



## Diesel Generator Set

# mtu 20V4000 DS4000

400 V - 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, BS 5000, ISO, DIN EN and IEC standards
- NFPA 110

### Power rating

- System rating: 3600 kVA - 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
- Low voltage alternator

### Emissions

- Fuel consumption optimized

### Certifications

- CE certification option
- Unit certificate acc. to VDE-AR-N 4110

\* Changes to the standard parameter sets (alternator-regulator and genset-controller) are necessary



A Rolls-Royce  
solution

## Application data <sup>1)</sup>

<b>Engine</b>		<b>Liquid capacity (lubrication)</b>	
Manufacturer	<i>mtu</i>	Total oil system capacity: l	390
Model	20V4000G44LF	Engine jacket water capacity: l	260
Type	4-cycle	Intercooler coolant capacity: l	50
Arrangement	20V	<b>Combustion air requirements</b>	
Displacement: l	95.4	Combustion air volume: m <sup>3</sup> /s	4.2
Bore: mm	170	Max. air intake restriction: mbar	30
Stroke: mm	210	<b>Cooling/radiator system</b>	
Compression ratio	16.4	Coolant flow rate (HT circuit): m <sup>3</sup> /hr	80
Rated speed: rpm	1500	Coolant flow rate (LT circuit): m <sup>3</sup> /hr	50
Engine governor	ADEC (ECU 9)	Heat rejection to coolant: kW	1040
Max power: kWm	3007	Heat radiated to charge air cooling: kW	775
Air cleaner	dry	Heat radiated to ambient: kW	105
<b>Fuel system</b>		Fan power for electr. radiator (40°C): kW	105
Maximum fuel lift: m	5	<b>Exhaust system</b>	
Total fuel flow: l/min	27	Exhaust gas temp. (after engine, max.): °C	445
<b>Fuel consumption <sup>2)</sup></b>		Exhaust gas temp. (before turbocharger): °C	621
At 100% of power rating:	l/hr      g/kwh	Exhaust gas volume: m <sup>3</sup> /s	10.3
At 75% of power rating:	711      196	Maximum allowable back pressure: mbar	50
At 50% of power rating:	517      190	Minimum allowable back pressure: mbar	-
	368      203		

## Standard and optional features

### System ratings (kW/kVA)

Generator model	Voltage	fuel consumption optimized 40°C/300m		
		without radiator		
		kWel	kVA*	AMPS
Leroy Somer LSA54.2 ZL17 (LV Leroy Somer standard)	400 V	2880	3600	5196
Leroy Somer LSA54.2 ZL12 (Med.volt. Leroy Somer)	11 kV	2904	3630	191
Marathon 1040FDH7105 (Medium volt. marathon)	11 kV	2904	3630	191
Leroy Somer LSA54.2 ZL14 (MV Leroy Somer oversized)	11 kV	2904	3630	191

\* 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 EN 55011, 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 1 core CT's
- Winding pitch: 2/3 winding
- Voltage setpoint adjustment ± 10%
- Meets NEMA MG-1, BS 5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS 1359 and ISO 8528-3 requirements
- Leroy Somer low voltage generator
- 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

- Unit cabling with coded plugs for easy connection of customer-specific controls (V0)
- 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

### Connectivity

The engine system automatically collects and transfers engine data to the manufacturer from time to time. The data is used by the manufacturer for the purposes of product

development and improvement as well as service optimization. Users can log in or register via <https://mtu-go.com> and also gain insight into the data.

- Represents standard features
- Represents optional features

## Standard and optional features

### Power panel

- Supply electrical driven radiator from 45kW – 75kW

### 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
- Redundant starting system
- Starter batteries, cables, rack, disconnect switch (lockable)
- Battery charger
- Alternator

### Mounting system

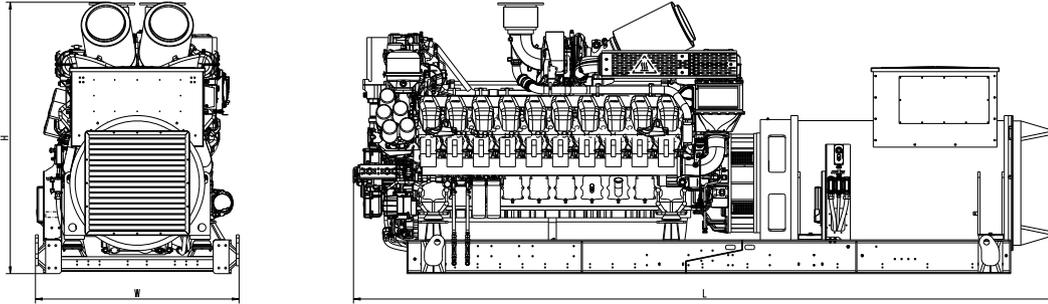
- Welded base frame
- Resilient engine and generator mounting
- Modular base frame design
- Base frame mounting on foundation/base plate with using clamping brackets

### 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

- Represents standard features
- Represents optional features

## 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)	6343 x 1810 x 2421 mm	20810 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:  $\leq 100\%$ .
- Consult your local **mtu** distributor for derating information.