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 voltage alternators

**Emissions**
- Tier 2 optimized engine
- NEA (ORDE) optimized

**Certifications**
- CE certification option
### Application data

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

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

**Fuel consumption**
- l/hr
- g/kwh

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

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

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

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

### Standard and optional features

#### System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>NEA (ORDE) + Tier 2 optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>without radiator</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>kWel</td>
</tr>
<tr>
<td><strong>Leroy Somer LSA54.2 ZL12</strong> (Med. volt. Leroy Somer)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
<tr>
<td><strong>Marathon 1040FDH7105</strong> (Medium volt. marathon)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
<tr>
<td><strong>Leroy Somer LSA54.2 ZL14</strong> (MV Leroy Somer oversized)</td>
<td>11 kV</td>
<td>2904</td>
</tr>
</tbody>
</table>

* cos phi = 0.8

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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 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 and are approximate values.
Standard and optional features

Engine
- 4-cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Closed crankcase ventilation
- Governor-electronic isochronous
- Tier 2 optimized engine
- Common rail fuel injection
- 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 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
- 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 and 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 11 kV 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

— Data center continuous power ratings apply to data center installations where a reliable utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. 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%.
— Consult your local MTU distributor for derating information.

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www.mtu-solutions.com/powergen

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