

**Imperial**

**Basic Technical Data**

Operation	P / E			
Nominal electrical output	3000 / 3725 kW/kVA <sup>1)</sup>			
Heat output <sup>2)</sup>	9,817,000 BTU/h			
1) At emergency operation E it is non-overload-able electric output for $\cos\varphi=0,8$				
2) Heat output is heat output of secondary circuit at its full utilization				
Load	50	75	100	%
Heat power	5,845,000	7,875,000	9,817,000	BTU/h
Fuel input	12,881,000	18,105,000	23,342,000	BTU/h
Heat rate	8,587	8,047	7,780	BTU/kW <sub>e</sub>
Electrical efficiency	39.7	42.4	43.8/43.6	%
Heat efficiency	45.3	43.5	42.0	%
Total efficiency (fuel utilization)	85.1	85.9	85.8/85.6	%
Gas consumption	14,125	19,845	25,566	CFH

The Basic Technical Data are applicable for the standard conditions pursuant to the "Technical instruction" document.

The minimum permanent electrical output must not drop below 50 % of the nominal output.

Gas consumption is expressed under the conditions (59°F, 14.648 psi, Low Heat Value 912.18 BTU/CF)

**Observance of Emission Limits**

Emissions	CO	NOx	VOC	
At 15% of O <sub>2</sub> in exhaust gas	0.6	1.0	0.7	g/HP-hr

**Generator**

Type	MJH 710 MC8		
Producer	MARELLI		
Cos φ	1,0		
Voltage	4160	V	
Frequency	60	Hz	

**Metric**

**Basic Technical Data**

Operation	P / E			
Nominal electrical output	3000 / 3725 kW/kVA <sup>1)</sup>			
Heat output <sup>2)</sup>	2877 kW			
1) At emergency operation E it is non-overload-able electric output for $\cos\varphi=0,8$				
2) Heat output is heat output of secondary circuit at its full utilization				
Load	50	75	100	%
Heat power	1713	2308	2877	kW
Fuel input	3775	5306	6841	kW
Electrical efficiency	39,7	42,4	43,8/43,6	%
Heat efficiency	45,3	43,5	42,0	%
Total efficiency (fuel utilization)	85,1	85,9	85,8/85,6	%
Gas consumption	400	562	724	m <sup>3</sup> /h

The Basic Technical Data are applicable for the standard conditions pursuant to the "Technical instruction" document.

The minimum permanent electrical output must not drop below 50 % of the nominal output.

Gas consumption is expressed under the conditions (15°C, 101.325 kPa, Low Heat Value 34MJ/m<sup>3</sup>)

**Engine**

Type	TCG 2032 V12		
Producer	MWM		
Number of cylinders	12		
Arrangement of cylinders	V		
Bore × stroke	260/320	mm	
Displacement	12,449	cui	
Compression ratio	12 : 1		
Speed	900	rpm	
Nominal oil consumption	0.2	g/kWh	
Max. engine output	3069	kW	

TCG2032V12 4160V natural gas; 04.05.2016



## Thermal System

### Aftercooler circuit <sup>1)</sup>

Heat carrier	water + ethylene glycol	
Ethylene glycol's concentration	35	%
Total system heat recovery	942,000	BTU/h
Coolant temperature (outlet from CHP unit – informative)	113	°F
Coolant temperature (inlet into CHP unit) max	104	°F
Nominal flow rate	240	GPM
Pressure loss	14.5	psi

*1) Parameters are valid if the dry cooler (optional) is part of delivery*

## Fuel, Gas Inlet

Low heat value	912.18	BTU/CF
Min. methane number	80	
Gas pressure	1.2 – 2.2	psi
Max. pressure change under varying consumption	10	%
Max. gas temperature	95	°F

## Combustion and Ventilation Air

Unused heat removed by the ventilation air	826,000	BTU/h
Air temperature	41/77	°F

## Exhaust Gas and Condensate Outlet

Amount of exhaust gases	7,451	CFM
Exhaust gas temperature, nominal / max	248/302	°F
Max. back-pressure of exhaust gases downstream the CHP unit flange	0.14	psi
Speed of exhaust gases at the outlet (DN 700)	13.2	m/s

## Oil

Amount of lubrication oil in the engine	383	gal
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## Thermal System

### Aftercooler circuit <sup>1)</sup>

Heat carrier	water + ethylene glycol	
Ethylene glycol's concentration	35	%
Total system heat recovery	276	kW
Coolant temperature (outlet from CHP unit – informative)	45,0	°C
Coolant temperature (inlet into CHP unit) max	40,0	°C
Nominal flow rate	15,2	kg/s
Pressure loss	100	kPa

*1) Parameters are valid if the dry cooler (optional) is part of delivery*

## Fuel, Gas Inlet

Low heat value	34	MJ/m <sup>3</sup>
Min. methane number	80	
Gas pressure	8 ÷ 15	kPa
Max. pressure change under varying consumption	10	%
Max. gas temperature	35	°C

## Combustion and Ventilation Air

Unused heat removed by the ventilation air	242	kW
Air temperature	5/25	°C

## Exhaust Gas and Condensate Outlet

Amount of exhaust gases	12660	Nm <sup>3</sup> /h
Exhaust gas temperature, nominal / max	120/150	°C
Max. back-pressure of exhaust gases downstream the CHP unit flange	10	mbar
Speed of exhaust gases at the outlet (DN 700)	13,2	m/s

## Oil

Amount of lubrication oil in the engine	1450	dm <sup>3</sup>
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## Noise Parameters

CHP unit in 10 m from container	78	dB(A)
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## Electrical Parameters

nominal voltage	4 160 V
nominal frequency	60 Hz
power factor <sup>1)</sup>	0,8
nominal current at cos φ=0.8	520,4 A
generator circuit breaker	ABB
short-circuit resistance of switchboard high-voltage	25 kA
short-circuit resistance of switchboards R2, R4	10 kA
contribution of the actual source to the short-circuit current	Depend on generator type
High-voltage switchboards protection	IP 40
protection of control switchboard R2, R4 closed/open	IP 31/00
recommended connection cable (< 50m, at t<35°C)	As recommended by the manufacturer of HV

1) Power factor adjustable from 0,8C ÷ 1 ÷ 0,8L (range from 0.8C ÷ 1 must be verified according to the various types of generators).

L = inductive load - overexcited

C = capacitive load - underexcited

Operation of the generator with a power factor of less than 0.95 causes a power limitation sets the following table:

power factor [-]	1	0,95	0,8
output [% P <sub>nom</sub> ]	100	100	98

## Color Version

Engine, generator and internal parts of unit	RAL 5010 (blue)
Container	RAL 5013 (blue)

## Caution

Manufacturer reserves the right to alter this document and the linked source materials.

