PRAMAC

ENERGY GENERATION

GSW200P

Main Features		
Frequency	Hz	50
Voltage	V	400
Power factor	cos ϕ	0.8
Phase and connection		3

Power Rating		
Standby power LTP	kVA	203.01
Standby power LTP	kW	162.41
Prime power PRP	kVA	182.73
Prime power PRP	kW	146.18

Ratings definition (According to standard ISO8528 1:2005)

PRP - Prime Power:
It is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. The permissible average power output over 24 h of operation shall not exceed 70 % of the prime power.

LTP - Limited-Time running Power:
It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 h of operation per year (whose no more than 300 for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

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Engine specifications		
Engine manufacturer		Perkins
Model		1106A-70TAG3
Version		1500rpm PR82236
[50Hz] Exhaust emission level		Non Emission Certified
Engine cooling system		Water
Nr. of cylinder and disposition		6 in line
Displacement	cm^3	7000
Aspiration		Turbocharged
Speed governor		Mechanical
Prime gross power PRP	kW	162.7
Maximum gross power LTP	kW	180.2
Oil capacity	l	14.9
Lube oil consumption @ PRP (max)	%	0.1
Coolant capacity	l	21
Fuel		Diesel
Specific fuel consumption @ 75% PRP	g/kWh	211
Specific fuel consumption @ PRP	g/kWh	207
Starting system		Electric
Starting engine capability	kW	4.2
Electric circuit	V	12

Engine equipment

Standards

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/5.

Lube oil system

Flat-bottomed isolated aluminium sump

Filter

- Fuel filter
- Air filter
- Oil filter

Cooling system

- Radiator (incorporating air-to-air charge cooler + fuel cooler)
- Water pump

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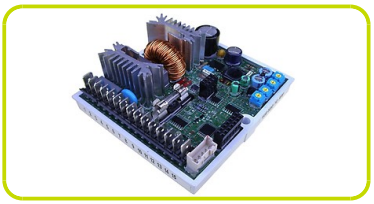
Alternator Specifications		
Brand		Mecc Alte
Model		ECO38-2SN/4
Voltage	V	400
Frequency	Hz	50
Power factor	cos ϕ	0.8
Poles		4
Type		Brushless
Voltage regulation system		Electronic
Standard AVR		DSR
Voltage tolerance	%	1.5
Efficiency @ 75% load	%	92.9
Class		H
IP protection		21

Mechanical structure
Robust mechanical structure which permits easy access to the connections and components during routine maintenance check-ups.

Voltage regulator
Voltage regulation with DSR. The digital DSR controls the range of voltage, avoiding any possible trouble that can be made by unskilled personnel. The voltage accuracy is ±1% in static condition with any power factor and with speed variation between 5% and +30% with reference to the rated speed.



Windings / Excitation system
Generator stator is wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th …) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches. MAUX (Standard): The MAUX MeccAlte Auxiliary Winding is a separate winding within the main stators that feeds the regulator. This winding enables to take an overload of 300% forced current (short circuit maintenance) for 20 seconds. This is ideal for motor starting requirements.

Insulation / Impregnation
Insulation is of class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. High voltage parts are impregnated by vacuum, so the insulation level is always very good. In the high-power models, the stator windings undergo a second insulation process. Grey protection is applied on the main and exciter stator to give enhanced protection.

Reference standards
Alternator manufactured according to , and complies with , the most common specification such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 No14-95-No100-95.

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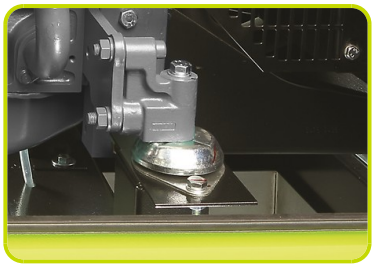
Genset equipment

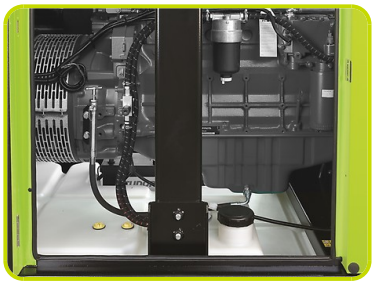
BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:



• Anti-vibration mountings properly sized

• Welded or Screwed support legs. (according to canopy size)

PLASTIC FUEL TANK WITH THE FOLLOWING COMPONENT:



• Filler neck

• Air breather (ventilation pipe)

• Minimum fuel level sensor

OIL DRAININ PIPE WITH CAP:

• Oil draining facilities

ENGINE COMPLETE WITH:

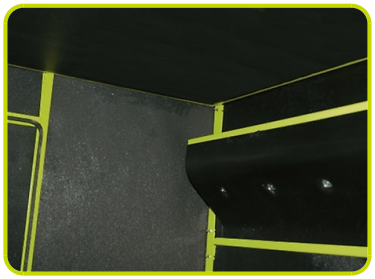
• Battery

• Liquids (no fuel)

CANOPY:

• Soundproof canopy made up of modular panels, realized with zinced steel as treatment against corrosion and aggressive conditions, properly fixed and sealed allowing a full weatherproof enclosure.
• Easy access to the genset for maintenance purposes thanks to: Wide lateral access doors fixed by stainless steel hinges and provided with plastic lockable handles; Detachable panels, with screws holes protected by rubber tap.
• Control panel protection door provided with suitable window and lockable handle.
• Lateral air inlet opening properly protected and soundproofed. Exhaust air outlet from the roof, trough wet section protected by proper grid.
• Single detachable lifting eye placed on the roof.

SOUNDPROOF:



• Noise attenuation thanks to soundproofing material (rock wool)

• Efficient residential silencer placed inside the canopy

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Dimensional data		
Length	(L) mm	3400
Width	(W) mm	1250
Height	(H) mm	1770
Dry weight	Kg	2088
Fuel tank capacity	l	350

Autonomy		
Fuel consumption @ 75% PRP	l/h	30.90
Fuel consumption @ 100% PRP	l/h	40.09
Running time @ 75% PRP	h	11.33
Running time @ 100% PRP	h	8.73

Noise level		
Guaranteed noise level (LWA)	dB(A)	97
Noise pressure level @ 7 mt	dB(A)	68

dB GUARANTEE

Installation data		
Total air flow	m³/min	45.08
Exhaust gas flow @ PRP	m³/min	31.55
Exhaust gas temperature @ LTP	°C	491

Data Current		
Battery capacity	Ah	140
MAX current	A	293.03
Circuit breaker	A	320

Control panel availability	
MANUAL CONTROL PANEL	MCP
MANUAL CONTROL PANEL FULL OPTION	MPF
AUTOMATIC CONTROL PANEL	ACP
MODULAR PARALLEL PANEL	MPP

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MCP - Manual control panel

Mounted on the genset and complete of: analogue instrumentation, control, protection of the generating set, protected through door with lockable handle.

INSTRUMENTATION (ANALOGUE)

- Voltmeter (1 phase)
- Ammeter (1 phase)
- Hours-counter

COMMANDS

- Start/stop selector switch with key
- Emergency stop button

PROTECTION WITH ALARM

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Earth Fault.

PROTECTIONS WITH SHUTDOWN

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature.
- Circuit breaker protection: III poles
- Emergency stop button

OTHERS PROTECTIONS

- Panel protected through door with lockable handle.

OUT PUT PANEL MCP

Power cables connection to Circuit Breaker.	
External Terminal Board (ETB)	Optional
Socket kit	Optional

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MPF - Manual control panel full option

Mounted on the genset and complete of: analogue instrumentation, control, protection of the generating set, protected through door with lockable handle

INSTRUMENTATION (ANALOGUE)

- Voltmeter with selector switch (3 phases)
- Frequency meter
- Ammeter with selector switch (3 phases)
- Hours-counter
- Fuel level indicator
- Oil pressure indicator
- Engine temperature indicator

COMMANDS

- Start/stop selector switch with key
- Emergency stop button

PROTECTION WITH ALARM

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Earth Fault

PROTECTIONS WITH SHUTDOWN

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Circuit breaker protection: III poles
- Emergency stop button

OTHERS PROTECTIONS

- Panel protected through door with lockable handle

OUT PUT PANEL MPF

ETB- External Terminal Board		ETB
Socket kit		Standard
Individual CB and Earth Fault protection		
3P+N+T 400V 63A	n	1
3P+N+T CEE 400V 32A	n	1
3P+N+T CEE 400V 16A	n	1
230V/16A 2P+T CEE	n	1
230V/16A SCHUKO	n	1

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ACP - Automatic control panel

Mounted on the genset, complete with digital control unit AC03 for monitoring, control and protection of the generating set, protected through door with lockable handle

DIGITAL INSTRUMENTATION (through AC-03)
- Generating set voltage (3 phases)
- Mains voltage
- Generating set frequency
- Generating set current (3 phases)
- Battery voltage
- Power (kVA - kW - kVAr)
- Power factor Cos φ
- Hours-counter
- Engine speed r.p.m.
- Fuel level (%)
- Engine temperature (depending on model)

COMMANDS AND OTHERS
- Four operation modes: OFF - Manual starting - Automatic starting - Automatic test
- Pushbutton for forcing Mains contactor or Genset contactor
- Push-buttons: start/stop, fault reset, up/down/page/enter selection
- Remote starting availability
- DC system disconnection switch
- Acoustic alarm
- Automatic battery charger
- RS232 Communication port
- Settable PASSWORD for protection level

PROTECTIONS WITH ALARM
- Engine protections: low fuel level, low oil pressure, high engine temperature
- Genset protections: under/over voltage, overload, under/over frequency, starting failure, under/over battery voltage

PROTECTIONS WITH SHUTDOWN
- Engine protections: low fuel level, low oil pressure, high engine temperature
- Genset protection: under/over voltage, overload, under/over battery voltage, battery charger failure
- Circuit breaker protection: III poles
- Earth Fault included in the control unit

OTHERS PROTECTIONS
- Emergency stop button
- Panel protected through door with lockable handle

OUT PUT PANEL ACP

Plinth row for connection from ACP to LTS panel.	
Power cables connection to Circuit Breaker.	
Predisposed for remote control optional:	RCG
External Terminal Board (ETB)	Optional
Socket kit	Optional

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MPP - Modular parallel panel

Mounted on the genset, complete with digital control unit IG-NTC for monitoring, control, protection and load sharing for both single and multiple gen-sets operating in standby or parallel modes (up to 32 gen-sets in island).

DIGITAL INSTRUMENTATION (through IG-NTC control unit)
- Mains: voltage, Intensity, Frequency.
- Mains kW - kVAr -Power factor Cos f.
- Genereting set voltage (3 phases).
- Generating set frequency.
- Generating set current (3 phases).
- Generating set Power (kVA - kW - kVAr).
- Generating set Power factor Cos f.
- Generating set kWh and kVAh.
- Battery voltage.
- Hours-counter.
- Engine speed r.p.m.
- Fuel level (%).
- Engine temperature (depending on model).
- Oil pressure (depending on model).

COMMAND AND OTHERS
- Graphical display 128x64 pixels.
- Operation modes: OFF - AMF function - Single Parallel to mains Island application - Single Parallel to Mains AMF application - Mulitple parallel genset Island application.
- Pushbutton for forcing Mains Breaker/contactor or Genset Breaker/contactor.
- Push-buttons: start/stop, fault reset, up/down/page/enter selection.
- Multiple parallel and Power Management operation with digital load AVR sharing.
- Automatic synchronizing and power control (via speed goveroner or ECU)
- Baseload Import/Export and Peak shaving
- Voltage and PF control (AVR).
- Configurable digital I/O (12/12) and analogue inputs (3).
- Integrate PLC programmable functions.
- Event-based history (up to 500records).
- Selectable measurment range 120/277V and 0-1/0-5A.
- Remote starting and Blocking signal availability.
- DC system disconnection switch.
- Acoustic alarm.
- Automatic battery charger.
- 2xRS232/RS485/USB Comuncation ports.
- Setable PASSWORD for protection level.

PROTECTION WITH ALARM AND SHUTDOWN
- Engine protections: low fuel level, low oil pressure, high engine temperature.
- Genset protections: under/over voltage, overload, under/over frequency, starting failure, under/over battery voltage
- Others: overcurrent, shortcircuit, reverse power, Earth fault

OTHERS PROTECTION:
- Circuit breaker protection: IV poles Motorized.
- Emergency stop button.
- Panel protected through door with lochetable handle

OUT PUT PANEL MPP

Multi-pin connectors (in and out) for parallel with other generators	n	2
Connecting cable with 2 connectors multipin (length 10m)	n	1
ETB External terminal board		ETB

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Supplements:	
Only Available when order	:

CONTROL PANEL SUPPLEMENT

RCG - Various supplements for remote controls - available for models:	ACP MPP
TLP - Various supplements for remote signals - available for models:	ACP MPP
ADI - Adjustable Differential Intensity - available only for models:	ACP
TIF - IV Poles Circuit Breaker instead of III - available for models:	ACP MCP
ETB - External Terminal Board - available for models:	MCP ACP

Socket kit

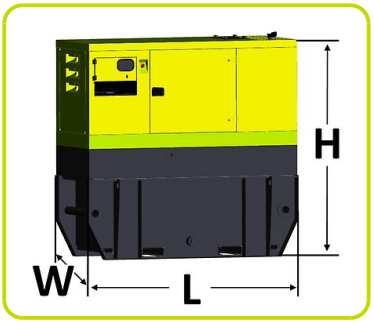
SKB socket kit B - available for models:		ACP MCP
Individual CB and Earth Fault protection		
3P+N+T 400V 63A	n	1
3P+N+T CEE 400V 32A	n	1
230V/16A 2P+T CEE	n	1
230V/16A SCHUKO	n	1
NB: for assembly is necessary:		ETB
3P+N+T CEE 400V 16A	n	1

GENSET EQUIPMENT

KPR - Premium Kit (Leak Proof Tray - Leakage detection sensor - Manual oil drain pump)	
AFP - Automatic Fuel Pump	ACP MPP
KRT - Kit Rental which includes fuel filter with water separator, 3-way fuel valve, battery switch, earth rod, docs folder)	

Extended Fuel Tank

Fuel tank capacity	l	1750
Length (Genset)	(L) mm	3414
Width (Genset)	(W) mm	1398
Height (Genset)	(H) mm	2539



ENGINE SUPPLEMENTS

PHS - Coolant Pre-Heating System - available for models:	ACP MPP
EEG - Engine Electronic Governor	

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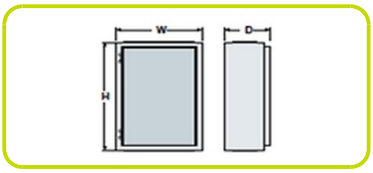
Accessories	
Items available as accessory equipment	
STR - Site trailer	•
RTR - Road Trailer	•

LTS - LOAD TRANSFER SWITCH - Accessories ACP

Automatic under-load change-over (AC22, AC23) from and to any of positions "1", "0", "2" both electrical and manual (emergency change-over), transfer function with direct transition from position "1" to position "2" and vice versa.
• Safety: locking by padlock preventing any electrical or manual operation, key lock for the selection of electrical or manual operation.- Quick operating time from pos. "1" to "2" and vice versa.
• Easy and fast electrical connections by means of terminal blocks of quick connection type.
• Conformity to standards: IEC 60947-1 IEC 60947-3, CEI EN 60947-1 / CEI EN 60947-3IEC 439-1, CEI EN 60439-1IEC 204-1, CEI EN 60204-1, VDE 0660 Teil 107

NOMINAL CURRENT & DIMENSIONS PANEL LTS (standard*)

Nominal Current	A	315
Width	(W) mm	800
Height	(H) mm	600
Depth	(D) mm	300
* = Available electrical power more		



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