

This document gives a complete list of technical data with some detailed explanations of the main systems, subsystems and performance of our generators, in order to support local sales documentation, tenders or even technical doubts.

While every effort has been made to ensure that the information in this manual is correct Chicago Pneumatic does not assume responsibility for possible errors. Chicago Pneumatic reserves the right to make changes without prior notice.



## Standard Model Scope

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The CPDG is our twenty-foot containerized unit which provides superior power, is super silent and ideal for heavy duty applications. Its complete configuration makes it our High spec product.

The innovative dual compartment design whereby the power compartment and the cooling compartment are completely separate, ensures maximum efficiency and safe operation in the most extreme conditions. In the power compartment, which houses the alternator and the engine.

Serviceability is one our main concerns. Doors can be easily opened so that all components are always within reach, ensuring maintenance a service. Engine has full step-in access, alternator and air filters share same door access to avoid wasting time and sliding base concept also enables parts to be accessed by simply sliding out the appropriate section

Qc4003 controller with paralleling system, makes possible to work with the mains and with other units (till 16) in applications as Independent Power Plants (IPP) all over the world. Providing Chicago Pneumatic Power Management System (PMS), which is a smart management of the load of our customers, saving costs in terms of fuel, maintenance and performance.

### Features

- Carefully selected components, accurately developed and tested configuration
- Superior standard configuration and extensive option list
- 500 hours service interval and superior accessibility to all service points
- Compact and safe concept and sturdy design
- Designed and built to last

### Benefits

- Accurate and stable power regardless of the conditions
- Ability to power a wide range of applications
- Service efficiency: increased up-time
- Increased transport efficiency, separated control and power cubicle
- Superior resale value / longer life time

## Manufacturing and Environmental Standards

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The CPDG range is manufactured following stringent ISO 9001 regulations, and by a fully implemented Environmental Management System fulfilling ISO 14001 requirements + OHSAS 18000.

Attention has been given to ensure minimum negative impact to the environment. The CPDG range complies with the latest noise emission directives.

**ISO 8528:** CPDG generators are designed to comply with ISO 8528 regulation.



## 1. Performance Data

<b>Generator</b>		<b>CPDG1000</b>	
Rated speed	rpm	1500	1800
Rated power factor (lagging)		0.80	0.80
Rated Prime Power, PRP	kVA	1000.00	1000.00
	kW	800.00	800.00
Limited Time Power, ESP (Stand-by)	kVA	220V & 440V / (400V – 50Hz)	1062.00
		380V	-
		1060.00	1100.00
	kW	220V & 440V / (400V – 50Hz)	849.60
	380V	-	848.00
Continuous Operation Power, COP (Continuous)	kVA	220V & 440V / (400V – 50Hz)	800
		380V	-
		800	800
	kW	220V & 440V / (400V – 50Hz)	640
	380V	-	640
Rated voltage (3ph. line to line)	V	400	220 & 440 / 380
Rated voltage (1ph. line to neutral)	V	231	127 & 254 / 219
Rated current ( <b>STBy</b> ) - (440V) / (400V – 50Hz)	A	1532,9	1443,3
Rated current ( <b>STBy</b> ) - (380V)	A	-	1610,5
Rated current ( <b>STBy</b> ) - (220V)	A	-	2886,8
Maximum sound power level (LWA) complies with 2000/14/EC	dB(A)	103	103
Maximum sound pressure level (LPA) at 7 m	dB(A)	73	73
Coupling engine/alternator		Direct	
Fuel Autonomy at full load	h	7,8	8
Single step load capability (Acc ISO 8528)	%	55	70
Frequency drop (lower than % isochronous)	%	<10	
Maxim oil consumption 100% load	l/h	0,606	0,592



# CPDG1000 BQD - Product Reference Sheet

Derating Factor %		temperature (°C)											
height (m)	0	0	5	10	15	20	25	30	35	40	45	50	
	0	100	100	100	100	100	100	100	100	100	95	95	95
	500	100	100	100	100	100	100	100	100	100	95	95	95
	1000	100	100	100	100	100	100	100	100	100	95	95	90
	1500	100	100	100	100	100	100	100	100	100	95	90	85
	2000	95	95	95	95	95	95	95	95	95	90	85	80
	2500	90	90	90	90	90	90	90	90	90	85	80	80
	3000	85	85	85	85	85	85	85	85	80	80	80	75
	3500	75	75	75	75	75	75	75	75	75	75	75	70
	4000	70	70	70	70	70	70	65	65	65	65	65	65
	4500	60	60	60	60	60	60	60	60	60	60	60	60
	5000	55	55	55	55	55	55	55	55	55	55	55	55

Derating Factor %		temperature (°C)											
height (m)	0	0	5	10	15	20	25	30	35	40	45	50	
	0	100	100	100	100	100	100	100	100	100	95	95	90
	500	100	100	100	100	100	100	100	100	100	95	95	90
	1000	100	100	100	100	100	100	100	95	95	95	90	85
	1500	100	100	100	100	100	100	100	95	95	95	90	85
	2000	95	95	95	95	90	90	90	90	90	90	85	80
	2500	90	90	90	90	90	90	90	90	90	85	80	80
	3000	85	85	85	85	85	85	85	85	80	80	80	75
	3500	75	75	75	75	75	75	75	75	75	75	75	70
	4000	70	70	70	70	70	70	65	65	65	65	65	65
	4500	60	60	60	60	60	60	60	60	60	60	60	60
	5000	55	55	55	55	55	55	55	55	55	55	55	55

## Limitations\*

## CPDG1000

Maximum ambient temperature	°C	50
Altitude capability*	m	5000
Relative air humidity maximum	%	85
Minimum starting temperature	°C	-10
Minimum starting temperature, with coldstart equipment	°C	-25

## Application Data

Mode of operation	ESP/PRP/COP
Max. Inclination	12°
Operation	Single / Synchronism
Start-up and control mode	Manual / Auto / PMS / Test
Climatic exposure	open air

\*See derating matrix

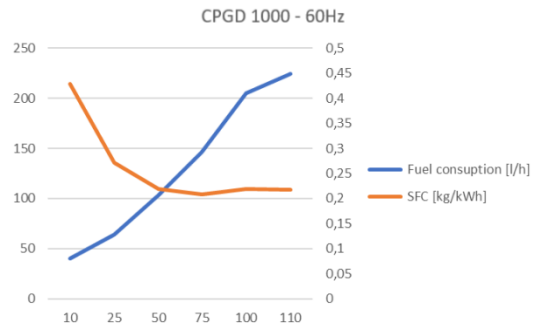
## CPDG1000

<b>Fuel Consumption at*:</b>		50Hz	60Hz
0% Load	kg/h	17,3	20,9
50% Load	kg/h	86,7	87,9
75% Load	kg/h	126	125
100% Load	kg/h	178,8	174,8
110% Load	kg/h	190,7	191,6
<b>Specific Fuel Consumption at:</b>			
100% Load	kg/kWh	0,224	0,218
110% Load	kg/kWh	-	-

\*Diesel fuel type No. 2 diesel or a fuel corresponding to ASTM D2. Density: 0,86kg/l.



# CPDG1000 BQD - Product Reference Sheet



(Data estimated in according to test)

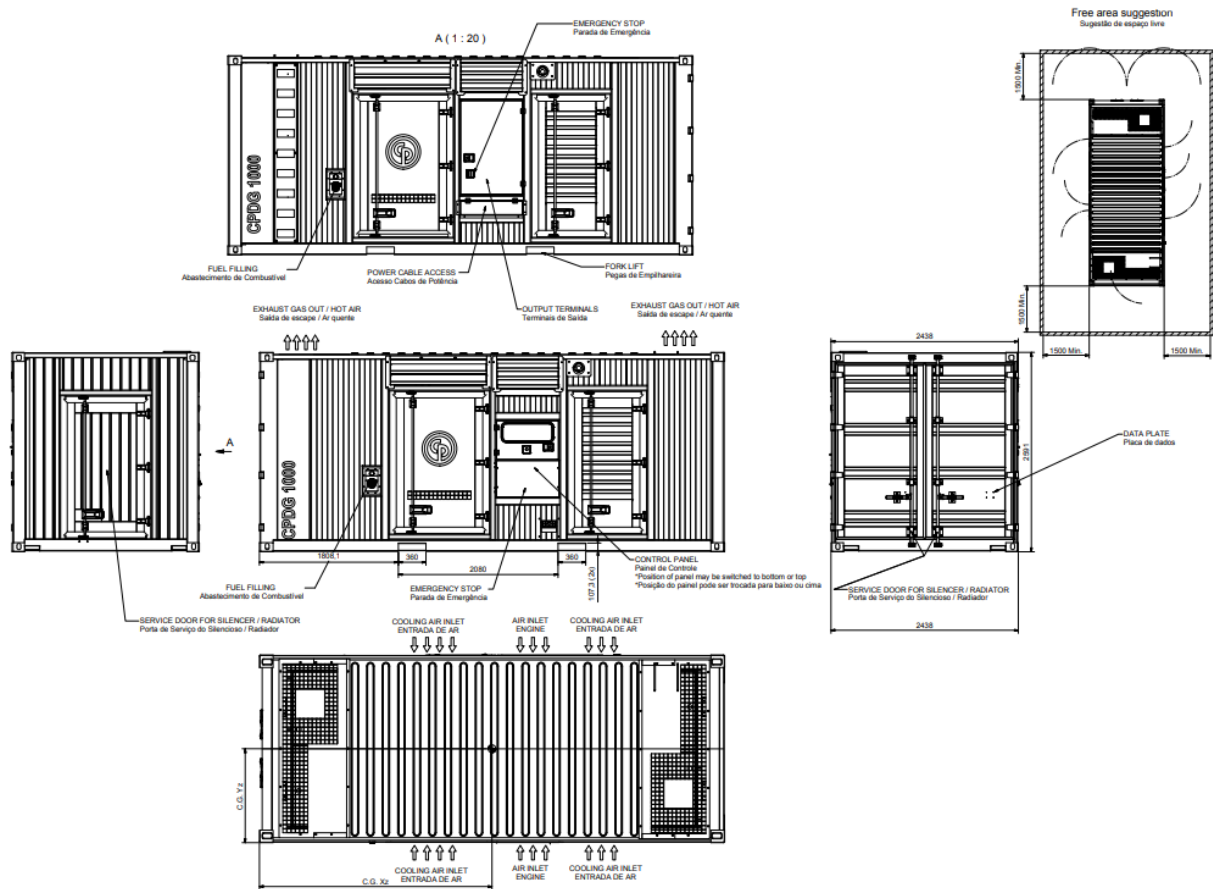
(Reference conditions at 25°C Air Inlet Temperature, 60% Relative Humidity, 1bar Absolute inlet pressure, for different conditions or limitations contact *Chicago Pneumatic* technical support).



# CPDG1000 BQD - Product Reference Sheet

## 2. Box

		CPDG1000	
	rpm	1500	1800
<b>Dimensions (L x W x H)</b>	m	6,056 x 2,438 x 2,591	
<b>Weight</b>			
Net mass	Kg	10410	
Wet mass	Kg	11964	
<b>Capacity of spillage free frame</b>	l	1988,8	
<b>Colour specification</b>			
Black	RAL	9011	
Red	RAL	3001	



## 3. Engine

<b>CPGD1000</b>			
<b>General</b>			
Speed	rpm	1500	1800
Manufacturer		Scania	
Model		DC13 072A ref.02-14	
Standard		ISO 8528-2	
Rated net output	kW	428	428
Number of cylinders	u.	6	
Configuration		6 in Line	
Aspiration		Turbocharged	
Speed governor		eletronic	
Bore	mm	130	
Stroke	mm	154	
Electrical system (DC)	V	24	
Compression ratio		16,7:1	
Displacement (swept volume)	l	12,7	
Piston speed	m/s	7.7	9.24
Combustion system		Direct injection	
Charged air cooling system		Intercooled	
Maximum permissible load factor of PRP during 24h	%	70	
Capacity of oil sump	l	39	
Oil pressure at rated speed	kPa	3 - 6 Bar	
Maximum Lubrication oil temperature	°C	110°	
Oil Filter(Standard)		Chicago Pneumatic	
Oil Filter(By-pass)		Chicago Pneumatic	
<b>Air intake system</b>			
Air consumption 60°C (PRP)	m³/min	394,49	394,49
Air consumption 59°C (LTP)	m³/min	533,72	438,12
Air Filters		Chicago Pneumatic	
Air filter cleaning efficiency	%	99.9	
Air filter capacity	m³/min	18 - 25	
<b>Cooling system</b>			
Coolant		ParCool / Water 50/50	
Capacity of coolant (engine)	l	45	
Fan material		Plastic	
Fan power consumption at nominal speed	kW	12	



## CPDG1000 BQD - Product Reference Sheet

<b>Fuel system</b>	<b>CPDG1000</b>		
	rpm	1500	1800
Capacity fuel tank	l		1640
Fuel tank specifications			Plastic
<b>Fuel filter</b>			
Micron rate	micron		10
<b>Fuel pre-filter</b>			Water Separator
Design Pressure	bar		1.2
Test pressure			1.8
Temperature	°C		-25°C to 120°C
Volume	l		10
<b>Emission compliance</b>		NA	NA
NOx	g/kWh	14.085	13.935
CO	g/kWh	0.27	0.914
HC	g/kWh	0.062	0.068
PM	g/kWh	0.035	0.036
SO <sub>2</sub>	g/kWh	-	-
CO <sub>2</sub> (at 100% load)	Kg/h	-	-



## 4. Alternator

		CPDG1000	
General	rpm	1500	1800
Manufacturer		WEG	
Model		AG10-280MI40AI	
Standard		IEC 34-1 / ISO 8528-3	
Rated net power	kVA	548	600
Number of bearings		1	
Number of wires		12	
Voltage regulator accuracy		+/- 0.5%	
Degree of protection		IP23	
Insulation class		H	
Environment Protection/ Industrial- grade 1		IEC 60721-3-3/ =<95% of humidit Possible condensation	
		ONSHORE	
Number of poles	440V / 400V	4	
	380V	4	
	220V	4	
Number phases		3	
Over speed	rpm	2250	
Total Harmonic Distortion THD		< 5%	
Xd Direct axis synchro reactance unsaturated	%	150	199
X'd Direct axis transient reactance saturated	%	11,6	13,8
X''d Direct axis subtransient reactance saturated	%	8,4	10
<b>Excitation system</b>		Brushless with auxiliary coil	
Sustained short-circuit current	A	Trifásico	Trifásico
		1804	2183
<b>Frame dimensions (single bearing)</b>			
Lenght	mm	1144	
Width	mm	645	
Height	mm	840	
Weight	kg	1153	
<b>AVR</b>			
Model		A-OPT-10	
Sensing		3 phase	
Voltage regulation	%	±0.5	
Nominal excitation current	A	50Hz	60Hz
		Trifásico	Trifásico
		5	7.5
Voltage detection	V	≤420	

The WEG alternators are designed for heavy duty continuous applications:

- INDUSTRIAL - GRADE 1 protection (relative humidity >95%) for tropical environment (except coastal areas). Salinity salt concentration =< 1 g/m³. Degree of protection: IP21 or IP23. Plate packages: unpainted, with painting plan: 207. Clamping elements: ZTAM. Impregnation: VPI;
- ONSHORE;
- OFFSHORE applications are optional;
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating;
- Voltage regulation +/- 0.5%;
- AREP is a standard feature. PMG is optional;



## 5. Generator

<b>CPDG1000</b>					
	rpm	1500		1800	
<b>Energy Balance</b>					
<b>Engine</b>		PRP	ESP	PRP	ESP
Heat rejection to exhaust	kW	309	344	320	358
Heat rejection radiation from engine	kW	567	645	594	672
Heat rejection to coolant	kW	134	158	142	166
<b>Alternator (PF 0,8)</b>					
Efficiency at full load	%	88,90%			
<b>Exhaust System</b>					
Flow (PRP)	kg/min	34	36		
Flow (LTP)	kg/min	36	38		
Exhaust gas temperature "after turbine" (PRP)	°C	536	521		
Exhaust gas temperature "after turbine" (LTP)	°C	563	557		
Max. Backpressure	kPa	40	40		
Output pipe diameter	mm	203			
<b>Battery</b>					
Quantity		4	4		
Voltage	V	12			
Capacity	Ah	100			
Connection		2x Serie			
Dimensions (L x W x H)	mm	330 x 172 x 244			
Starting power	kW	5,5			
Weight (wet)	kg	24,88			
<b>Sensor*</b>					
Oil (temp, pressure & level)		STD			
Coolant (temp & level)		STD			
Fuel (feed pressure)		STD			
Charge air (temp & pressure)		STD			
Fuel Level		STD			
Generator Voltage	V	220/380/440 / (400 – 50Hz)			
Mains Voltage Qc4003		STD			
Generator Current transformer Qc4003		STD			
TM changeover feedback (Qc4003)		STD			
Reply: Mains CB opened/closed (Qc4003)		STD			
Reply: Generator CB opened/closed (Qc4003)		STD			
Air Inlet Pressure Switch		STD			
Low Coolant Level Shutdown/Warning		STD			
<b>*Confirm with Chicago Pneumatic technical support.</b>					



## 6. Power Output

### Circuit Breaker

Speed		1500	1800
Model		SCHNEIDER NS1600N	
Poles		3	
Rated current (In) (A)	440V / 400V	1532,9	1443,4
	380V	-	1610,5
	220V	-	2886,8
Thermal release, regulated (It)	A	0.8~1.0 In	
	440V / 400V	919,74	866,04
CB tripping point (A)	380V	-	966,30
	220V	-	1732,08
	A	2.5~5.0 In	
Fault current protection, residual current release (I <sub>dn</sub> )	A	0,03-30	
Motor Driven DC voltage	V	24	
Motorized		Yes	
Life operating cycles without maintenance		10000	
<b>Status of neutral</b>			
TN-S (earthed)		STD	
IT		OP	
IT (EDF)		OP	
<b>Terminal Board</b>			
Bolts diameter	mm	12	

**STD – Standard; OP – Option; NA – Not Available**



## 7. Options

### Mechanical Options

#### Special Equipment

<b>Spark arrestor</b>		OP
Material		Various
<b>Inlet shutdown valve</b>		OP
Max/Min Temperature Valve	°C	93° (Max)

Spark arrestor is a device that is designed to trap any exhaust particles or combustible materials, such as sparks or other flaming debris, from escaping into hazardous areas where they might cause fires. Exhaust particles are centrifuged in the spark arrestor, then collected and stored in a reservoir until emptied by an operator. An inlet shutdown valve serves to stop the engine by closing the air intake once the controller detects an over speed in the engine.

#### Fuel System

<b>External fuel tank connection</b>		STD
Material		Brass
Test pressure	bar	1
Overpressure	bar	2
Open pressure	bar	1±0,1
Max/Min Temperature	°C	-30 to +80

The EFT enables the generator to run for long periods of time on an external fuel supply without having to refuel. We can also provide quick couplings to enable easy and fast connection to the fuel tank

### Electrical Options

#### Coolant Heater

<b>Electric driven coolant heater</b>		STD
Voltage	V	220
Power	kW	1
Current	A	8,3
Thermostat Range	°C	NA
<b>Fuel driven coolant heater</b>		OP
Electrical power	W	NA
Rated voltage	V	NA
Operating pressure	bar	NA
Flow rate at 0,1 bar	l/h	NA

Its main mission is heat the coolant so that the temperature of the engine is always high enough to start straight away, even in temperatures as low as minus 25 degrees Celsius. Not for all models but a fuel powered version is available, which is ideal for remote areas without mains supply.

#### Dual

Dual frequency switch 50Hz-60Hz		YES
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#### Battery

<b>Battery charger</b>		STD
Temperature	°C	-18 to 50
Input frequency	Hz	48.....64
Output voltage	V	24 - 27,5
Output current	A	5
Output power	W	137
Dimensions (L x W x H)	mm	140 x 140 x 63
<b>Battery cut off switch</b>		STD

Battery charger is necessary for stand-by applications because the controller is always on, ready to start at any time. Battery cut off switch allows the battery to be disconnected when storing the unit, thus preventing the battery from becoming drained.



**Electrical Options**

Electronic speed regulator

CPDG1000

STD

**Controllers**

Qc4003

STD

\*with Qc4003+ PMS Chicago Pneumatic recommends: Battery charger + Coolant heater

\*Just 1 ph socket available

\*Qc4003 includes always communication cables and needed adaptors

Qc4003: is the high spec controller prepared to work synchronized with several units (IPP) and/or the mains

**Power and Flow division**

**Controllers key features QC 4003 controllers**

