Silent-type Natural Gas Generator

Datasheet(4160V)

CP1000N6S

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Natural Gas Generator

Standard Basic Module–Silent-type

- Highly efficient gas engine
- AC synchronous alternator
- Gas safety train and gas protection device against leakage
- Exhaust and jacket water heat exchanger(CHP)
- Heating water and jacket water circulation system
- Advanced engine control system, including: ignition system, speed control system, air/fuel ratio control system
- Strict shop test for all genset unit
- Industrial silencer reduces the noise by 12-20dB(A)
- Unattached switch cabinet and electric control cabinet
- Multi-functional control system with easy operation
- Data communication interfaces integrated into control system
- Lighting and smoke alarm system
- Monitoring battery voltage and charging automatically
- Bus interface for connecting to higher level control unit
- Match variable power load;
- Genset rotation maintenance without downtime

Picture is for reference only

Power and Efficiency @60Hz			
Voltage-V	Power-kW	Efficiency-%	Current-A
/	1000	/	/
4160	1000	41.0%	174
/	1000	/	/

Dimensions and Weight	
Dimensions (L x W x H), mm	12,192 x 2,438 x 2,896
Weight, kg	17,500

Fuel and Emission	
Fuel type	Natural gas
Methane number	MN>80
Excess air factor (Lambda)	1.65
NOx, mg/Nm^3	≤500
CO, mg/Nm^3	≤700
Fuel consumption @100% load, m^3/h	240
Supply gas pressure range, kPa	20

Structure and Control Cabinet	
Structure Type	40'HQ container
Spraying Process	High quality powder coating
Electrical control cabinet	Integrated, IP54
Noise level@7m, dB(A)	75

- The technical data is based on a gas with a calorific value of 9.72kWh/Nm^3 and standard conditions according to ISO8528/1, ISO3046/1 and BS5514/1
- Absolute atmospheric pressure: 100kPa; Ambient temperature: 25°C; Relative air humidity: 30%
- Rating adaptation at ambient conditions acc. to DIN ISO 3046/1. The tolerance for the specific fuel consumption is + 5 % at rated output.
- **Dimension and weight above are just for reference** and may be subject to change. This document is used only for presale reference. Use specifications supplied by BlueFlare before ordering as final.

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Standard configuration

Engine	Alternator	Canopy and base	Electrical cabinet
Gas engine Ignition system Lambda controller Electronic governor actuator Electrical start motor Battery system Auto charging system	PMG AC alternator H class insulation IP23 protection AVR voltage regulator PF control	Steel monocoque base frame Engine bracket Vibration isolators Alternator base 40'HQ container	Air circuit breaker Grid control system 10-inch screen Communication interfaces Electrical switch cabinet Lighting system Smoke alarm system CH_4 alarm system
Gas supply system	**Lubrication system**	**Standard voltage**	**Intake/exhaust system**
Gas train Gas leakage protection Air/fuel mixer	Oil filter Daily auxiliary oil tank Auto refilling oil system	4160V@60Hz	Air filter Exhaust silencer Exhaust bellows Ventilation system
Cooling system	**Service and documents**		
Jacket water circulation pump Mixture circulation pump Jacket water&Mixture radiator Expansion tank Shut-off valve Three-way valve	Tools package and operation manual Maintenance manual After service guide Standard package	Engine operation and maintenance manual Installation Gas quality specification Software manual Parts manual	

Optional configuration

Engine	Alternator	Lubrication system
Jacket water heater Oil heater	Space heater Treatments against humidity and corrosion	New and used oil tank Automatic oil refilling device
Electrical system	**Gas supply system**	**Voltage**
RCD Lightning protection ATS control cabinet Thermal power gauge Electric power gauge	Gas flow gauge Emergency relief flare Refrigerated gas drier Free water separator Gas compressor Gas purification plant	10500V 400V
Service and documents	**Exhaust system**	**Exhaust gas using**
Service tools Maintenance and service parts	Three-way catalytic converter	Exhaust gas evaporator LiBr refrigerator

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Genset performance data and manufacturing technology	
Gneset model	CP1000N6S
Electric output power(kW)	1000
Electric efficiency	41.0%
Overload runtime at 1.1xSe(hour)	1
Steady-state voltage deviation	≤±1%
Transient-state voltage deviation	-15%~20%
Voltage recovery time(s)	≤4
Voltage unbalance	1%
Steady-state frequency regulation	±0.5%
Transient -state frequency regulation	±5%
Frequency recovery time(s)	≤3
Steady-state frequency band	0.5%
Recovery time response(s)	0.5
Telephone interference factor(TIF)	≤50
Telephone harmonious factor(THF)	≤2%, as per BS4999

Manufacturing technology

- Special welded base frame, inner vibration isolators and design for whole lifting
- With high quality paint, endurable brightness as well resistance against abrasion and defacing
- Installation manual, operation and maintenance manual circuit diagram

Standards and certificate

- ISO3046，ISO8528，GB2820
- BS5000PT99，AS1359，IEC34
- ISO9001:2008 quality system certification

Genset Control System

Programmable control system is adopted with screen display, and various functions, including: engine protection and control paralleling between gensets or gensets and grid, and CHP control functions, as well as communication functions, etc.

Genset controller			
Controller Brand	ComAp	Display Brand	CP
Controller Type	IG500	Display Type	IV10
Origin of Products	Czech	Origin of Products	China

Main functions	
- Engine monitor: coolant, lubrication, exhaust, battery	- Modbus communication protocol based on RS232 and RS485
- Supply gas circuit monitor: pressure, temperature	- SMS message
- Auto paralleling and load share	- Internet connection and USB 2.0 interface
- Voltage and PF control	- 10-inch screen
- Alternator data：U、I、Hz、kW、kVA、kVAr、PF、	- Internet monitor, auto orientation and cloud
- Grid data：U、I、Hz、kW、kVAr、PF	

Advantages	
- Accordant with consumer requirement	- Simplified engine start/stop control
- Complete control solution	- Enhanced stability and safety
- Convenient remote monitor and service	

Standard protection functions	Standard control functions	
Alternator protection - 2xReverse power - 2xOverload - 4xOvercurrent - 1xOvervoltage - 1xUndervoltage - 1xOver/under frequency - 1xUnbalanced current	**Power control** - RPM control(synchronization) - Power control(grid connection) - Load share(island)	**Voltage control** - Voltage tracking (synchronization) - Voltage control(island) - PF control(grid connection) - Reactive power share (island）
	Lubrication control - Auto refilling - Warning and monitoring	**Pump control** - Cooling system - Emergency radiator
Busbar/mains protection - 1xOvervoltage - 1xUndervoltage - 1xOver/under frequency - 1xPhase sequence - 1xROCOF alarm	**Fan control** - Ventilation for engine room - Radiator fan - Emergency radiator fan	**Valve control** - Cooling system - Heating system - Emergency radiator
	Engine protection - Various routine and customized protection functions - Monitoring	

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Gas Engine

General Data	
Brand	MWM
Origin of products	Germany
Type	TCG3016V16S
No. of cylinders	16
Engine Type	4- Stroke, turbo charged , lean burn
Cylinder arrangement	V type
Bore X Stroke(mm)	132 X 160
Displacement(L)	35
Compression Ratio	11:1
Rated speed (RPM)	1,500
ISO standard power (COP)	1,028
Excess air factor	1.65
Ignition timing (BTDC)	18

Induction/exhaust system	
Exhaust Flow (wet)(kg/h)	5,601
Combustion air flow(kg/h)	5,410
Exhaust temperature ©	465
Max. exhaust back pressure (mbar)	50
Max. suction restriction (mbar)	5

Lubrication System	
Max refilling capacity(L)	480
Mean oil consumption(g/kWh)	.1
Lubrication oil pump	Gear-driven

Energy balance and gas flow	
Load	100%
Mechanical power, KW	1,028
Collant heat, kW	563
Mixture heat HT, kW	/
Mixture heat LT, kW	69
Exhaust heat up to 120C, kW	593
Max radiation heat, kW	33
Energy input, kW	2,441
Combustion air flow, kg/h	5,601
Fuel Consumption MJ/kWh	8.78
Exhaust gas flow, kg/h	5,410

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Gas Engine Control System

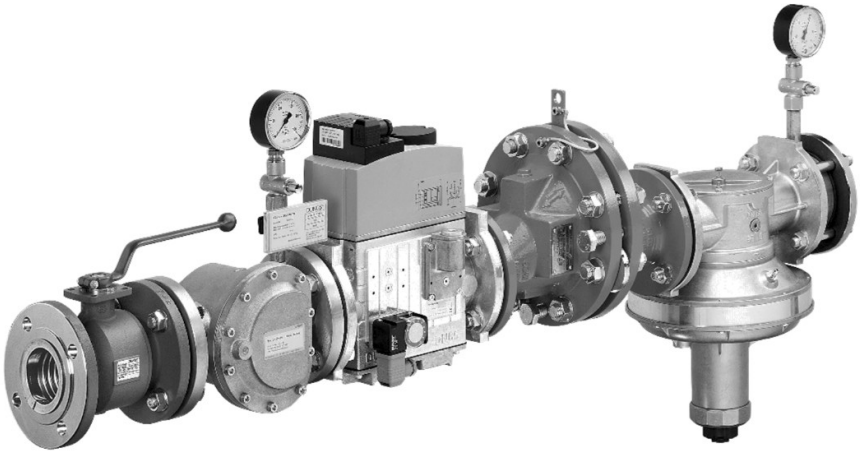
Natural Gas Engine Control System			
Brand	MWM/Heinzmann	Origin of Products	Germany
Type	/		
Main Configuration			
Ignition system		Electronic governor actuator	
Lambda controller		Detonation control	
Advantages			
- Engine control: ignition, speed, lean burn control		- Satisfy American CSA Certification	
- Signal Detection: Timing, Temperature, Pressure.		- 8/12/16/24 Ignition Output	
- The maximum ignition capacity of capacitive ignition coil can reach 300 mJ.		- Configuration of CAN Bus Interface, Modbus RTU Interface, USB Interface	
- Guideway wiring, strong anti-interference		- Fully programmable ignition time control curve	
- Simple and Easy-to-operate Calibration Software System		- Automatically adapt to the change of gas content	
- Industrial grade platinum and iridium spark plugs improve the anti-flashover and leakage performance.			

Synchronous Alternator

AC Alternator Performance Data			
Alternator brand	Meccalte	Accessory parts	Current transformer×3
Alternator model	ECO43MV 1XL4A		Voltage transformer×3
Rated output power@4,160V (kW)	1000		Winding temperature sensor
Power factor	0.8~1		Permanent magnet
Rated current @4,160V and 100% load (A)	173		Bearing temperature sensor
Excitation system	Brushless		
THF(BS EN60034-1)	<2%		
Bearing number	2		
Winding material	100% copper		
Wiring connection	Star		
Rotor insulation class	H		
Winding pitch	2/3		
A.V.R. model	R450		
Voltage fluctuation(no load to full load)	± 0.5%		
Housing protection	IP23		
TIF(NEMA MG 1-22)	<50		
Excitation method	PMG		
Rated ambient temperature(℃)	40		
Rated stator temperature rise(℃)	125		

Gas Train

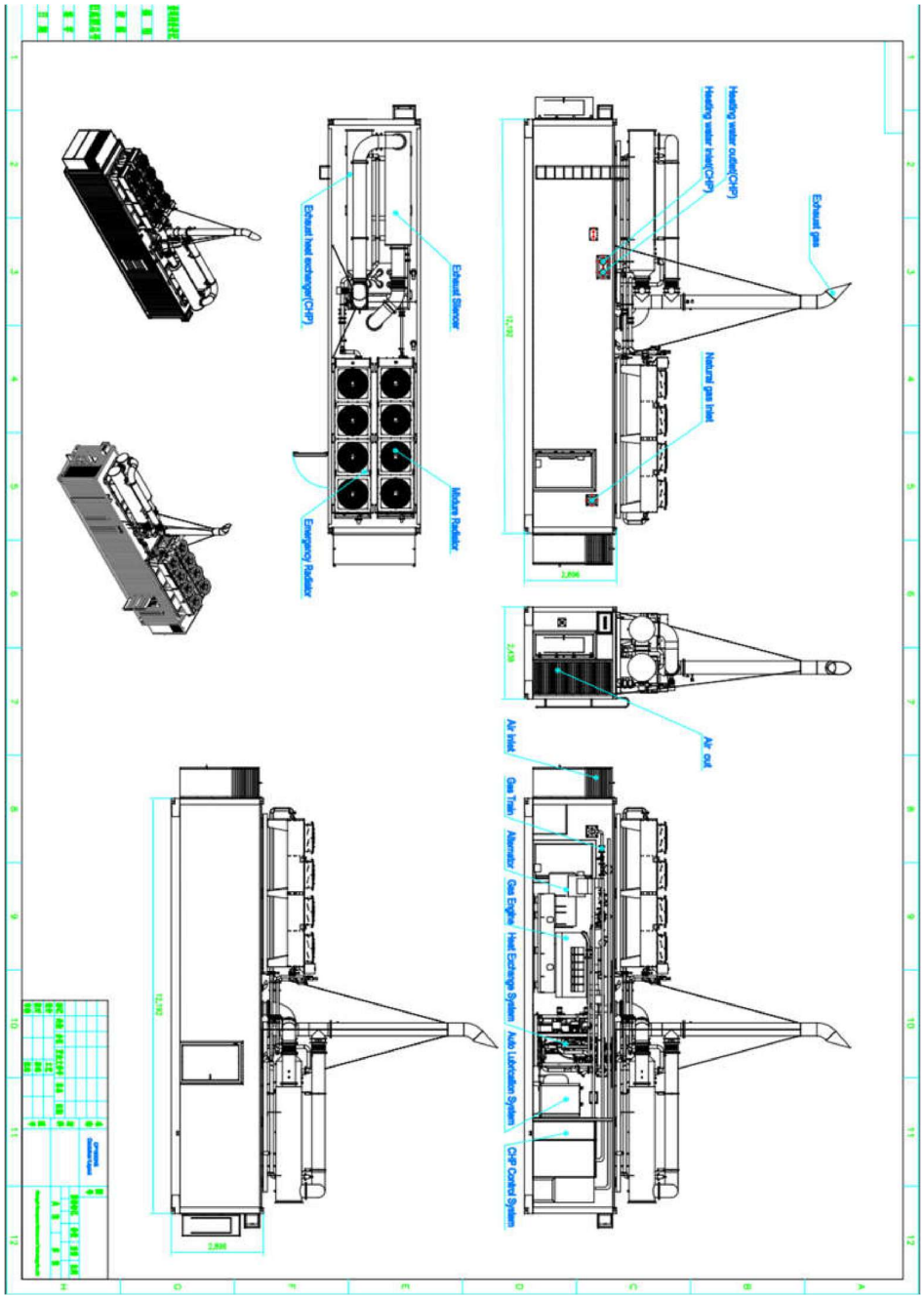
The gas regulation and safety components are integrated in the module and implemented in accordance with DIN specifications and are promulgated through the German Association of Science and Technology (DVGW).



Gas Train			
Brand	DUNGS	Origin of Products	Germany
Main Configuration			
1.Ball valve	2.Gas filter	3.Double solenoid valve	4.Zero Pressure Regulator
5.Pressure gauge			

Main Datasheet			
Flow（Nm³/h）	300	Protection level	IP54
Min. intake pressure（mbar）	20	Operating temperature（℃）	-10 to 60
Max. intake pressure（mbar）	200	Flange connection	DN80 PN10
Max. operation pressure（mbar）	360	Max. gas temperature（℃）	60
Outlet pressure（mbar）	0	Max. gas pressure change（mbar/ min.）	5
Voltage（VDC）	24		

Main Configuration Parts Layout



Data is subject to change without prior notice.