1
3.3	三通阀 Three-way valve	KZ;ARI;1240 9712 UC/230V/50Hz DN125/PN16/ARI-450 Premio	个	1
3.4	节流阀 hrottle valve	KZ; Fa. ARI; DN100 ARI-ZIVA-Z mit Handrad	个	1
3.5	自动排气阀 Ventilation valve	KD;; (komplett) / Flexvent Super G1/2	个	1
3.6	安全阀 Safety valve	EZ; Syr; 1017 kW/3 bar, G 2 x G 2 1/2; Typ 1915	个	1
3.7	压差开关 Differential pressure switch	KD; Fa. Fischer; Typ 21 D 045 (Anzeige 0-2,5 bar)	个	1
3.8	液位检测开关	KD; Syr; Syr 933.2 (ohne Verriegelung/mit Gehäuse)	个	1

	Liquid level detection switch	Verriegelung/mit Gehäuse)		
4	中冷水冷却系统 Sensors intercooling circuit			
4.1	水泵 pump	500mbar	个	1
4.2	膨胀水箱 Expansion tank	随机, G1;max. 6bar, 120° C	个	1
4.3	三通阀 Three-way valve	KZ;ARI;1240 9450 UC/230V/50-60Hz DN80/PN16/ARI-450 Premio	个	1
4.4	自动排气阀 Ventilation valve	KD;; (komplett) / Flexvent Super G1/2	个	1
4.5	安全阀 Safety valve	EZ; Syr; 395 kW/3 bar, G 1 1/4 x G1 1/2; Typ 1915	个	1
4.6	液位检测开关 Liquid level detection	KD; Syr; Syr 933.2 (ohne Verriegelung/mit Gehäuse)	个	1
4.7	压差开关 Differential pressure switch	KD; Fa. Fischer; Typ 21 D 045 (Anzeige 0-2,5 bar)	个	1
5	润滑油系统 Lubricating oil system			
5.1	电磁阀 Solenoid valve	DN25/230V	个	4
6	烟气排气系统 Crankcase ventilation			
6.1	烟气背压检测装置 Exhaust back pressure sensor	1240 2029 KD	个	1
7	TEM 控制系统 TEM Control system			
7.1	发电机主控柜 (TEM) Base system TEM	1200x800x300mm	面	1
8	其它 Other			
8.1	随机备件 Spare parts for new engines	7999H	套	4
8.2	随机文件 Standard documentation	CD 上的标准文件 Standard documentation on CD		4



Harnessing Energy for Life

PANDA MACHINES LIMITED
熊貓機械有限公司
Authorized Representative
楊國海
2019.08.01



For end on behalf of
熊貓機械有限公司
PANDA MACHINES LIMITED
楊國海
2019.08.01

Specifications



Manufacturer	MWM
Model	TG2032-16
Year	2018
Condition	New
Location	Middle East
Price	\$20,125,000.00
Category	Natural Gas Generators
Subcategories	<ul style="list-style-type: none">• 10 – 99 MW
Stock Number	USP009752
Wattage	43 MW
Hours	New
Frequency	50 Hz
Fuel type	Natural Gas
Voltage	10 500
Balance of Plant Available? (BOP)	-

Asset Images



- Images may be representative, and actuals can be supplied upon request.

USp&e

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