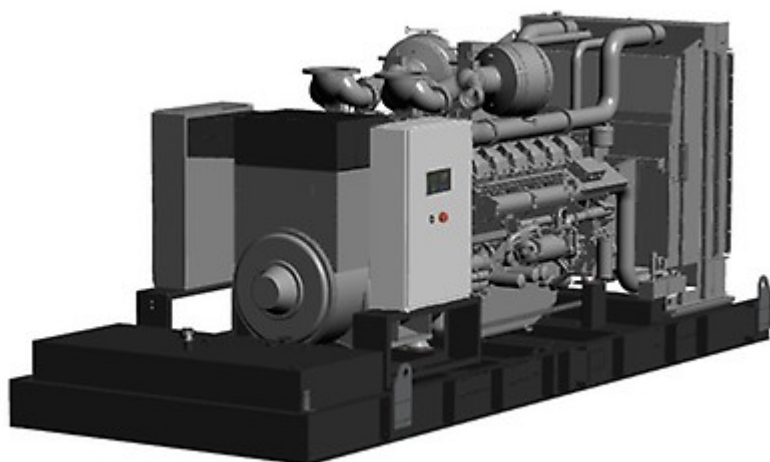




ENERGY GENERATION

GSW2800M



Main Features

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

Power Rating

Standby power LTP	kVA	2750
Standby power LTP	kW	2200
Prime power PRP	kVA	2582
Prime power PRP	kW	2066

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	MTU	
Model	20V4000G23	
Version	50 Hz	
Engine cooling system	Water	
Nr. of cylinder and disposition	20 V	
Displacement	cm ³	95400
Aspiration	Turbocharged aftercooled	
Speed governor	Electronic	
Operating Speed-Nominal	rpm	1500
Prime gross power PRP	kW	2200
Maximum gross power LTP	kW	2420
Oil capacity	l	390
Fuel	Diesel	
Specific fuel consumption @ 75% PRP	g/kWh	199
Specific fuel consumption @ PRP	g/kWh	193
Starting system	Electric	
Electric circuit	V	24

Electric radiator

Dry weight	Kg	2600
Wet weight	Kg	3000
Coolant capacity	l	300
Cooling fan airflow rate	m ³ /min	2208
Electrical motor power	kW	90

Fuel system:

- Electronically controlled high-pressure injection with single unit injection pumps (EUP)
- Fuel delivery pump
- Fuel main filter
- Fuel priming pump for initial system filling and venting
- Closed fuel system

Lube oil system:

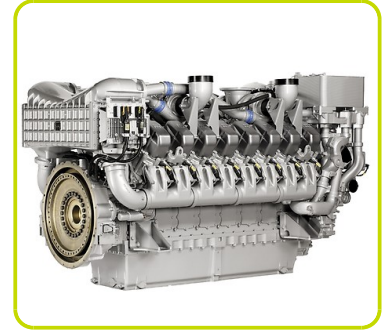
- Forced-feed lubrication system with piston cooling
- Lube oil circulation pump with safety valve
- Lube oil multi-stage filter
- Lube oil heat exchanger
- Oil filler neck and oil dipstick for measurement on non-running engine
- Closed crankcase venting system

Combustion air system:

- Exhaust turbochargers
- Set of dry-type air filters with contamination indicator

Cooling system :

- Coolant circulation pump and coolant thermostat for jacket water cooling systems
- Electric radiator for jacket water and charge air cooling circuit with integrated expansion tank
- Coolant level sensor



Alternator Specifications

Brand	Leroy Somer	
Model	LSA51.2 VL95	
Voltage	V	400
Frequency	Hz	50
Power factor	$\cos \phi$	0.8
Voltage regulation system	Electronic	
Poles	4	
Standard AVR	R449	
Voltage tolerance	%	0.5
Efficiency @ 75% load	%	96.7
Class	H	
IP protection	23	
Phases	3	



Genset equipment

BASE FRAME:

Base frame made of welded steel profiles, complete with anti-vibration mountings properly sized.

The baseframe has a grounding point to connect all metal parts of the generating set and it provides a high structural strength.

ENGINE COMPLETE WITH:

- Liquids (no fuel)
- Manual oil Draining pump

PROTECTIONS:

- Moving and rotating parts protection against accidental contacts

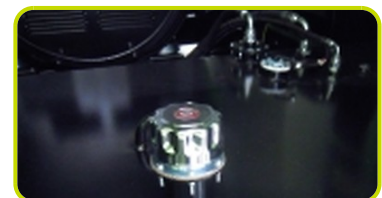
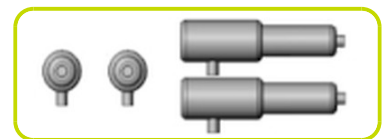
LIFTING:

- Lifting points frame structure.



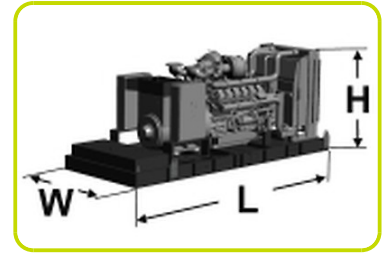
Genset Equipment - Basic Configurations Available:

BAT – LEAD-ACID STARTING BATTERIES KIT			:
Battery	n		4
Battery Capacity	Ah		220
MBS - Manual Battery Switch			•
EXHAUST SILENCER - VERSIONS AVAILABLE			:
IES - Industrial silencer	dB(A)		-15
RES - Residential silencer	dB(A)		-35/38
FEC - Flexible Exhaust Compensator Bellow and flanges			•
Hot parts protection			•
INTEGRATED FUEL TANK - VERSIONS AVAILABLE			:
IFT1 - Integrated Fuel Tank (steel)	l		500
IFT2 - Integrated Fuel Tank (steel)	l		1000
FBD - Fully bundled base frame			•
LDS - Leakage detection sensor (only with FBD)			•
FCV - Fuel Cut Off Valve			•
AFP - Automatic Fuel Pump			•
DFP - Double Automatic Fuel Pump			•
PHS - Coolant Pre-Heating System - available for models:			•
ALS - Automatic Lube Oil Top Up System with lube oil tank 100L			•
• : Supplement available			.
Other Configurations and-or special versions available on requests			.



Dimensional data

Length	(L) mm	7535
Width	(W) mm	2280
Height	(H) mm	2755
Dry weight	Kg	20500



Consumption

Fuel consumption @ 75% PRP	l/h	373.00
Fuel consumption @ 100% PRP	l/h	483.83

Installation data

Total air flow	m ³ /min	2472.00
Exhaust gas flow @ PRP	m ³ /min	408
Exhaust gas temperature @ LTP	°C	530

Data Current

MAX current	A	3807.02
Circuit breaker	A	4000

Control panel availability

AUTOMATIC CONTROL PANEL	ACP
MODULAR PARALLEL PANEL	MPP

ACP - Automatic control panel

Mounted on the genset, complete with digital control unit AC03 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 ϕ
- Hours-counter
- Engine speed r.p.m.
- Fuel level (%)
- Engine temperature

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
- Earth Fault included in the control unit



ACP - Basic Configurations Available:

POWER PANEL - BREAKERS AVAILABLE:		
GCB1 - Genset Circuit Breaker 3-pole	A	4000
GCB2 - Genset Circuit Breaker 4-pole	A	4000
ETB - External Terminal Board (with GCB)		Standard
RCG - Various Supplement fof Remote Control		•
IRB - Various supplements for remote signals		•
CPA - Control Panel Anti-Condensation Heater (ACP)		•
• : Supplement available		.
Other Configurations and-or special versions available on requests		.



MPP - Modular parallel panel

Mounted on the genset, complete with digital control unit Intelvision5 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 (Graphical display 320x240 pixels)

- 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 - Cos f).
- Generating set kWh and kVAh.
- Battery voltage.
- Hours-counter.
- Engine speed r.p.m.
- Fuel level (%).
- Engine temperature - Oil pressure

COMMAND AND OTHERS

- 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/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 governer 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 Comuncation ports.
- Multi-pin connettor (in and out) for parallel with other generators

PROTECTION

- 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
- Emergency stop button.



MPP - Basic Configurations Available:

POWER PANEL - BREAKERS AVAILABLE:			
GMB1 - Genset Circuit Breaker 3-pole motorized	A	4000	:
GMB2 - Genset Circuit Breaker 4-pole motorized	A	4000	:
ETB - External Terminal Board (with GMB)		Standard	:
RCG - Various Supplement fof Remote Control			•
IRB - Various supplements for remote signals			•
CPA - Control Panel Anti-Condensation Heater (MPP)			•
• : Supplement available			.
Other Configurations and-or special versions available on requests			



Accessories

Items available as accessory equipment

LTS - LOAD TRANSFER SWITCH - Accessories ACP

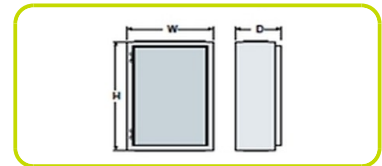
Automatic under-load change-over (AC22, AC23) from and to any of positions "1", "0", "2" both electrical and manual (emergency change-over), transfer function with direct transition from position "1" to position "2" and vice versa.

- 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	4000
Width	(W) mm	1260
Height	(H) mm	2300
Depth	(D) mm	1260
Weight	Kg	550



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