# GSW220I (ALT.LST)

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

| Power Rating | | |
|---|---|---|
| Standby power LTP | kVA | 220.00 |
| Standby power LTP | kW | 176.00 |
| Prime power PRP | kVA | 202.56 |
| Prime power PRP | kW | 162.05 |

**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 | | FPT |
| Model | | NEF67TE2A |
| [50Hz] Exhaust emission level | | Stage II |
| Engine cooling system | | Water |
| Nr. of cylinder and disposition | | 6 in line |
| Displacement | cm³ | 6700 |
| Aspiration | | Turbocharged aftercooled |
| Speed governor | | Electronic |
| Prime gross power PRP | kW | 180 |
| Maximum gross power LTP | kW | 198 |
| Oil capacity | l | 17 |
| Lube oil consumption @ PRP (max) | % | 0.1 |
| Coolant capacity | l | 25.5 |
| Fuel | | Diesel |
| Specific fuel consumption @ 75% PRP | g/kWh | 207 |
| Specific fuel consumption @ PRP | g/kWh | 205.5 |
| Starting system | | Electric |
| Starting engine capability | kW | 3 |
| Electric circuit | V | 12 |

**Standards**

ISO 8528 standard certification of excellent performance related to load acceptance.

**Injection system**

Accurate fuel delivery, provided by a very compact direct injection 2nd generation Common Rail @ 1.600
bar toachieve top performance in terms of load acceptance and top power with the minimum fuel consumption.

**Air handling**
NEF series engines are available in Naturally Aspirated, turbocharged and turbocharged with aftercooler
versionsin order to reach highest engine performance in terms of load acceptance & fuel consumption.

**600h Oil interval change**

NEF series adopt combustion chambers optimized to reduce oil dilution and are designed with anoptimum engine design in terms of mechanical clearances, piston rings and engine oil system calculation.

**Engine design**

Multiple injections, balancer counterweights incorporated in crankshaft webs, rear gear train layout, camshaft incrankcase, suspended oil pan, ladder frame cylinder block.

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| Alternator Specifications | | |
|---|---|---|
| Alternator | | Leroy Somer |
| Model | | TAL044M |
| Voltage | V | 400 |
| Frequency | Hz | 50 |
| Power factor | cos ϕ | 0.8 |
| Poles | | 4 |
| Type | | Brushless |
| Standard AVR | | R180 |
| Voltage tolerance | % | 1 |
| Efficiency @ 75% load | % | 93 |
| Class | | H |
| IP protection | | 23 |

The TAL alternator range is designed to meet the needs of general applications such as prime power and stand-by. The alternator is designed to meet power needs of commercial and industrial buildings and telecom cell towers.

**Compact Robust Design:**
•Compact design with easy maintenance and access to cables and regulator
•Rugged assembly to withstand engine vibrations
•Steel frame
•Aluminium or Cast iron flanges and shields
•Sealed for life bearing

**Excitation and regulation system:**
•Excitation system: AREP
•Voltage A.V.R.: R180

**Environment and protection:**
•IP 23
•Class H insulation
•Standard winding protection for non-harsh environments with relative humidity ≤ 95%

**Compliant with international standards**
The TAL range complies with international standards and regulations: EMC, CE, and IEC 60034.
The range is designed, manufactured and marketed in an ISO 9001 and 14001 environment.

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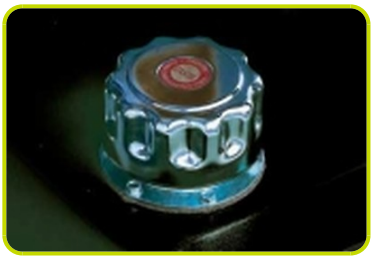
## Genset equipment

**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)

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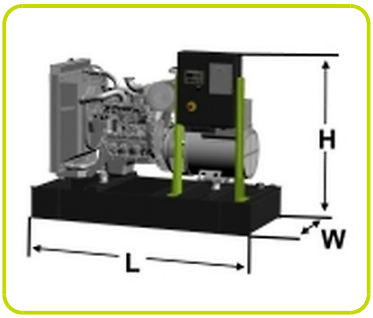
| Dimensional data | | |
|---|---|---|
| Length | (L) mm | 2600 |
| Width | (W) mm | 1000 |
| Height | (H) mm | 1743 |
| Dry weight | Kg | 1550 |
| Fuel tank capacity | l | 240 |
| Fuel tank material | | Metal |




| Autonomy | | |
|---|---|---|
| Fuel consumption @ 75% PRP | l/h | 33.44 |
| Fuel consumption @ 100% PRP | l/h | 44.04 |
| Running time @ 75% PRP | h | 7.18 |
| Running time @ 100% PRP | h | 5.45 |

| Electrical Data | | |
|---|---|---|
| MAX current | A | 317.55 |
| Circuit breaker | A | 320 |

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

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## MCP - Manual control panel

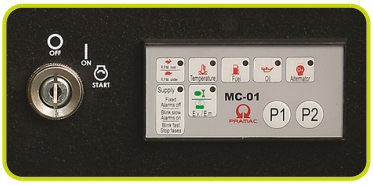
Mounted on the genset and complete of: instrumentation, control, protection of the generating set.

### 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

| | |
|---|---|
| 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

• 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.

### OUT PUT PANEL ACP

| | |
|---|---|
| Plinth row for connection from ACP to LTS panel. | √ |
| 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).
- 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 - 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 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 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.
- Settable 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 |
| External terminal board | | ETB |

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| Supplements: | |
|---|---|
| To be ordered with the equipment | : |

**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 |

**GENSET EQUIPMENT**

| | |
|---|---|
| AFP - Automatic Fuel Pump | ACP MPP |

**ENGINE SUPPLEMENTS**

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

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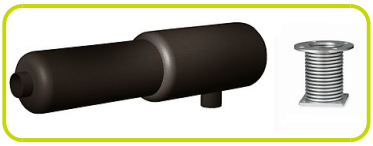
## Accessories

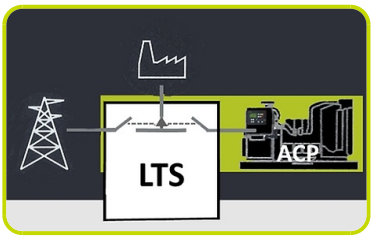
Items available as accessory equipment

FEC - Flexible Exhaust Compensator Bellow and flanges

RES - Residential silencer



**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: Wall mounted <400A; Floor Standing =>630A
- Door: Hinged door closed with double barb locking.
- Ingress Protection: IP43
- Gland Plates: Removable on the top & bottom side
- Connections: Bottom/Bottom
- Motor unit
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- 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 (Tolerance+/-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)*

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