











HEAVY RANGE

GENSET 1250 kVA BAUDOUIN / MECC ALTE

1. MAIN FEATURES

	Three-phase		Diesel
	Baudouin / 12M33G1650/5		Mecc Alte ECO43MV-2XL/4
	Grupel / G545		50 Hz
	1500 r.p.m.		6300 V
	> 0.8		400 A
Standby Power(ESP)		1375 kVA	1100 kW
Prime Power (PRP)		1250 kVA	1000 kW
Continuous Power(COP)		-	-

OPEN SKID

Length (L)	6520 mm
Height (H)	3190 mm
Width (W)	2170 mm
Weight	11000 kg
Fuel tank daily capacity	not included
Muffler sound level reduction	25 dB(A) (>15%)

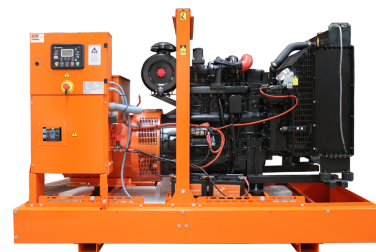


2. ROOM INSTALLATION

EXHAUST SYSTEM	50 Hz		
	COP	PRP	ESP
Exhaust gas temperature (°C)	-	-	550
Exhaust gas flow (m³/min)	-	318.5	350.4
Evacuated heat (kW)	-	-	1190.3
Maximum back pressure (kPa)		7.5	
Exhaust silencer attenuation (dB)		18-25	
Output diameter (mm)		-	

VENTILATION SYSTEMS	50 Hz		
	COP	PRP	ESP
Combustion air flow (m³/min)	-	91.9	101.1
Cooling airflow (m³/min)		1380	
Maximum load losses (Pa)		100	
Alternator cooling air flow (m³/min)		108	

RADIATION	50 Hz		
	COP	PRP	ESP
Engine (kW)	-	-	176.8
Alternator (kW)	51.37	51.37	59.29



3. ENGINE SPECIFICATIONS

GENERAL SPECIFICATIONS		50Hz
Model	12M33G1650/5	
Emissions (UE/USEPA)	Not applicable / Not applicable	
Performance grade	G3*, ISO 8528:5 2018	
Operating method	4 stroke	
Fuel type	Diesel (EN590)	
Refrigeration system	Closed water circuit / antifreeze till -40°C	
Aspiration system	Turbo-aftercooled	
Injection system	Common-rail	
No. and Cylinder arrangement	12 in V	
Displacement (L)	39.2	
Cylinder bore (mm)	150	
Cylinder stroke (mm)	185	
Compression ratio	15:1	
Regulation	Electronic	
Rotation speed (r.p.m.)	1500	
Piston speed (m/s)	9.3	
Gross power COP (kWm)	-	
Gross power PRP (kWm)	1350	
Gross power ESP (kWm)	1450	
Fan Power (kWm)	- / 43 / 43	
Net Power COP (kWm)	-	
Net Power PRP (kWm)	1307	
Net Power ESP (kWm)	1407	
BMEP COP (kPa)	-	
BMEP PRP (kPa)	2755	
BMEP ESP (kPa)	2959	



CONSUMPTION		50 Hz
Fuel consumption	l/h	g/kWh
ESP	354.2	204.9
PRP	324	201.6
COP	-	-
75%	234.2	194.3
50%	156.1	194.3
Oil consumption	< 0.3% of fuel consumption	

REFERENCE CONDITIONS	
Temperature (°C)	25
Atmospheric pressure (kPa)	100

CAPACITY (°C)	
Coolant (L)	188
Oil (L)	160

STARTING SYSTEM	
Voltage (V)	2 x 24
Power (kW)	2 x 8,5
Battery (Ah)	220

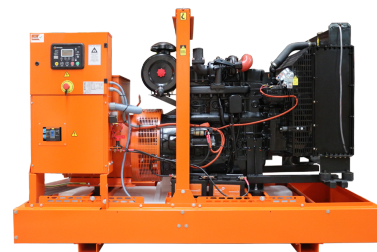
4. ALTERNATOR SPECIFICATIONS

GENERAL SPECIFICATIONS	
Model	EC043MV-2XL/4
Phases No.	Three-phase
Protection	IP23
Insulation	H
Temperature rise	H
R.F.I. telephone interference	THF < 2%
R.F.I. Suppression	IEC 61000-6-2/3/4, VDE 0875G/N, EN 55011
Coupling	Flexible disks
Support	Single bearing



Wave form distortion with no load	< 3,5%
Wave form distortion with balanced linear load	< 3,5%
Winding Leads	6
Excitation	PMG
AVR Model	DER2
Voltage /Frequency fluctuation	< ± 1 % / < ± 0,5 %
Icc (standard/optional)	3In:10s

PF (cos Ø)	Phase	Voltage (V)	Power PRP/ESP (kVA)	Efficiency PRP/ESP (%)	Xd	X'd	X''d
0.8	Three-phase	380	1250 / 1375	94.86 / 94.61	4.34	0.215	0.182



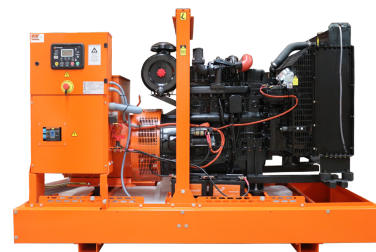
5. CONTROL PANEL



GENSET	GrupeL G545
Voltage (F-F / F-N)	● / ●
Current intensity	●
Frequency	●
RMS Values	●
Generator phase sequence	●
Generator earth current [a]	○
No. of registered events	400
Real time clock	●
PIN Protection	●
kWh, kVAR, kVAh, kVAh, cos Ø	●
Synchroscope [i]	○
No. of available outputs [b]	4
Indication of alarms on LCD	●
Hours of engine operation	●
Total no. of LED indicators	15
No. of LED alarms	4
Sound signalling alarms	-
Schedule	●
Fuel level	●

ELECTRICAL GRID	GrupeL G545
Voltage (F-F / F-N)	● / ●
Current [a]	○
Frequency	●
kVA, kW, cos Ø [a]	○
Inversion control between main-group	●

PROTECTIONS AND ALARMS	GrupeL G545
High / low battery voltage	A
Failure in battery charge alternator	A
Failure to stop	A/S
Failure to start	A/S
Low fuel level	A/S
Overload	A/S
Earth leakage	A/S
Asymmetry between phases	A/S
Maintenance	A/S
High / Low generator frequency	A/S
Engine overspeed	A/S
Engine underspeed	A/S
Generator overvoltage	A/S
Generator undervoltage	A/S
ECU Alert (if applicable)	A/S
Low oil pressure	A/S
Low level of radiator water [f]	A/S
Engine high temperature	A/S
Fuel leakage/ theft	A



ENGINE	Grupel G545
Engine speed	●
Low oil pressure protection	●
Oil pressure reading [c]	○
High temperature engine protection	●
Engine temperature reading [c]	○
Engine battery voltage	●
Intensity of the engine battery [d]	○
Fuel Consumption [e]	●
Low level of radiator water [f]	○
Scheduled engine maintenance	●

Legenda	
●	Available
○	Optional
-	Not available
A	Warning Alarm
S	Stop alarm
[a]	Need additional CT
[b]	No. of outputs available for standard configuration. The outputs do not include relays and additional terminal connections.
[c]	If the information is not provided by the engine-ECU, you need an additional sensor
[d]	Needs additional ammeter
[e]	If information provided by the engine ECU
[f]	Required additional sensor
[g]	Requires G-ETH
[h]	Requires G-GSM
[i]	Requires G-Sync


STANDARDS	
Working temperature	-30 ≤°C ≤ 70
Protection degree (front panel)	IP65
Degree of humidity (during 48hr)	93%, 40°C

These specifications are subject to change without notice.

ISO 9001
BUREAU VERITAS
Certification

ISO 14001
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Certification

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	Model : 12M33G1650/5	Date : 02/08/21
	PowerKit Engine Datasheet - DCP	Page : 1 / 4

Ratings


RPM	Gross Engine Output		Net Engine Output	
	Data Centre Power (DCP)		Data Centre Power (DCP)	
	kWm	BHP	kWm	BHP
1500	1350	1810	1293	1734

1 kWm = 1,34102 BHP

Basic data

Engine model	12M33G1650/5
N° of Cylinders / Valves	12 / 48
Cylinders arrangement	At Vee
Bore x Stroke (mm)	150 x 185
Displacement (L)	39.2
Thermodynamic Cycle	Diesel 4 stroke
Mean Piston Speed (m/s)	9.25
BMEP (Bar)	29.59
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	High Pressure Common Rail
Aspiration	Turbocharged and Aftercooled
Compression ratio	15 : 1
Flywheel housing	SAE 0
Flywheel	18"
N° of teeth on flywheel ring gear	194
Inertia of flywheel (kg•m ²)	7.18
Inertia of crankshaft (kg•m ²)	4.52
Emission standard	N/A
Overall Dimensions with radiator (Length x Width x Height) (mm)	3525x2241.5x2243
Engine dry weight without radiator and without radiator pipes (kg)	3590
Engine dry weight with radiator and radiator pipes (kg)	4575
Engine wet weight with radiator (includes oil, coolant) (kg)	5024

DPK-TDS-EN-12M33-0056-21-08-02 Moteurs Baudouin reserve the right to modify these specifications, without notice. Document not contractual.

	Model : 12M33G1650/5	Date : 02/08/21
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Air intake system

Air intake temperature rise (°C)	≤ 5
Air intake restriction clean filter (mBar)	≤ 30
Air intake restriction dirty filter (mBar)	≤ 65
Recommended air flow @ DCP (m³/min)	91.9
Min. diameter of intake pipe (mm)	160

Aftercooling system

Aftercooler system type	Air to Air
Max. intake temperature @ 25°C ambient temperature (°C)	55
Max. difference between intake temperature and ambient temperature (°C)	30
Max. intake pressure drop of aftercooler (mBar)	120

Lubrication system


Oil capacity Low / High (L)	117 / 155
Oil pressure in normal condition idle speed (Bar)	≥ 2
Oil pressure in normal condition at 1500 Rpm @ DCP (Bar)	4 - 6.5
Lowest oil pressure alarm (shutdown) (Bar)	2
Max. oil temperature (°C)	105
Oil flow at 1500 Rpm (L/min)	≥ 392
Oil fuel consumption ratio based on engine fuel consumption data	≤ 0.3 %
Total system capacity (including filters) (L)	160

Heat balance test data (with ambient temperature 27.0 °C)

Total heat dissipation @ DCP (kJ/s)	2242.1
- Heat Rejection to Jacket Water @ DCP (kJ/s)	548.3
- Heat Rejection to AfterCooler @ DCP (kJ/s)	326.7
- Radiated Heat to Ambient @ DCP (kJ/s)	176.8
- Heat Rejected to Exhaust @ DCP (kJ/s)	1190.3

Exhaust system

Max. exhaust back pressure (mBar)	75
Max. exhaust temperature before turbocharger (°C)	700
Max. exhaust temperature after turbocharger (°C)	550
Exhaust flow @ DCP (m³/min)	318.5
Min. diameter of exhaust pipe (mm)	220
Max. bending moment of exhaust gas exit flange (Nm)	10

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Cooling system with standard radiator version 2021

System designed for ambient temperature up to (°C) ¹	50
Radiator type	Mechanical
Fan type	Belt driven pusher
Min. inside diameter of coolant outlet pipe (mm)	84
Coolant capacity of radiator and pipes (L)	220
Coolant alarm (shutdown) temperature (°C)	103
Thermostat opening temperature / full open temperature (°C)	80 / 92
Max. additional restriction for external cooling circuit (Bar)	0,44
Coolant capacity of the engine (L)	83
Cooling fan airflow (m³/min)	2100
Fan absorbed power (kW)	55
Additional restriction (for reference) - Duct allowance (Pa)	100

Fuel system

Governor	ECU
Governor steady state speed stability at constant load (ISO 8528-5 Class G3) ²	≤ +/- 0.5 %
Max. restriction at fuel inlet (Bar)	0.5
Max. pressure at fuel inlet (Bar)	0.5
Max. fuel return restriction (Bar)	0.2
Max. fuel inlet temperature (°C)	50
Fuel supply flow (L/hr)	1900
Min. internal diameter of inlet pipe (mm)	19
Min. internal diameter of return pipe (mm)	19


Electrical system

Electrical system voltage (negative to ground) (Vdc)	24
Starter power (kW)	2 x 8.5
Battery charger current (A)	55
Battery charger absorbed power (kW)	1,6
Max. electric resistance of starting circuit (Ω)	0.008
Min. sectional area of wire (mm²)	95
Min. cold start temperature without auxiliary starting device (°C) ³	- 5
Min. cold start temperature with auxiliary starting device (°C) ³	- 10

¹ The indicated value is based on the AOT value of 50°C for an engine tested at 100% of the DCP Power, reflecting temperature in an open condition, without an enclosure or container, without any airflow obstruction in the front of the radiator, without air recirculation, with free exhaust gas exit and with the engine thermostatic valve in its full open condition, without a closing plate present. The reference air restriction is equal to 50Pa. For the equivalent ATB (Air-to-Boil) performance in a customer or project basis, please consult Baudouin Application Engineering.

² This refers only to the frequency response of the engine and should not be confused with the performance class of the Generator Set, which is subject to additional contributing factors such as alternator selection and control settings.

³ Engines used in emergency standby application or applications that require immediate start under load, they must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

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Noise

Diesel engine noise (Acoustic power level) (dB(A))	121.2
Noise - upper side (dB(A))	102.9
Noise - right side (view from flywheel) (dB(A))	104.8
Noise - left side (view from flywheel) (dB(A))	103.6
Noise – front (radiator) side (dB(A))	103.5
Noise – rear (flywheel) side (dB(A))	106

Notes :

- Noise test made at 100% of the power, at 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- Noise test refers to GB/T 1859 norm : "Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method".

Fuel consumption

Rating	gr/kWh	L/hr
100% DCP	201,6	324
75% DCP	194,3	234,2
50% DCP	194,3	156,1
25% DCP	209	84
Fuel consumption tolerance + 3 %		

Ratings definitions

Data Centre Power (DCP)

Data Centre Power is defined as being the maximum power which a generating set is capable of delivering while supplying a variable or continuous electrical load and during unlimited run hours. Depending on the sites to supply and the availability of reliable utility, the generating set manufacturer is responsible to define what power level he is able to supply to fulfil that requirement including hardware or software or maintenance plan adaptation.

Note : The engine driven alternating current generating set is a reliable source of power for the data centre and it can be also used to back up a reliable utility. Prolonged operation at load in parallel with a utility is not permitted.


Uptime Compliant

This engine rating is compliant with Uptime certified installations

- All ratings are based on operating conditions under ISO 8528-1:2018, ISO 3046, DIN6271. Performance tolerance of $\pm 5\%$.
- Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
- Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

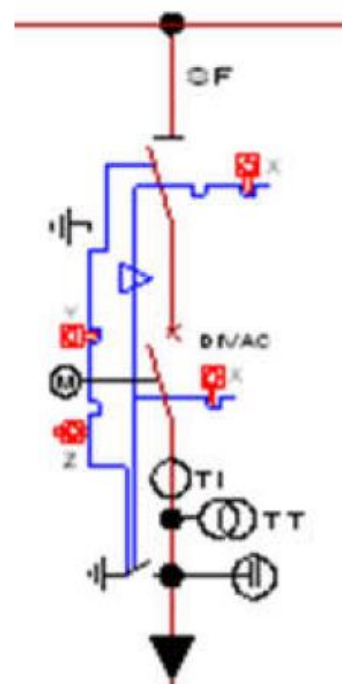
1.1 Modular MVSG +SB 400A_EN

General characteristics	
Ambient temperature:	<40 °C
Relative humidity:	< 95 %
Altitude	< 1000 m
Type of installation:	Indoor
Ventilation type:	Standard
Installation Base:	
International Standards Applicable	
IEC 62271-1/100/102/105/200 ; IEC 60265-1	
General Technical Characteristics	
Devices under metal cover:	Compact Panels insulated in SF ₆ (RMU)
Insulation:	SF ₆
Interruption type	SF ₆ and Vacuum (Switch)
Protection degree	IP3XC
Label / Plate:	Adhesive
Paint:	Standard
Tag Language:	English



Electrical Characteristics - Main Circuit	
Service Voltage:	6.3 kV
Rated Voltage:	12 kV
Isolation of General Busbar:	SF ₆
Test Voltage at Industrial Frequency 50 Hz-1 min:	50 kV
Insulation Level (BIL):	125 kV
Neutral Connection:	-
Rated Current:	400 A
Permissible short-time current:	16 kA (1 s)
Short-Run Current Value of Permissible Short-Run Current:	40 kA
Frequency:	50 Hz
Auxiliary circuits	
Signalling Voltage:	230 Vca
Control Voltage:	230 Vca
Test Voltage at Industrial Frequency 50 Hz-1 min:	2 kV

Configuration		
Type	Protection and Measure	
Rated Current	400 A	
Width	1200 mm	
Standard Equipment		
Upper compartment containing three-pole busbar in copper tube for a rated current of 400 A.		
Three-position SF switch (closed, open and earth) with isolation in SF6, 600 A, three-pole, with manual control type CS1.		
Three-pole vacuum switch type - 24 kV, 400 A, 16 kA. (see switch table).		
Earthing switch integrated in the SF, with closing power.		
Additional earthing switch next to the cable terminals.		
Set of direct mechanical interlocks between the disconnecter, DIVAC switch and the cell door.		
Set of 3 Isolators-capacitors and a voltage presence indicator box with LED's.		
Cell prepared to receive 1 end per phase up to 240 mm ² .		
List of Options (X - equipment included)		
	ISF control mechanism equipped with motorization	
	Interlock by lock to lock the insulator (SF) and Breaker (Divac / Diflu) with other cells	
X	Interlock by lock of the open earthing switch (Interlock ring with another cell)	
X	Interlocking by lock of the closed earthing switch (Interlock ring with another cell)	
X	Contact group status signalling ISF switch (2A + 2C + 2T)	
	Compartment B.T. additional front	
	Compartment B.T. additional on top equipped with: 1 multifunction numeric protection relay type EFACEC TPU S220-I	
	Compartment B.T. additional on top equipped with: 1 Multifunction numeric protection relay type GENERAL ELECTRIC G489	
	Compartment B.T. additional on top equipped with: 1 Multifunction numeric protection relay type GENERAL ELECTRIC G60	
X	Installation of current transformers (see table of transformers).	
X	Installation of voltage transformers (see table of transformers).	
	Contact group signalling the isolation of voltage transformers.	
X	Anti-resonant resistance (voltage transformers only)	
	Surge arrester	
X	Heating resistance 230 Vac	
X	DIVAC - separate pole automatic circuit breaker that uses vacuum as a dielectric medium	
	Motorized control for automatic circuit breaker	
X	Thermostat for heating resistance control	
	Integrated protection constituted by relay (protection against overloads and short circuits, even homopolar)	



Characteristics of the Current Transformers	
Quantity	3
Transformation ratio	125/5A-5A
Secondary (s)	S1:15VA-5P20 S2:10 VA – 0,5Fs5
Characteristics of the Voltage Transformers	
Quantity	3
Transformation ratio	13800/√3//110/√3V
Secondary (s)	10 VA – 0,5

Automatic switch			
Type:	DIVAC 361 6B	Disposition:	
Qt :	1	Short-time withstand current:	16 kA
Interruption type:	Vacuum	Breaking Capacity:	40 kA
N° of Poles :	3	Manoeuvres Counter:	Si
Applicable Standards	IEC 62271-1/100/102/200 ; IEC 60265-1	Operating Cycle	O - 0.3s- CO -15s - CO (-15s - CO)
Optional equipment Automatic switch			
X	Manual Control	X	48 Vcc Closure Coil
	Motorized Control 48 Vcc	X	48 Vdc Opening Coil
X	Heating resistance 230 Vac		Supplementary Opening Coil
X	Signalling State of the Docks	X	Auxiliary Contacts 10NA + 7NF
	Minimum voltage opening coil		Lock