



#### DESCRIPTIVE

- Electronic governor
- Mechanically welded chassis with antivibration suspension
- Radiator with mechanic fans (please see the performance table for the temperatures)
- Exhaust compensators with flanges
- 24 V charge alternator and starter
- Delivered with oil and coolant -30°C
- Manual for use and installation

#### POWER DEFINITION

PRP : Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8528-1. ESP : The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8528-1. Overload is not allowed.

#### TERMS OF USE

According to the standard, the nominal power assigned by the genset is given for 25°C Air Inlet Temperature, of a barometric pressure of 100 kPA (100 m A.S.L), and 30 % relative humidity. For particular conditions in your installation, refer to the derating table.

#### ASSOCIATED UNCERTAINTY

For the generating sets used indoor, where the acoustic pressure levels depends on the installation conditions, it is not possible to specify the ambient noise level in the exploitation and maintenance instructions . You will also find in our exploitation and maintenance instructions a warning concerning the air noise dangers and the need to implement appropriated preventive measures.



## X1000

|                   |              |
|-------------------|--------------|
| Engine ref.       | 16V2000G25F  |
| Alternator ref.   | LSA 49.1 L10 |
| Performance class | G3           |

### GENERAL CHARACTERISTICS

|                        |                      |
|------------------------|----------------------|
| Frequency (Hz)         | 50                   |
| Voltage (V)            | 400/230              |
| Standard Control Panel | Basic terminal block |
| Optional control panel | M80                  |
| Optional Control Panel | TELYS                |
| Optional control panel | APM802               |

### POWER

| Voltage | ESP |      | PRP |     | Standby Amps |
|---------|-----|------|-----|-----|--------------|
|         | kWe | kVA  | kWe | kVA |              |
| 415/240 | 784 | 980  | 713 | 891 | 1363         |
| 400/230 | 800 | 1000 | 727 | 909 | 1443         |
| 380/220 | 784 | 980  | 713 | 891 | 1489         |

### DIMENSIONS COMPACT VERSION

|                   |      |
|-------------------|------|
| Length (mm)       | 4315 |
| Width (mm)        | 1848 |
| Height (mm)       | 2150 |
| Dry weight (kg)   | 6152 |
| Tank capacity (L) | 0    |

### DIMENSIONS SOUNDPROOFED VERSION

|                                       |      |
|---------------------------------------|------|
| Commercial reference of the enclosure | M427 |
| Length (mm)                           | 6400 |
| Width (mm)                            | 2170 |
| Height (mm)                           | 2721 |
| Dry weight (kg)                       | 9060 |
| Tank capacity (L)                     | 930  |
| Acoustic pressure level @1m in dB(A)  | 90   |
| Sound power level guaranteed (Lwa)    | 111  |
| Acoustic pressure level @7m in dB(A)  | 81   |

## X1000

### ENGINE CHARACTERISTICS

## GENERAL ENGINE DATA

|   |                 |
|---|-----------------|
| Engine brand                                    | MTU             |
| Engine ref.                                     | 16V2000G25F     |
| Air inlet system                                | Turbo           |
| Cylinders configuration                         | V               |
| Number of cylinders                             | 16              |
| Displacement (L)                                | 31,86           |
| Charge Air coolant                              | Air/Air DC      |
| Bore (mm) x Stroke (mm)                         | 130,00 x 150,00 |
| Compression ratio                               | 16              |
| Speed (RPM)                                     | 1500            |
| Pistons speed (m/s)                             | 7,50            |
| Maximum stand-by power at rated RPM (kW)        | 890,00          |
| Frequency regulation, steady state (%) +/- 0.5% |                 |
| BMEP (bar)                                      | 20,34           |
| Governor type                                   | Electronic      |

## COOLING SYSTEM

|   |                 |
|---|-----------------|
| Radiator & Engine capacity (L)                          | 196,00          |
| Max water temperature (°C)                              | 102,00          |
| Outlet water temperature (°C)                           | 95              |
| Fan power (kW)  | 52,00           |
| Fan air flow w/o restriction (m <sup>3</sup> /s)        | 21,81           |
| Available restriction on air flow (mm H <sub>2</sub> O) | 20,00           |
| Type of coolant   | Glycol-Ethylene |
| Thermostat modulating range HT (°C)                     | 75-88           |

## EMISSIONS

|   |      |
|---|------|
| Emission PM (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub> | <50  |
| Emission CO (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub> | <650 |
| Emission HC+NO <sub>x</sub> (g/kWh)                 |      |
| Emission HC (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub> | <150 |

## EXHAUST

|  |         |
|--|---------|
| Exhaust gas temperature @ ESP 50Hz (°C)          | 520     |
| Exhaust gas flow @ ESP 50 Hz (L/s)               | 2700,00 |
| Max. exhaust back pressure (mm H <sub>2</sub> O) | 500     |

## FUEL

|                               |        |
|-------------------------------|--------|
| Consumption @ 110% load (L/h) | 205,00 |
| Consumption @ 100% load (L/h) | 186,00 |
| Consumption @ 75% load (L/h)  | 140,00 |
| Consumption @ 50% load (L/h)  | 96,00  |
| Maximum fuel pump flow (L/h)  | 600,00 |

## OIL

|                                 |        |
|---------------------------------|--------|
| Oil capacity (L)                | 102,00 |
| Min. oil pressure (bar)         | 4,70   |
| Max. oil pressure (bar)         | 7,50   |
| Oil consumption 100% load (L/h) | 1,860  |
| Oil sump capacity (L)           | 92,0   |

## HEAT BALANCE

|                                |       |
|--------------------------------|-------|
| Heat rejection to exhaust (kW) | 591   |
| Radiated heat to ambient (kW)  | 45,00 |
| Heat rejection to coolant (kW) | 380   |

## AIR INTAKE

|   |         |
|---|---------|
| Max. intake restriction (mm H <sub>2</sub> O) | 150     |
| Intake air flow (L/s)                         | 1000,00 |



# X1000

## ALTERNATOR CHARACTERISTICS

### GENERAL DATA

|   |                         |
|---|-------------------------|
| Alternator ref.   | LSA 49.1 L10            |
| Number of Phase   | Three phase             |
| Power factor (Cos Phi)                                  | 0,8                     |
| Altitude (m)  | 0 to 1000               |
| Overspeed (rpm)   | 2250                    |
| Number of pole  | 4                       |
| Capacity for maintaining short circuit at 3 In for 10 s | Yes                     |
| Insulation class  | H                       |
| T° class (H/125°), continuous 40°C                      | H / 125°K               |
| T° class, standby 27°C                                  | H / 163°K               |
| %regulation_avr%  | #regulation_avr#        |
| Total Harmonic Distortion in no-load DHT (%)            | <4                      |
| Total Harmonic Distortion, on load DHT (%)              | <4                      |
| Wave form : NEMA=TIF                                    | <50                     |
| Wave form : CEI=FHT                                     | <2                      |
| Number of bearing                                       | 1                       |
| Coupling  | Direct                  |
| Voltage regulation at established rating (+/- %)        | 0,50                    |
| Recovery time (Delta U = 20% transient) (ms)            | 500                     |
| Indication of protection                                | IP 23                   |
| Technology  | Without collar or brush |
| AVR Regulation  | Yes                     |

### OTHER DATA

|   |          |
|---|----------|
| Continuous Nominal Rating 40°C (kVA)                    | 910,0    |
| Standby Rating 27°C (kVA)                               | 1000,0   |
| Efficiencies 100% of load (%)                           | 95,2     |
| Air flow (m3/s)   | 1,000    |
| Short circuit ratio (Kcc)                               | 0,411    |
| Direct axis synchro reactance unsaturated (Xd) (%)      | 315,0    |
| Quadra axis synchro reactance unsaturated (Xq) (%)      | 189,0    |
| Open circuit time constant (T'do) (ms)                  | 2111,00  |
| Direct axis transient reactance saturated (X'd) (%)     | 14,9     |
| Short circuit transient time constant (T'd) (ms)        | 100,000  |
| Direct axis subtransient reactance saturated (X''d) (%) | 11,9     |
| Subtransient time constant (T''d) (ms)                  | 10,000   |
| Quadra axis subtransient reactance saturated (X''q) (%) | 13,00    |
| Subtransient time constant (T''q) (ms)                  | 10,0     |
| Zero sequence reactance unsaturated (Xo) (%)            | 0,900    |
| Negative sequence reactance saturated (X2) (%)          | 12,47    |
| Armature time constant (Ta) (ms)                        | 15,000   |
| No load excitation current (io) (A)                     | 0,92     |
| Full load excitation current (ic) (A)                   | 3,38     |
| Full load excitation voltage (uc) (V)                   | 39,5     |
| Engine start (Delta U = 20% perm. or 50% trans.) (kVA)  | 2179,46  |
| Transient dip (4/4 load) - PF : 0,8 AR (%)              | 11,00    |
| No load losses (W)                                      | 9812,42  |
| Heat rejection (W)                                      | 36354,59 |
| Unbalanced load acceptance ratio (%)                    | 60       |

## DIMENSIONS

### BASE AND CANOPY SPECIFICATIONS

|                                       |      |
|---------------------------------------|------|
| Commercial reference of the enclosure | M427 |
| Length (mm)                           | 6400 |
| Width (mm)                            | 2170 |
| Height (mm)                           | 2721 |
| Dry weight (kg)                       | 9420 |
| Tank capacity (L)                     | 930  |
| Acoustic pressure level @1m in dB(A)  | 86   |
| Sound power level guaranteed (Lwa)    | 107  |
| Acoustic pressure level @7m in dB(A)  | 77   |

### CONTAINER ISO 20

|                                       |          |
|---------------------------------------|----------|
| Commercial reference of the enclosure | ISO20 Si |
| Length (mm)                           | 6058     |
| Width (mm)                            | 2438     |
| Height (mm)                           | 2896     |
| Dry weight (kg)                       | 11140    |
| Tank capacity (L)                     | 500      |
| Acoustic pressure level @1m in dB(A)  | 88       |
| Sound power level guaranteed (Lwa)    | 109      |
| Acoustic pressure level @7m in dB(A)  | 79       |

**Basic terminal block**

The control unit can be used as a basic terminal block for connecting a control box.

Offers the following functions:

emergency stop button, customer connection terminal block, CE.

**M80, transfer of information**

The M80 is a dual-function control unit. It can be used as a basic terminal block for connecting a control box and as an instrument panel with a direct read facility, with displays giving a global view of your generating set's basic parameters.

Offers the following functions:

Engine parameters: tachometer, working hours counter, coolant temperature indicator, oil pressure indicator, emergency stop button, customer connection terminal block, CE.

## TELYS, ergonomic and user-friendly



The highly versatile TELYS control unit is complex yet accessible, thanks to the particular attention paid to optimising its ergonomics and ease of use. With its large display screen, buttons and scroll wheel, it places the accent on simplicity and communication.

The TELYS offers the following functions:

Electrical measurements: voltmeter, frequency meter, ammeter.

Engine parameters: working hours counter, oil pressure, coolant temperature, fuel level, engine speed, battery voltage.

Alarms and faults: oil pressure, coolant temperature, failure to start, overspeed, alternator min./max., battery voltage min./max., emergency stop, fuel level.

Ergonomics: wheel for navigating around the various menus.

Communication: remote control and operation software, USB connections, PC connection.

For more information on the product and its options, please refer to the sales documentation.

## APM802 dedicated to power plant management



The new APM802 command/control system is specifically designed for operating and monitoring power plants for markets including hospitals, data centres, banks, the oil and gas sector, industries, IPP, rental and mining. This unit is available as standard on all generating sets from 275 Kva designed for coupling. It is optional on the rest of our range.

The Human Machine Interface, designed in collaboration with a company specialising in interface design, facilitates operations with a large 100% touch screen. The pre-configured system for power plant applications features a brand new customisation function which complies with the international standard IEC 61131-3. New communication functions (PLC and regulation), improve the high level of equipment availability in the installation.

Advantages:

- Dedicated to power plant management.
- Specially researched ergonomics.
- High level of equipment availability.
- Modularity and long service life guaranteed.
- Making it easy to extend the installation

For more information, please refer to the sales documentation.