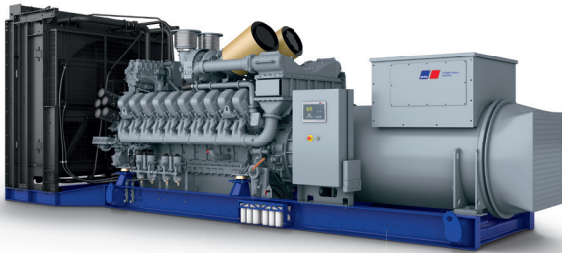




Diesel Generator Set

mtu 20V4000 DS3600

3.3 - 11 kV/50 Hz/data center continuous power/
fuel consumption optimized/20V4000G44F/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: 3380 kVA - 3390 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
- Mechanical driven radiators
- Medium and oversized voltage alternators

Emissions

- Fuel consumption optimized

Certifications

- CE certification option
- Unit conformity and certificate according to AR-N-4110. on request



A Rolls-Royce
solution

Application data ¹⁾

| | | | | |
|---------------------------------------|-------------|------------|--|----------|
| Engine | | | Liquid capacity (lubrication) | |
| Manufacturer | | <i>mtu</i> | Total oil system capacity: l | 390 |
| Model | 20V4000G44F | | Engine jacket water capacity: l | 260 |
| Type | 4-cycle | | Intercooler coolant capacity: l | 50 |
| Arrangement | 20V | | Combustion air requirements | |
| Displacement: l | 95.4 | | Combustion air volume: m³/s | 4.0 |
| Bore: mm | 170 | | Max. air intake restriction: mbar | 30 |
| Stroke: mm | 210 | | Cooling/radiator system | |
| Compression ratio | 16.4 | | Coolant flow rate (HT circuit): m³/hr | 80 |
| Rated speed: rpm | 1500 | | Coolant flow rate (LT circuit): m³/hr | 44 |
| Engine governor | ECU 9 | | Heat rejection to coolant: kW (100/110%) | 945/1090 |
| Max power: kWm | 2807 | | Heat radiated to charge air cooling: kW (100/110%) | 700/795 |
| Air cleaner | dry | | Heat radiated to ambient: kW | 105 |
| Fuel system | | | Fan power for electr. radiator (40°C): kW | 105 |
| Maximum fuel lift: m | 5 | | Exhaust system | |
| Total fuel flow: l/min | 27 | | Exhaust gas temp. (after engine, max.): °C | 550 |
| Fuel consumption ²⁾ | | | Exhaust gas temp. (before turbocharger): °C | 605 |
| At 100% of power rating: | 653 | 193 | Exhaust gas volume: m³/s | 9.6 |
| At 75% of power rating: | 485 | 191 | Maximum allowable back pressure: mbar | 50 |
| At 50% of power rating: | 349 | 206 | Minimum allowable back pressure: mbar | - |

Standard and optional features

System ratings (kW/kVA)

| Generator model | Voltage | fuel consumption optimized 40°C/1000m | | |
|--|---------|---------------------------------------|------|------|
| | | without radiator | | |
| | | kWel | kVA* | AMPS |
| Leroy Somer LSA54.2 XL11 (Med. volt. Leroy Somer) | 11 kV | 2704 | 3380 | 177 |
| Marathon 1040FDH7103 (Medium volt. marathon) | 11 kV | 2712 | 3390 | 178 |
| Leroy Somer LSA54.2 ZL12 (MV Leroy Somer oversized) | 11 kV | 2704 | 3380 | 177 |
| Marathon 1040FDH7105 (MV marathon oversized) | 11 kV | 2712 | 3390 | 178 |

* 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 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
- 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 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 $\pm 5\%$
- 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 monitoring
- ☐ Generator 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

- 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

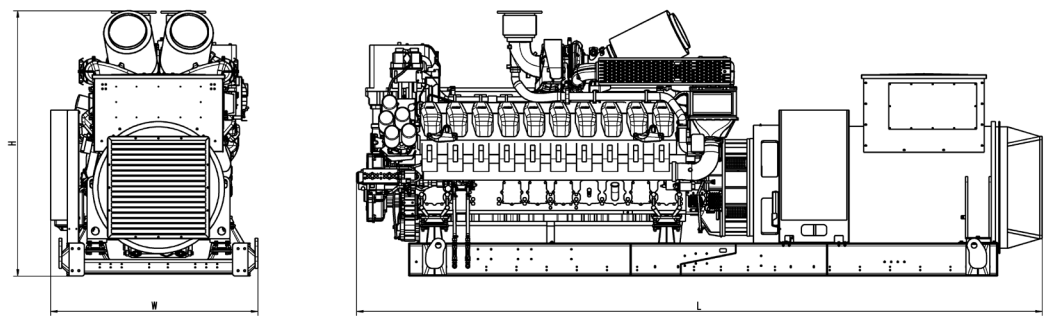
Mounting system

- ☒ 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



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.

| System | Dimensions (LxWxH) | Weight (dry/less tank) |
|-----------------------|-----------------------|------------------------|
| Open power unit (OPU) | 6249 x 1887 x 2412 mm | 18420 kg |

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 (DCP) 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.