# GSW2275M


| Main Features | | |
|---|---|---|
| Frequency | Hz | 50 |
| Voltage | V | 400 |
| Power factor | cos ϕ | 0.8 |
| Phase | | 3 |

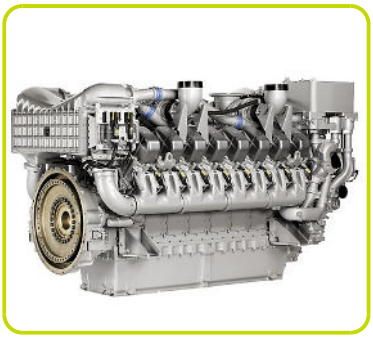
| Power Rating | | |
|---|---|---|
| Emergency Standby Power ESP | kVA | 2268.00 |
| Emergency Standby Power ESP | kW | 1814.40 |
| Prime power PRP | kVA | 2104.67 |
| Prime power PRP | kW | 1683.74 |
| PRP Rating available only with engine supplement: | | DPA |

**Ratings definition (ISO-8528)**

**ESP** - Emergency Standby Power:
It is the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 h of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. The permissible average power output over 24 h of operation shall not exceed 70 % of the ESP.

**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.

| Engine specifications | | |
|---|---|---|
| Engine Brand | | MTU |
| Model | | 16V4000G74F 3D |
| Version | | 50 Hz |
| PRP Rating only with supplement: | | DPA |
| [50Hz] Exhaust emission level | | Unregulated |
| Engine cooling system | | Water |
| Nr. of cylinder and disposition | | 16 V |
| Displacement | cm³ | 76300 |
| Aspiration | | Turbocharged aftercooled |
| Speed governor | | Electronic |
| Operating Speed-Nominal | rpm | 1500 |
| Prime gross power PRP | kW | 1798 |
| Maximum gross power LTP ESP | kW | 1965 |
| Oil capacity | l | 225 |
| Lube oil consumption PRP (max) | % | 1 |
| Coolant capacity | l | 260 |
| Fuel | | Diesel |
| Specific fuel consumption 75% PRP | g/kWh | 191 |
| Specific fuel consumption PRP | g/kWh | 188 |
| Starting system | | Electric |
| Starting engine capability | kW | 2 x 7.5 |
| Electric circuit | V | 24 |



**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 filte
• 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 | | |
|---|---|---|
| Alternator | | Mecc Alte |
| Model | | ECO46-1LN/4 |
| Voltage | V | 400 |
| Frequency | Hz | 50 |
| Power factor | cos ϕ | 0.8 |
| Voltage regulation system | | Electronic |
| Poles | | 4 |
| Type | | Brushless |
| Standard AVR | | DER1 |
| Voltage tolerance | % | 1 |
| Efficiency @ 75% load | % | 96.8 |
| Class | | H |
| IP protection | | 21 |
| Phases | | 3 |

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

**Voltage regulator**

Voltage regulation with DER 1. The digital DER 1 is a Digital controlled regulator, based on DSP (Digital Signal Processor) that combines function as Voltage Regulation and Alternator Protections and Diagnostic into a very small single board.
Voltage supply: 40Vac÷270Vac
Maximum continuous output current: 4Adc
Frequency range: 12Hz÷72Hz
Single phase sensing automatic recognition
Average value of voltage regulation
Voltage regulation range (sensing) from 75Vac to 300Vac
Precision of voltage regulation: ± 1% from no-load to nominal load in static condition, with any power factor and for frequency variations ranging from -5% to +20% of the nominal value.
Precision of voltage regulation: ± 0,5% in stabilized conditions (load, temperature).
Transient voltage drop and overvoltage within ± 15%
Voltage recovery time within ± 3% of the value set, in less than 300 msec.
Underspeed protection with adjustable threshold and slope
Overvoltage and undervoltage alarms
Excitation overcurrent protection with delayed intervention
Alarm conditions storage (type of alarm, number of events, duration of the last event, total time)
Memorization of the regulator operation time

**Windings / Excitation system**
Generator stator is wound to 2/3 pitch. This eliminates triple (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. PMAUX (optional): Alternator can be equipped with the optional PMAUX (Permanent Magnet Generator) which matches the performance and is capable of supporting both linear and distorted loads.

**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:**
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.

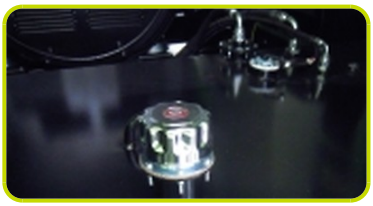
**ENGINE COMPLETE WITH:**
- Liquids (no fuel)

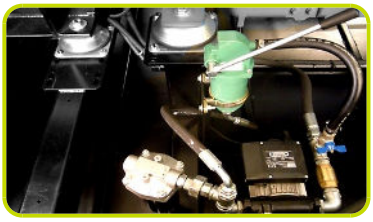
**MANUAL OIL DRAININ PUMP**:
- Oil draining facilities

**CONTAINER 40'**:
Soundproof Container made by monoblock structure and designed to satisfy the most disparate needs of the Customer.
Main feature are:
- Structure similar to shipping containers (upper and lower corner castings, monolithic structure, walls and roof made of corrugated steel sheet), making them particularly strong and suitable.
- High resistance to the atmospheric agents.
- Polyester powder painting and automatic blasting SA 2.5.
- Air inlet and exhaust openings air outlet for genset cooling.
- It is foreseen space for housing the electrical panel, if necessary the control panel can be separated from alternator, in a dedicated room.
- The floor is made of textured sheeting reinforced with profiles at steady pace bent.
- Doors single or double swing , these are fixed by sturdy steel hinges and equipped with various systems of locks, such as lever bolt locks, panic bars etc.

**SOUNDPROOF**:
The walls, divisors and roof are self supporting and with high acoustic absorption. They are produced in galvanized steel-sheet and subsequently painted with a galvanic deposition of polyester powder. Inside they are composed by a sheet of rock wool .
Exhaust silencers placed inside or outside the container depending on genset model.

| Genset Equipment - Basic Configurations Available: | | |
|---|---|---|
| BAT – LEAD-ACID STARTING BATTERIES KIT | | : |
| Battery | n | 4 |
| Battery Capacity | Ah | 220 |
| MBS - Manual Battery Switch | | ● |
| INTEGRATED FUEL TANK - VERSIONS AVAILABLE | | : |
| IFT1 - Integrated Fuel Tank (steel) | l | 500 |
| IFT2 - Integrated Fuel Tank (steel) | l | 1000 |
| FBD - Fully bunded 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 | 6800 |
| Width | (W) mm | 2150 |
| Height | (H) mm | 2772 |
| Dry weight | kg | 15620 |


| Consumption | | |
|---|---|---|
| Fuel consumption @ 75% PRP | l/h | 309.14 |
| Fuel consumption @ 100% PRP | l/h | 402.41 |

| Installation data | | |
|---|---|---|
| Total air flow | m³/min | 2661.00 |
| Exhaust gas flow PRP | m³/min | 324 |
| Exhaust gas temperature LTP ESP | °C | 485 |

| Electrical Data | | |
|---|---|---|
| Battery capacity | Ah | 220 |
| MAX current | A | 3273.67 |
| Circuit breaker | A | 3200 |

| Control panel availability | |
|---|---|
| AUTOMATIC CONTROL PANEL | ACP |
| MODULAR PARALLEL PANEL | MPP |

## ACP - Automatic control panel

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

**DIGITAL INSTRUMENTATION**
- 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
- Acoustic alarm
- Automatic battery charger
- USB Communication port
- Settable PASSWORD for protection level

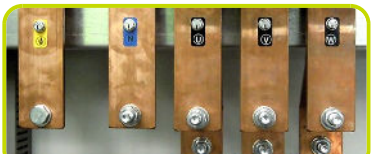
**PROTECTIONS WITH ALARM**
- Engine protections: low fuel level, low oil pressure, high engine temperature
- Genset protections: under/over voltage, overload, under/over frequency, starting failure, under/over battery voltage

**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

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

## ACP - Basic Configurations Available:

| | | |
|---|---|---|
| POWER PANEL - BREAKERS AVAILABLE: | | : |
| GCB1 - Genset Circuit Breaker 3-pole | A | 3200 |
| GCB2 - Genset Circuit Breaker 4-pole | A | 3200 |
| ETB - External Terminal Board (with GCB) | | Standard |
| Various Supplement fof Remote Control | | RGW [●] |
| Various supplements for remote signals | | ARM [●] |
| Control Panel Anti-Condensation Heater (ACP) | | CAH [●] |
| Other Configurations and-or special versions available on requests | | . |



## MPP - Modular parallel panel

Mounted on the genset, complete with digital control unit 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 (5'TFT COLOUR SCREEN)**

- 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**

- Single Parallel to Mains and Multiple parallel genset Island applications
- Operation modes: OFF- MAN - AUTO - TEST
- 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 available.
- Automatic synchronizing and power control (via speed goveroner or ECU)
- Baseload Import/Export and Peak shaving
- Voltage and PF control.
- Configurable digital I/O (8/8) and analogue inputs (4).
- Integrate PLC programmable functions.
- Event-based history (up to 500records).
- Remote starting and Blocking signal availability.
- Acoustic alarm.
- Automatic battery charger.
- Ethernet RJ45, USB A, USB B and RS485 Comunication 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.
- Emergency stop button.
- Panel protected through door with lochetable handle

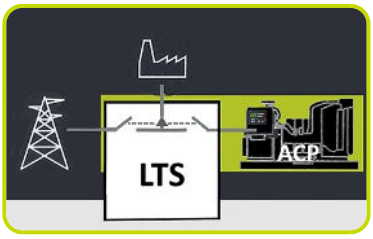
## MPP - Basic Configurations Available:

| | | |
|---|---|---|
| POWER PANEL - BREAKERS AVAILABLE: | | : |
| GMB1 - Genset Circuit Breaker 3-pole motorized | A | 3200 |
| GMB2 - Genset Circuit Breaker 4-pole motorized | A | 3200 |
| ETB - External Terminal Board (with GMB) | | Standard |
| Various Supplement fof Remote Control | | ● |
| Various supplements for remote signals | | ● |
| 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 for ACP Automatic Control Panel]




The Load Transfer Switch (LTS) panel operates the power supply changeover between the generator and the Mains in backup applications, guarantying the feeding to the load within a short period of time.
It consists of a standalone cabinet which can be installed separate from the generating set. The logic control of the power supply changeover is operated by means of the Automatic Control Panel (ACP) mounted on the generating set, so therefore none logic device is required on the LTS panel.

**LTS Type ATyS_D:**

- Box type:  steel enclosures
- Installation mode: Standing
- Door: Hinged door closed with double barb locking.
- Ingress Protection: IP43
- Gland Plates: Removable on the top & bottom side
- Connections: Bottom/Bottom
- Motor unit
- Gland Plates: Removable on the top & bottom side
- Connections: Bottom/Bottom
- Motor unit
- Switch position indicator
- Auto/Manual cover selector
- Housing for manual handle
- Padlocking mechanism
- Two side by side mounted load break switches
- Poles 4
- Double coils self-powered
- Voltage (coils): 208/277VAC (Tollerance+/-20% 166/333VAC)
- Frequency 50 & 60HZ
- Interface ATyS D10, fixed on the door for the status indication:  Two lights to indicate the voltage presence of the grid and the diesel generator;  Two lights for the switch position; Functionality mode (auto/manual) and cover protection IP65.
- *Compliant with IEC 60947-3, EN 61439-6-1 and GB 14048-11*


*LTS SUPPLEMENTS AVAILABLE ON REQUEST:*

- ***ESB -*** *Emergency Stop Button (installed on the panel front)*
- ***APP*** *- Additional IPXXB Protection (internal plexiglass)*