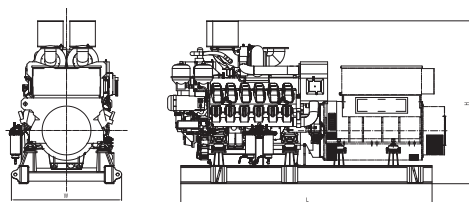
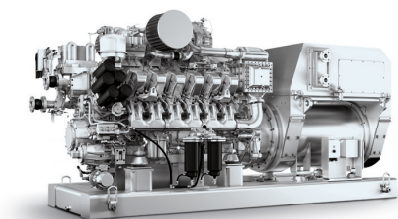




Oil & Gas

OFFSHORE OIL & GAS GENSET

Diesel engine genset – 50Hz / 60Hz



Optional equipment and finishing shown. Standard may vary.

Engine	Dimensions (LxWxH) mm (in)	Mass, dry kg (lbs)
12V	4850 x 1950 x 2450 (191 x 77 x 96)	14500 (31967)
16V	5720 x 1950 x 2450 (225 x 77 x 96)	18500 (40785)
20V	6950 x 1950 x 2450 (274 x 77 x 96)	24300 (53572)

All dimensions are approximate, for complete information refer to the installation drawing.

Engine	
Bore/stroke	mm (in)
Cylinder configuration	
Displacement/cylinder	l (cu in)
Displacement, total	l (cu in)
Fuel specification	
Emission compliance	

170/210 (6.7/8.3)
90°V
4.77 (290)
12V: 57.2 (3491); 16V: 76.3 (4655); 20V: 95.5 (5822)
acc. to mtu fluids & lubricants spec A001061
IMO II, IMO III (with optional exhaust aftertreatment), EPA Tier 2 (60Hz versions), EPA Tier 3 (with optional exhaust aftertreatment)

Application	Power definition	
3A	Continuous power	Continuous operation with load factor < 100% power, operating hours unrestricted, 10% overload capability (ICXN)
3B	Prime power	Continuous operation, variable load with load factor < 75%, operating hours unrestricted, 10% overload capability (ICXN)
3C	Prime power limited	Standby operation, variable load with load factor < 75%, operating hours max. 1000 h/year, 10% overload capability (ICXN)

Power output within 5% tolerance at standard conditions. Power definition according to ISO 3046 (ratings also correspond to SAE J 1995 and SAE J 1349 standard conditions). Consult your **mtu** distributor/dealer for the rating that will apply to your specific application.

		12V 4000 P63/83		16V 4000 P63/83		20V 4000 P63/83	
Frequency	Hz	50/60					
Application		3A	3B/3C	3A	3B/3C	3A	3B/3C
Engine speed	rpm	1500/1800	1500/1800	1500/1800	1500/1800	1500/1800	1500/1800
Genset power	kWe	1295/1395	1500/1615	1730/1860	2000/2150	2155/2330	2500/2690
Voltage	VAC	400 - 440, 690; other voltages on request					
Power factor		0.8	0.8	0.8	0.8	0.8	0.8
Fuel consumption at load							
100%	g/kWh	204/203	202/207	198/205	197/204	207/209	211/215
75%	g/kWh	204/211	202/207	201/211	199/205	210/211	206/209
50%	g/kWh	213/223	209/217	209/223	205/216	220/222	215/218
Air intake							
Intake air depression max.	mbar	50	50	50	50	50	50
Intake air flow at 100% load	m/s	1.6/2.1	1.8/2.5	2.0/2.9	2.3/3.2	2.9/4.0	3.5/4.4
Exhaust system							
Exhaust volume flow at 100% load	m/s	3.8/4.5	4.3/5.5	5.1/6.4	5.9/7.2	6.8/8.3	8.2/9.6
Exhaust gas temperature at 100% load	°C	500/395	493/395	480/395	480/395	495/375	470/410
Exhaust back pressure max.	mbar	85	85	85	85	85	85
Lube system							
Engine oil capacity, initial fill	ltr	245	245	300	300	335	335
Noise level							
Surface airborne noise level at 1m	dB(A)	102/104	102/106	105/105	106/106	103/106	106/105
Exhaust noise level at 1 m (unsilenced)	dB(A)	105/105	106/106	TBA/111	109/109	112/114	114/115

Standard equipment	
Genset	<ul style="list-style-type: none"> - Designed in accordance to oil & gas offshore industry standards - Modular concept with pre-defined options - FEM designed common base frame for broad range of engine/alternator combinations - All auxiliary equipment preinstalled on skid - Stainless steel tubing on skid - Flanged interfaces (ASME B16.5) - On skid terminal box (LOP) for control interface - 100% factory acceptance tested
Starting system	<ul style="list-style-type: none"> - Electric starter motor 15 KW
Fuel system	<ul style="list-style-type: none"> - Common rail injection system, 1800 bar - Double walled high pressure injection pipes with leakage monitoring - Duplex fuel filters with changeover valve 2x 100% - Duplex fuel pre-filter 2x 100% with water separator and water level sensor
Lube oil system	<ul style="list-style-type: none"> - Automatic lube oil filter - Lube oil centrifuge - Closed crankcase breather system - Dipstick for lube oil measurement - Hand pump for lube oil extraction
Combustion air system & exhaust system	<ul style="list-style-type: none"> - Air filters - Exhaust turbochargers and manifolds water cooled (reduced surface temp) - Vertical exhaust gas outlet - Exhaust gas bellows/compensators with counter flanges
Cooling system	<ul style="list-style-type: none"> - High temp engine jacket & low temp charge air coolant circuits with engine driven coolant pumps - Coolant thermostats in HT and LT circuits
Mounting	<ul style="list-style-type: none"> - Engine mounting brackets for resilient mounting - Resilient engine mounts, height adjustable - Resilient alternator mounting - FEM designed common base frame for broad range of engine/alternator combinations
Paint system	<ul style="list-style-type: none"> - Offshore paintwork solvent-based, 2K epoxy paint system - Colors to RAL- 5007, 7001, 7023 - Increased coat thickness for offshore applications – DFT min 140 µm
Power transmission	<ul style="list-style-type: none"> - SAE 00 flywheel housing - Flywheel 21" - Vibration damper - Resilient coupling
Control/monitoring – ADEC (advanced diesel engine controller)	<ul style="list-style-type: none"> - Engine monitoring of operating parameters and alarms - Engine protection against critical operating parameters - CAN communication to SAM (customer interface module) - Hardware I/O (digital analog) - Engines speed control - Over speed detection - Island and parallel operation (droop) - Override possibility (Test-, EMG-, FWP- or essential operating mode) - Invertible digital inputs (NO or NC contacts) - Self-monitoring
SAM	<ul style="list-style-type: none"> - Display of fault codes - Hardware I/O - Communication protocol (SAEJ1939 or Siemens RK512) - Interface for diagnostics - Diagnostic lamp - Control keys for parameter setting - Monitoring and protection of generator temperatures

Standard equipment	
Generator	<ul style="list-style-type: none"> - Insulation class H - Temperature rise F - Space heaters - IP 23 - Marine paint system - AREP excitation - Brushless - Alternator with brushless exciter - Analogue AVR - Two bearings – roller type - Air cooled – 45°C - Meets IEC, DIN EN, ISO standard - Temp sensor for bearings (1 each) & windings (2 each)
LOP (local operator panel)	<ul style="list-style-type: none"> - Interface terminal box to customer control panel - Touchscreen HMI - Visible indication of main operating values e.g.: <ul style="list-style-type: none"> • Speed • Lube oil pressure • Coolant temperature - Material: stainless steel 316L - Dims LxHxW: 800 x 800 x 350 mm (typical) - Weight: 65 kg (typical) - Onskid installation - Emergency stop push button - Switch remote/local/off - Start/stop push button - Alarm horn - Generator winding and bearing temperature - Monitoring - Anti condensation heater - Starter control - Control and monitoring of onskid auxiliaries
Documentation	<ul style="list-style-type: none"> - General arrangement drawing - P&ID - Wiring/schematic diagrams - Utility consumption list - Fabrication and quality control plan (ITP) - Equipment & instrument data sheet - Torsional critical speed analysis - Welding certificates and procedures - Testing FAT procedure & report - NDE, paint procedure & report - Fluids and lubricants schedule - Operation and maintenance manual - Installation, erection, commissioning and start-up manuals - Packing list - EC declaration of conformity

Optional equipment	
Starting system	<ul style="list-style-type: none"> - Air turbine starter - Hydraulic starter - Redundant starting systems - Battery charging alternator 28 VDC
Fuel system	<ul style="list-style-type: none"> - Fuel return cooler
Lube oil system	<ul style="list-style-type: none"> - Pre-lubrication pump - Electrical pump for lube oil extraction/filling - Deeper oil sump - for higher inclinations - Lube oil level monitoring & replenishment
Combustion air system & exhaust gas system	<ul style="list-style-type: none"> - Air shut off flaps - Horizontal exhaust gas outlet (16V, 20V only) - Exhaust gas bifurcation for single outlet (16"/20") - Exhaust gas silencer with spark arrestor
Coolant system	<ul style="list-style-type: none"> - Coolant connections: <ul style="list-style-type: none"> • Weld on flanges with rubber bellows • Connections for rubber hoses - Coolant preheating system with heater and circulation pump (none ATEX, optionally ATEX) - Expansion tank
Mounting	<ul style="list-style-type: none"> - Double elastic mounting system
Paint system	<ul style="list-style-type: none"> - Other RAL colors
Power transmission	<ul style="list-style-type: none"> - Add. PTO's for auxiliary equipment (hydro. pumps) control/monitoring – ADEC
Control/monitoring – ADEC (advanced diesel engine controller)	<ul style="list-style-type: none"> - Engine monitoring unit (EMU) - NFPA 20 (2010) redundant governor
Generator	<ul style="list-style-type: none"> - IP 55 - Digital AVR - Water cooled – 32°C or 40°C - Automatic regreasing unit - PMG excitation - Variable power - Cable connections - 3x standard CT's1 core with In/5A or In/1A – 10VA for measure 0,5FS5 or protection 5P10
Certifications	<ul style="list-style-type: none"> - According to classification authorities (ABS, DNV, LRS, BV, GL, RS, CCS)
LOP (local operator panel)	<ul style="list-style-type: none"> - Remote services/monitoring - Protocol: Profibus - Generator control - Load sharing
Documentation	<ul style="list-style-type: none"> - Other documents on request

Subject to change without notice. Customization possible.

Engines illustrated in this document may feature options not fitted as standard.