Diesel Generator Set

MTU 20V4000 DS4000

11 kV/50 Hz/data center continuous power/NEA (ORDE) + tier 2 optimized
20V4000G44LF/water charge air cooling

Optional equipment and finishing shown. Standard may vary.

Product highlights

Benefits
— Low fuel consumption
— Optimized system integration ability
— High reliability
— High availability of power
— Long maintenance intervals

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 ISO 8528
— Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
— NFPA 110

Power rating
— System rating: 3630 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
— 100% load factor
— 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
— Electrical driven radiators
— Medium and oversized voltage alternators

Emissions
— Tier 2 optimized engine
— NEA (ORDE) optimized

Certifications
— CE certification option
Application data 1)

**Engine**
- Manufacturer: MTU
- Model: 20V4000G44LF
- Type: 4-cycle
- Arrangement: 20V
- Displacement: 95.4 l
- Bore: 170 mm
- Stroke: 210 mm
- Compression ratio: 16.4
- Rated speed: 1500 rpm
- Engine governor: ADEC (ECU 9)
- Max power: 3007 kW
- Air cleaner: Dry

**Fuel system**
- Maximum fuel lift: 5 m
- Total fuel flow: 27 l/min

**Liquid capacity (lubrication)**
- Total oil system capacity: 390 l
- Engine jacket water capacity: 260 l
- Intercooler coolant capacity: 50 l

**Combustion air requirements**
- Combustion air volume: 4.4 m³/s
- Max. air intake restriction: 30 mbar

**Cooling/radiator system**
- Coolant flow rate (HT circuit): 80 m³/hr
- Coolant flow rate (LT circuit): 50 m³/hr
- Heat rejection to coolant: 1045 kW
- Heat radiated to charge air cooling: 835 kW
- Heat radiated to ambient: 105 kW
- Fan power for electr. radiator (40°C): 105 kW

**Exhaust system**
- Exhaust gas temp. (after engine, max.): 440 °C
- Exhaust gas temp. (before turbocharger): 620 °C
- Exhaust gas volume: 10.6 m³/s
- Maximum allowable back pressure: 50 mbar
- Minimum allowable back pressure: –

**Fuel consumption** 2)

<table>
<thead>
<tr>
<th>Percent of Power Rating</th>
<th>l/hr</th>
<th>g/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>718</td>
<td>198</td>
</tr>
<tr>
<td>75%</td>
<td>541</td>
<td>199</td>
</tr>
<tr>
<td>50%</td>
<td>392</td>
<td>216</td>
</tr>
</tbody>
</table>

**America (fuel consumption optimized)**

<table>
<thead>
<tr>
<th>Generator model Description</th>
<th>Voltage</th>
<th>Fuel consumption optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>without radiator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>kWeli</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 ZL12 (Med. volt. Leroy Somer)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
<tr>
<td>Marathon 1040FDH7105 (Medium volt. marathon)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 ZL14 (MV Leroy Somer oversized)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
</tbody>
</table>

1 All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level).
2 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.
## Standard and optional features

### Engine
- 4-Cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Closed crankcase ventilation
- Governor-electronic isochronous
- Common rail fuel injection
- Tier 2 optimized engine
- NEA (ORDE) optimized engine

### Generator
- 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 IP23
- Insulation class H, utilization acc. to H
- Radio suppression EN55011, group 1, cl. B
- Short circuit capability 3xIn for 10sec
- Winding and bearing RTDs (without monitoring)
- Excitation by AREP + PMI
- Mounting of CT’s: 3x 2 core CT’s
- Winding pitch: 5/6 winding
- Voltage setpoint adjustment ± 5%
- Meets NEMA MG-1, BS 5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS1359 and ISO 8528 requirements
- Leroy Somer low voltage generator
- Marathon low voltage generator
- Oversized generator

### Cooling system
- Jacket water pump
- Thermostat(s)
- Water charge air cooling
- Electrical driven front-end cooler
- Jacket water heater
- Pulley for fan drive

### 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)
- Mains parallel operation of a single genset (V6)
- Mains parallel operation of multiple gensets (V7)
- 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
- Remote annunciator
- Daytank control
- Generator winding temperature monitoring
- Generator bearing temperature monitoring
- Modbus TCP-IP

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

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

Fuel system

- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Fuel filter with water separator heavy-duty
- Switchable fuel filter with water separator
- Switchable fuel filter with water separator heavy-duty
- Separate fuel cooler
- Fuel cooler integrated into cooling equipment

Starting/charging system

- 24V starter
- Starter batteries, cables, rack, disconnect switch
- Battery charger
- Redundant starter 2x 15kW

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>6339 x 1887 x 2415 mm</td>
<td>19350 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

— Standby ratings 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. 100% unlimited hours.

— Consult your local MTU distributor for derating information.