Diesel Generator Set

MTU 20V4000 DS4000

11 kV/50 Hz/data center continuous power/fuel consumption 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 voltage alternators

Emissions
— Fuel consumption optimized

Certifications
— CE certification option
Application data 1)

**Engine**
- Manufacturer: MTU
- Model: 20V4000G44LF
- Type: 4-cycle
- Arrangement: 20V
- Displacement: l 95.4
- Bore: mm 170
- Stroke: mm 210
- Compression ratio: 16.4
- Rated speed: rpm 1500
- Engine governor: ADEC (ECU 9)
- Max power: kWm 3007
- Air cleaner: Dry
- Fuel system
  - Maximum fuel lift: m 5
  - Total fuel flow: l/min 27
- Fuel consumption 2)
  - At 100% of power rating: l/hr 711, g/kwh 196
  - At 75% of power rating: l/hr 517, g/kwh 190
  - At 50% of power rating: l/hr 368, g/kwh 203

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

**Combustion air requirements**
- Combustion air volume: m³/s 4.2
- Max. air intake restriction: mbar 30

**Cooling/radiator system**
- Coolant flow rate (HT circuit): m³/hr 80
- Coolant flow rate (LT circuit): m³/hr 50
- Heat rejection to coolant: kW 1040
- Heat radiated to charge air cooling: kW 775
- Fan power for electr. radiator (40°C): kW 105

**Exhaust system**
- Exhaust gas temp. (after engine, max.): °C 445
- Exhaust gas temp. (before turbocharger): °C 621
- Exhaust gas volume: m³/s 10.3
- Maximum allowable back pressure: mbar 50
- Minimum allowable back pressure: mbar –

**Standard and optional features**

**System ratings (kW/kVA)**

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>kWei</th>
<th>kVA*</th>
<th>AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leroy Somer LSA54.2 ZL12 (Med. volt. Leroy Somer)</td>
<td>11 kV</td>
<td>2904</td>
<td>3630</td>
<td>191</td>
</tr>
<tr>
<td>Marathon 1040FDH7105 (Medium volt. marathon)</td>
<td>11 kV</td>
<td>2904</td>
<td>3630</td>
<td>191</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 ZL14 (MV Leroy Somer oversized)</td>
<td>11 kV</td>
<td>2904</td>
<td>3630</td>
<td>191</td>
</tr>
</tbody>
</table>

* cos phi = 0.8

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
- Fuel consumption 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 I, cl. B
- Short circuit capability $3 \times \text{In}$ 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 medium voltage generator
- Marathon medium voltage generator
- Oversized generator

#### Cooling system
- Jacket water pump
- Thermostat(s)
- Water charge air cooling
- Electrical driven front-end cooler
- 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 and temperature monitoring
- Modbus TCP-IP

#### Power panel
- Available in 600x600 mm
- 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

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- 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
- □ Seperate 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

System | Dimensions (L x W x H) | Weight (dry/less tank)
--- | --- | ---
Open power unit (OPU) | 6339 x 1887 x 2415 mm | 19350 kg

Drawing above for illustration purposes only, based on a standard open power 11 kV engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

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. A 10% overload capacity is available for one hour in twelve. 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.

Rolls-Royce Group
www.mtu-solutions.com/powergen