

## GSW220V



### Main Features

Frequency	Hz	50
Voltage	V	400
Power factor	cos $\phi$	0.8
Phase and connection		3

### Power Rating

Standby power LTP	kVA	220.00
Standby power LTP	kW	176.00
Prime power PRP	kVA	202.67
Prime power PRP	kW	162.14

#### 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.

## Engine specifications

Engine manufacturer	Volvo	
Model	TAD733GE	
Version	50 Hz	
Exhaust emission level	Stage II	
Engine cooling system	Water	
Nr. of cylinder and disposition	6 in line	
Displacement	cm <sup>3</sup>	7150
Aspiration	Turbocharged intercooled	
Speed governor	Electronic	
Prime gross power PRP	kW	181
Maximum gross power LTP	kW	201
Oil capacity	l	34
Lube oil consumption @ PRP (max)	%	0.10
Coolant capacity	l	38.4
Fuel	Diesel	
Specific fuel consumption @ 75% PRP	g/kWh	214
Specific fuel consumption @ PRP	g/kWh	216
Starting system	Electric	
Starting engine capability	kW	5
Electric circuit	V	24



## ENGINE EQUIPMENT

### Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. Power output guaranteed within 0 to +2% at rated ambient conditions at delivery. Ratings are based on ISO 8528. Engine speed governing in accordance with ISO 3046/IV, class A1 and ISO 8528-5 class G3

### Engine and block

- Optimized cast iron cylinder block with optimum distribution of forces
- Drop forged steel connecting rods
- Keystone top compression rings for long service life
- Replaceable valve guides and valve seats

### Fuel system

- Washable fuel prefilter with water separator
- Fine fuel filter of disposable type
- Rotary low-pressure fuel pump

### Lubrication system

- Rotary displacement oil pump driven by the crankshaft
- Deep centre oil sump – Oil filler on top – Oil dipstick, short in front
- Integrated full flow oil cooler, side-mounted– Integrated full flow oil cooler, side-mounted

### Cooling system

- Belt driven, maintenance-free coolant pump with high degree of efficiency
- Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block
- Reliable thermostat with minimum pressure drop

## Alternator Specifications

Brand	Mecc Alte	
Model	ECO38-2SN/4	
Voltage	V	400
Frequency	Hz	50
Power factor	cos $\phi$	0.8
Type	Brushless	
Poles	4	
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  $\pm 1\%$  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.



## Genset equipment

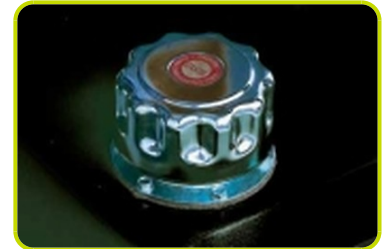
### BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:

- Steel base frame with support legs
- Anti-vibration mountings properly sized
- Grounding point to connect all metal parts of the generating set



### FUEL TANK WITH THE FOLLOWING COMPONENT:

- Filler neck
- Air breather (ventilation pipe)
- Minimum fuel level sensor



### PROTECTIONS:

- Moving and rotating parts protection against accidental contacts.



### ENGINE COMPLETE WITH:

- Battery
- Liquids (no fuel)

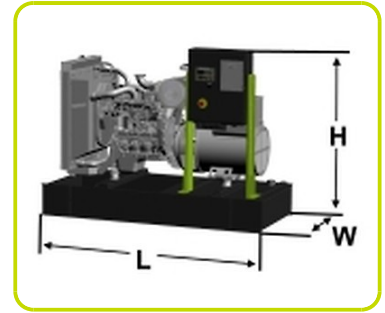
### EXHAUST (Standard):

- Industrial silencer (loose)



### Dimensional data

Length	(L) mm	2650
Width	(W) mm	1180
Height	(H) mm	1965
Dry weight	Kg	2026
Fuel tank capacity	l	400



### Autonomy

Fuel consumption @ 75% PRP	l/h	34.90
Fuel consumption @ 100% PRP	l/h	46.54
Running time @ 75% PRP	h	11.46
Running time @ 100% PRP	h	8.59

### Installation data

Total air flow	m <sup>3</sup> /min	241.48
Exhaust gas flow @ PRP	m <sup>3</sup> /min	31.8
Exhaust gas temperature @ LTP	°C	530

### Data Current

Battery capacity	Ah	140
MAX current	A	317.55
Circuit breaker	A	320

### Control panel availability

MANUAL CONTROL PANEL	MCP
AUTOMATIC CONTROL PANEL	ACP
MODULAR PARALLEL PANEL	MPP

## MCP - Manual control panel

Mounted on the genset and complete of: instrumentation, control, protection of the generating set.

### INSTRUMENTATION (ANALOGUE)

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

### COMMANDS

- Start/stop selector switch with key (Glow plugs preheating function also included).
- 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

### OUT PUT PANEL MCP

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Power cables connection to Circuit Breaker.

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## ACP - Automatic control panel

Mounted on the genset, complete with digital control unit for monitoring, control and protection of the generating set.

### 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  $\phi$ .
- 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.



### OUT PUT PANEL ACP

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Plinth row for connection from ACP to LTS panel.

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Power cables connection to Circuit Breaker.

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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.
- Generating 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).

### COMMAND AND OTHERS

- Oil pressure (depending on model).
- Graphical display 128x64 pixels.
- Operation modes: OFF - AMF function - Single Parallel to mains Island application - Single Parallel to Mains AMF application - Multiple parallel genset Island application.
- Pushbutton for forcing Mains Breaker/contact or Genset Breaker/contact.
- 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 governor 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 measurement 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 Comunication 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.

### 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





**Supplements:**Only Available when order :

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**CONTROL PANEL SUPPLEMENT**

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RCG - Various supplements for remote controls - available for models: ACP MPP

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TLP - Various supplements for remote signals - available for models: ACP MPP

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ADI - Adjustable Differential Intensity - available only for models: ACP

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TIF - IV Poles Circuit Breaker instead of III - available for models: ACP MCP

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**GENSET EQUIPMENT**

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AFP - Automatic Fuel Pump ACP MPP

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**ENGINE SUPPLEMENTS**

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PHS - Coolant Pre-Heating System - available for models: ACP MPP

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## Accessories

Items available as accessory equipment

RES - Residential silencer

FEC - Flexible Exhaust Compensator Bellow and flanges

### 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 60947-3 IEC 439-1, CEI EN 60439-1 IEC 204-1, CEI EN 60204-1, VDE 0660 Teil 107



### NOMINAL CURRENT & DIMENSIONS PANEL LTS (standard\*)

Nominal Current	A	400
Width	(W) mm	800
Height	(H) mm	600
Depth	(D) mm	300

\* = Available electrical power more

