Diesel Generator Set

MTU 20V4000 DS3600

3.3 - 11 kV/50 Hz/standby power/fuel consumption optimized
20V4000G94F/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 ratings: 3580 kVA - 3730 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
- 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
- Fuel consumption optimized

Certifications
- CE certification option
- Unit certificate acc. to BDEW (German Grid-Code) on request
Application data 1)

**Engine**
- Manufacturer: MTU
- Model: 20V4000G94F
- 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: ECU 9
- Max power: kWm 3088
- 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 730, g/kWh 196
- At 75% of power rating: 531, 190
- At 50% of power rating: 378, 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 4.3
- Max. air intake restriction: mbar 30

**Cooling/radiator system**
- Coolant flow rate (HT circuit): m³/hr 80
- Coolant flow rate (LT circuit): m³/hr 44
- Heat rejection to coolant: kW 1090
- Heat radiated to charge air cooling: kW 795
- Heat radiated to ambient: kW 105
- Fan power for electr. radiator (40°C): kW 105

**Exhaust system**
- Exhaust gas temp. (after engine, max.): °C 550
- Exhaust gas temp. (before turbocharger): °C 643
- Exhaust gas volume: m³/s 10.6
- Maximum allowable back pressure: mbar 50
- Minimum allowable back pressure: mbar –

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

**System ratings (kW/kVA)**

<table>
<thead>
<tr>
<th>Generator model</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>kWel</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 XL11 (Med. volt. Leroy Somer)</td>
<td>11 kV</td>
<td>2864</td>
</tr>
<tr>
<td>Marathon 1040FDH7103 (Medium volt. marathon)</td>
<td>11 kV</td>
<td>2976</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 ZL12 (MV Leroy Somer oversized)</td>
<td>11 kV</td>
<td>2864</td>
</tr>
<tr>
<td>Marathon 1040FDH7105 (MV marathon oversized)</td>
<td>11 kV</td>
<td>2976</td>
</tr>
<tr>
<td>Leroy Somer LSA54.2 ZL12 (Engine output optimized)</td>
<td>11 kV</td>
<td>2984</td>
</tr>
</tbody>
</table>

* cos phi = 0.8
### 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 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 bearing 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
## Standard and optional features

### Fuel system
- **Standard features**
  - Flexible fuel connectors mounted to base frame
  - Fuel filter with water separator
  - Fuel filter with water separator heavy-duty
- **Optional features**
  - 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
- **Standard features**
  - 24V starter
  - Starter batteries, cables, rack, disconnect switch
- **Optional features**
  - Battery charger
  - Redundant starter 2x 15kW

### Mounting system
- **Standard features**
  - Welded base frame
  - Resilient engine and generator mounting
- **Optional features**
  - Modular base frame design

### Exhaust system
- **Standard features**
  - Exhaust bellows with connection flange
  - Exhaust silencer with 10 dB(A) sound attenuation
- **Optional features**
  - Exhaust silencer with 30 dB(A) sound attenuation
  - Exhaust silencer with 40 dB(A) sound attenuation
  - Y-connection-pipe

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- ■ Represents standard features
- □ Represents optional features
Weights and dimensions

<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>6249 x 1887 x 2412 mm</td>
<td>18420 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: ≤ 85%.
Operating hours/year: max. 500.
— Consult your local MTU distributor for derating information.

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