Diesel Generator Set

MTU 18V2000 DS1400

380V - 415V/50 Hz/standardized backup/fuel consumption optimized
18V2000G76F/air charge air cooling

Product highlights

Benefits
— Low fuel consumption
— Optimized system integration ability
— High reliability and availability of power
— Long maintenance intervals
— Optimized ratio between size and power
— Wide operating range without derating

Support
— Global product support offered

Standards
— Engine-generator set is designed and manufactured in facilities certified to standards ISO 2008:9001 and ISO 2004:14001
— Generator set complies to G3 according to ISO 8528
— Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
— NFPA 110

Power rating
— System rating: 1400 kVA
— Accepts rated load in one step per NFPA 110
— Generator set complies to G3 according to ISO 8528-5
— Generator set exceeds load steps according to ISO 8528-5

Performance assurance certification (PAC)
— Engine-generator set tested to ISO 8528-5 for transient response
— 85% load factor for continuous power applications
— Verified product design, quality and performance integrity
— All engine systems are prototype and factory tested

Complete range of accessories available
— Control panel
— Power panel
— Fuel system
— Fuel connections with shut-off valve mounted to base frame
— Starting/charging system
— Exhaust system
— Mechanical radiator
— Oversized voltage alternators

Emissions
— Fuel consumption optimized

Certifications
— CE certification option
— VDE4110 Certification
### Application data

#### Fuel consumption optimized

<table>
<thead>
<tr>
<th>Engine</th>
<th>Manufacturer</th>
<th>MTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>18V2000G76F</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle</td>
<td></td>
</tr>
<tr>
<td>Arrangement</td>
<td>18V</td>
<td></td>
</tr>
<tr>
<td>Displacement: l</td>
<td>40.2</td>
<td></td>
</tr>
<tr>
<td>Bore: mm</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Stroke: mm</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Compression ratio</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>Rated speed: rpm</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>Engine governor</td>
<td>ADEC (ECU 9)</td>
<td></td>
</tr>
<tr>
<td>Speed regulation</td>
<td>± 0.25%</td>
<td></td>
</tr>
<tr>
<td>Max power: kWm</td>
<td>1235</td>
<td></td>
</tr>
<tr>
<td>Mean effective pressure: bar</td>
<td>24.6</td>
<td></td>
</tr>
<tr>
<td>Air cleaner</td>
<td>Dry</td>
<td></td>
</tr>
</tbody>
</table>

#### Combustion air requirements

| Combustion air volume: m³/s | 1.51 |
| Max. air intake restriction: mbar | 40 |

#### Fuel consumption

<table>
<thead>
<tr>
<th>Fuel consumption</th>
<th>l/hr</th>
<th>g/kwh</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 100% of power rating:</td>
<td>286</td>
<td>192</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>210</td>
<td>188</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>143</td>
<td>192</td>
</tr>
</tbody>
</table>

#### Fuel system

<table>
<thead>
<tr>
<th>Fuel consumption</th>
<th>l/hr</th>
<th>g/kwh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum fuel lift: m</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total fuel flow: l/min</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

#### Cooling/radiator system

| Coolant flow rate (HT circuit): m³/hr | 46.3 |
| Max. lube oil temperature (alarm): °C | 103 |
| Min. lube oil pressure (alarm): bar | 4.5 |
| Min. lube oil pressure (shutdown): bar | 4 |

#### Lube oil system

<table>
<thead>
<tr>
<th>Lube oil system</th>
<th>l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total oil system capacity: l</td>
<td>110</td>
</tr>
<tr>
<td>Max. lube oil temperature (alarm): °C</td>
<td>103</td>
</tr>
<tr>
<td>Max. lube oil temperature (shutdown): °C</td>
<td>105</td>
</tr>
<tr>
<td>Min. lube oil pressure (alarm): bar</td>
<td>4.5</td>
</tr>
</tbody>
</table>

#### Generator

<table>
<thead>
<tr>
<th>Protection class</th>
<th>IP23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation class</td>
<td>H</td>
</tr>
<tr>
<td>Voltage regulation (steady state)</td>
<td>± 0.25%</td>
</tr>
</tbody>
</table>

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1 All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level).

2 Emission optimized data refer to TA-Luft optimized and NEA (ORDE) optimized/Tier 2 compliant engines. Values referenced are in accordance with ISO 3046-1. Conversion calculated with fuel density of 0.83 g/ml. All fuel consumption values refer to rated engine power.
Engine

- 4-Cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Full flow oil filters

- Closed crankcase ventilation
- Governor-electronic isochronous
  ADEC/ECU9
- Common rail fuel injection
- Dry exhaust manifold
- Electric starting motor (24V)
- Fuel consumption optimized engine

Generator

- Leroy Somer low voltage generator
- Met NEMA MG1, BS5000,
  IEC 60034-1, VDE 0530,
  DIN EN 12601, AS1359
  and ISO 8528 requirements
- Superior voltage waveform
- Solid state, volts-per-Hertz regulator
- 4 pole three-phase synchronous
  generator
- Brushless, self-excited, self-regulating,
  self-ventilated
- Digital voltage regulator
- Anti condensation heater
- Stator winding Y-connected,
  accessible neutral (brought out)
- Protection IP 23
- Less than 5% harmonic distortion
- 2/3 pitch stator windings
- No load to full load regulation
- ± 0.25% voltage regulation no load to
  full load
- Insulation class H, utilization acc. to H
- Radio suppression EN55011,
  group 1, cl. B
- Short circuit capability 3xIn for 10sec
- Sustained short circuit current of up to
  300% of the rated current for up to 10
  seconds (Leroy Somer generator)
- Winding and bearing RTDs
  (without monitoring)
- Excitation by AREP + PMI
- Mounting of CT’s: 3x 2 core CT’s
- Voltage setpoint adjustment ±10V
- Sustained short circuit current of up to
  250% of the rated current for up to 10
  seconds (Marathon generator)
- Marathon low voltage generator
- Oversized generator

Standard and optional features

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>with mechanical radiator**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kWeL</td>
<td>kVA*</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 L7</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td>Leroy Somer standard)</td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 L8</td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Leroy Somer oversized)</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon 742RSL7184</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon standard)</td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon 743RSL7186</td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon oversized)</td>
<td>380 V</td>
<td>1120</td>
</tr>
</tbody>
</table>

* cos phi = 0.8
** BE, fuel optimized: max. power available up to: open power unit 40°C/400m; TAL, EPA Tier 2 compl., NEA: standard operating conditions/open power unit 25°C/100m

Electrical outputs may vary depending on generator voltage and ambient conditions. For power outputs consult your MTU dealer.

Intake air depression/mbar: 15mbar
Exhaust back pressure/mbar: 30mbar

- Represents standard features
- Represents optional features
## Standard and optional features

### Cooling system
- □ Jacket water pump
- □ Thermostat(s)
- □ Air charge air cooling
- □ Mechanical radiator
- □ Jacket water heater

### Control panel
- □ Pre-wired control cabinet for easy application of customized controller (V1+)
- □ Island operation (V2)
- □ Automatic mains failure operation with ATS (V3a)
- □ Automatic mains failure operation incl. control of generator and mains breaker (V3b)
- □ Island parallel operation of multiple gensets (V4)
- □ Automatic mains failure operation with short (< 10s) mains parallel overlap synchronization (V5)
- □ Basler controller
- □ Deif controller
- □ Complete system metering
- □ Digital metering
- □ Engine parameters
- □ Generator Protection Functions
- □ Engine protection
- □ SAE J1939 engine ECU communications
- □ Parametrization software
- □ Multilingual capability
- □ Multiple programmable contact inputs
- □ Multiple contact outputs
- □ Event recording
- □ IP 54 front panel rating with integrated gasket
- □ Different expansion modules
- □ Remote annunciator
- □ Daytank control
- □ Generator winding temperature monitoring
- □ Generator bearing temperature monitoring
- □ Differential protection with multi-function protection relay
- □ Modbus TCP-IP

### Power panel
- □ Available in 600x600
- □ Phase monitoring relay 230V/400V
- □ Supply for battery charger
- □ Supply for jacket water heater
- □ Plug socket cabinet for 230V compatible Euro

### Fuel system
- □ Flexible fuel connectors mounted to base frame
- □ Fuel filter with water separator
- □ Switchable fuel filter with water separator
- □ Fuel cooler

### Starting/charging system
- □ 24V starter
- □ Starter batteries, cables, rack, disconnect switch
- □ Battery charger
- □ Redundant starter 2x 7.5kW

### Mounting system
- □ Welded base frame
- □ Resilient engine and generator mounting
- □ Modular base frame design

### Exhaust system
- □ Exhaust bellows with connection flange
- □ Exhaust silencer with 10 dB(A) sound attenuation
- □ Exhaust silencer with 30 dB(A) sound attenuation
- □ Exhaust silencer with 40 dB(A) sound attenuation
- □ Y-connection-pipe
Weights and dimensions

Drawing above for illustration purposes only, based on a standard open power 400 Volt engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (dry/less tank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>4720 x 1990 x 2200 mm</td>
<td>7700 kg</td>
</tr>
</tbody>
</table>

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific engine-generator set.

Sound data

→ Consult your local MTU distributor for sound data.

Emissions data

→ Consult your local MTU distributor for emissions data.

Rating definitions and conditions

→ Standardized backup apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514 and AS 2789. Average load factor: ≤ 85%. Operating hours/ year: max. 500.
→ Consult your local MTU distributor for derating information.