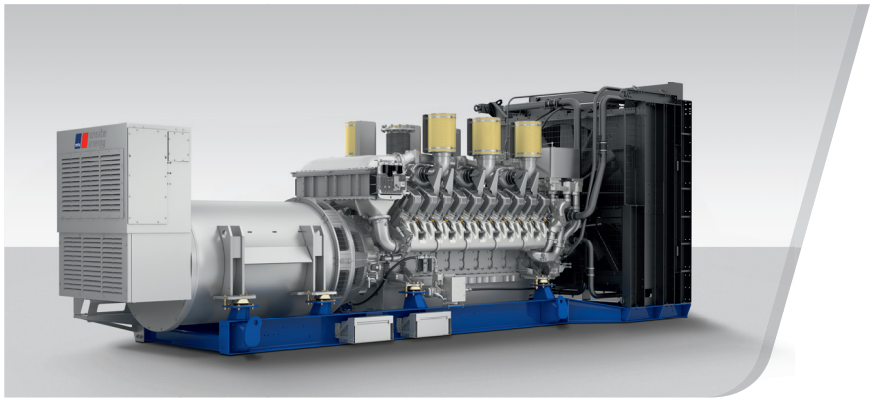
DIESEL GENERATOR SET
MTU 20V4000 DS2650

380V – 11 kV/50 Hz/Standby Power/Fuel Consumption Optimized
MTU 20V4000G23/Water Charge Air Cooling



Optional equipment and finishing shown. Standard may vary.

ADVANCED®

PRODUCT HIGHLIGHTS

// **Benefits**
- Low fuel consumtion
- Optimized system integration ability
- High reliability
- High availability of power
- Long maintenance intervals

// **MTU Onsite Energy is a single-source supplier**

// **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: 2600 kVA - 2900 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
- Circuit breaker/power distribution
- Fuel system
- Fuel connections with shut-off valve mounted to base frame
- Starting/charging system
- Exhaust system
- Mechanical and electrical driven radiators
- Medium voltage alternators

// **Emissions**
- Fuel consumption optimized

// **Certifications**
- CE certification option

APPLICATION DATA[1]

// Engine

Manufacturer	MTU
Model	20V4000G23
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 7)
Max power: kWm	2420
Air cleaner	Dry

// Fuel System

Maximum fuel lift: m	5
Total fuel flow: l/min	27

// Fuel Consumption[2]

	l/hr	g/kwh
At 100% of power rating:	554	190
At 75% of power rating:	419.9	192
At 50% of power rating:	293	201

// Liquid Capacity (Lubrication)

Total oil system capacity: l	390
Engine jacket water capacity: l	205
Intercooler coolant capacity: l	50

// Combustion Air Requirements

Combustion air volume: m^3/s	2.65
Max. air intake restriction: mbar	50

// Cooling/Radiator System

Coolant flow rate (HT circuit): m^3/h	80
Coolant flow rate (LT circuit): m^3/h	32.5
Heat rejection to coolant: kW	910
Heat radiated to charge air cooling: kW	350
Heat radiated to ambient: kW	105
Fan power for mech. radiator (40°C): kWm	44

// Exhaust System

Exhaust gas temp. (after turbocharger): °C	560
Exhaust gas volume: m^3/s	7.1
Maximum allowable back pressure: mbar	85
Minimum allowable back pressure: mbar	30

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)

Generator model	Voltage	Fuel consumption optimized 40°C/400m								
		without radiator			with mechanical radiator			with electr. driven radiator		
		kWel	kVA*	AMPS	kWel	kVA*	AMPS	kWel	kVA*	AMPS
Marathon 1020FDL7093	380 V	2240	2800	4254	2200	2750	4178	2160	2700	4102
(Low voltage	400 V	2160	2700	3897	2120	2650	3825	2120	2650	3825
marathon standard)	415 V	2120	2650	3687	2120	2650	3687	2080	2600	3617
Marathon 1030FDL7094	380 V	2240	2800	4254	2200	2750	4178	2160	2700	4102
(Low voltage	400 V	2160	2700	3897	2120	2650	3825	2120	2650	3825
marathon oversized)	415 V	2120	2650	3687	2120	2650	3687	2080	2600	3617
Marathon 1030FDL7094	380 V	2320	2900	4406	2280	2850	4330	2240	2800	4254
(Low voltage marathon	400 V	2304	2880	4157	2240	2800	4041	2240	2800	4041
engine output optimized)	415 V	2320	2900	4034	2240	2800	3895	2280	2850	3965
Leroy Somer LSA 53.1 M80	380 V	2320	2900	4034	2280	2850	3965	2280	2850	3965
(Low voltage	400 V	2320	2900	4034	2280	2850	3965	2280	2850	3965
Leroy Somer)	415 V	2320	2900	4034	2280	2850	3965	2280	2850	3965
Marathon 1030FDL7101 (Medium volt. marathon)	11 kV	2280	2850	150	2240	2800	147	2240	2800	147
Leroy Somer LSA 54 XL75 (Medium volt. Leroy Somer)	11 kV	2320	2900	152	2280	2850	150	2280	2850	150

* 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

- ■ NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- ■ Self-ventilated
- ■ Superior voltage waveform
- ■ Solid state, volts-per-Hertz regulator
- ■ No load to full load regulation
- ■ ±0,25% voltage regulation no load to full load
- ■ Brushless alternator with brushless pilot exciter
- ■ 4 pole, rotating field
- ■ Sustained short circuit current of up to 250% of the rated current for up to 10 seconds (marathon generator)
- ☐ Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)
- ■ Marathon low voltage generator
- ☐ Leroy Somer generator
- ☐ Oversized generator
- ☐ Medium voltage generator

■ Represents standard features ☐ Represents optional features

STANDARD AND OPTIONAL FEATURES, CONTINUATION

// Cooling System

- ■ Jacket water pump
- ■ Thermostat(s)
- ■ Water charge air cooling
- ☐ Mechanical radiator
- ☐ Electrical driven front-end cooler
- ☐ Jacket water heater

// 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
- ☐ Different expansion modules
- ☐ Remote annunciator
- ☐ Daytank control
- ☐ Generator winding temperature monitoring
- ☐ Generator bearing temperature monitoring
- ☐ Differential protection with multi-finction protection relay
- ☐ Modbus RTU-TCP gateway

// Circuit Breaker/Power Distribution

- ☐ 3-pole circuit breaker
- ☐ 4-pole circuit breaker
- ☐ Manual-actuated circuit breaker
- ☐ Electrical-actuated circuit breaker
- ☐ Stand-alone solution in seperate switch box

// Fuel System

- ■ Flexible fuel connectors mounted to base frame
- ☐ Fuel filter with water separator
- ☐ Switchable fuel filter with water separator
- ☐ Seperate fuel cooler
- ☐ Fuel cooler integrated into cooling equipment

■ Represents standard features ☐ Represents optional features

STANDARD AND OPTIONAL FEATURES, CONTINUATION

// Starting/Charging System

- ■ 24V starter
- ☐ Starter batteries
- ☐ Battery rack & cables
- ☐ Battery charger

// Mounting System

- ■ Welded base frame
- ■ Resilient engine and generator mounting
- ■ Modular base frame design

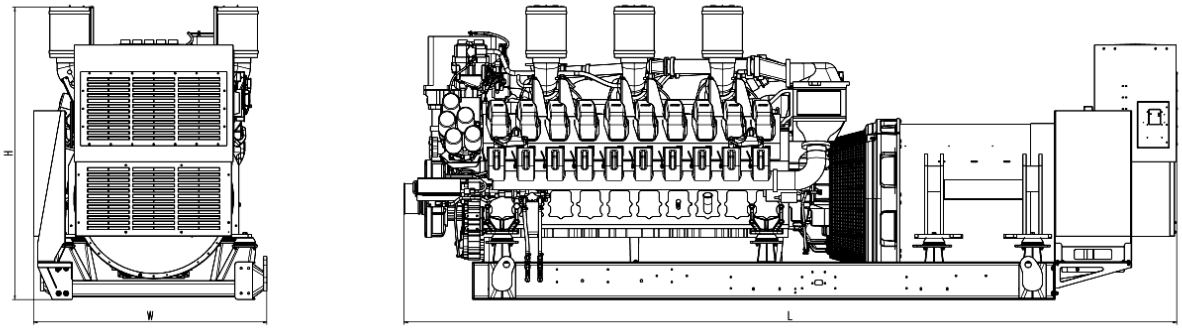
// Exhaust System

- ☐ 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

■ Represents standard features

☐ Represents optional features

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based an standard open power 400 Volt engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6176 x 1810 x 2332 mm	18339 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 Onsite Energy distributor for sound data.

EMISSIONS DATA

// Consult your local MTU Onsite Energy 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.
// Deration factor:
Altitude: Consult your local MTU Onsite Energy Power Generation distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation distributor for temperature derations.

Rated power is available up to 40°C and 400m above sea level.

Materials and specifications subject to change without notice.