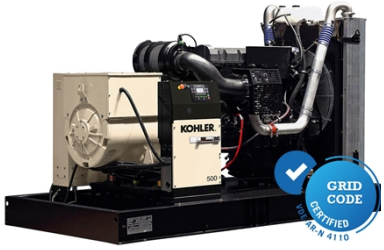
Industrial Diesel Generator Set – V650C2_VDE
CERTIFIED FOR GRID CODE APPLICATION
50 Hz



RATINGS 400 V - 50 Hz		
Standby	kVA	591,00
	kWe	473,00
Prime	kVA	591,00
	kWe	473,00

Benefits & features

Certified for "Grid Code" application :

- Design certified VDE-AR-N 4110 : this generating set complies with the German regulation for running in parallel with the grid
- Generating set simulation model certified : can be integrated in the global simulation model of end-user's electrical installation
- Capabilities of the generating set tested, assessed and verified by the independent third-party certification body FGH
- Certificate n° FGH-E-2021-001

KOHLER premium quality

- Design offices using the latest technical innovations
- Modern fully certified factories
- A cutting edge laboratory
- The generating set, its components and a wide range of options have been fully developed, prototype tested, factory built, and production tested
- Approved for use with HVO (Hydrotreated Vegetable Oil) according to EN15940

KOHLER premium performances

- Optimized and certified sound levels
- Reliable power, even in extreme conditions
- Optimized fuel consumption
- Compact footprint
- Best quality of electricity, high starting and loading capacity, according to ISO8528-5
- Robust base frames and high-quality enclosures
- Protection of installations and people
- Approved in line with the most stringent standards

Engines

- Premium level engines, in-house or from strong partners
- High power density, small footprint

GENERAL SPECIFICATIONS	
Engine brand	VOLVO
Alternator commercial brand	KOHLER
Voltage (V)	400/230
Standard Control Panel	APM802
Consumption @ 100% load ESP (L/h) *	118
Consumption @ 100% load PRP (L/h) *	116
Emission level	Emission optimization - Stage II Compliant
Type of Cooling	Radiator
Performance class	G3

GENERATOR SETS RATINGS

				Standby Rating			Prime Rating	
V650C2_VDE	Voltage	PH	Hz	kWe	kVA	Amps	kWe	kVA
	400/230	3	50	473,00	591,00	853	473,00	591,00

Genset power limited to its PRP power by VDE-AR-N 4110 regulation
Standby rating = Prime rating
no 10% overload capacity for Prime rating

DIMENSIONS COMPACT VERSION	
Length (mm)	3470
Width (mm)	1630
Height (mm)	2095
Tank capacity (L)	610,00

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
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- Low temperature starting capability
- Long maintenance interval

Alternator

- Provide industry leading motor starting capability
- Made in Europe
- Built with a class H insulation and IP23
- Premium state of the art AVR solution
- Specific certified protection relay for VDE-AR-N 4110 compliance

Cooling

- A flexible solution using an electrical driven radiator fan
- Designed or optimized by KOHLER-SDMO
- High temperature and altitude product capacity available

Base frame and enclosure

- High quality steel with enhanced corrosion resistance
- Highly durable QUALICOAT-certified epoxy paint
- Minimum 1000 hours of resistance to salt spray in accordance with ISO12944
- Ergonomic access to allow easy maintenance and connection of the generator

Dry weight (kg)	3860,00
DIMENSIONS SOUNDPROOFED VERSION	
Type soundproofing	M230
Length (mm)	5031
Width (mm)	1690
Height (mm)	2672
Tank capacity (L)	610,00
Dry weight (kg)	5380,00
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	84
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	74

* Volumetric Fuel consumption is up to 4% higher when using HVO than Diesel Fuel

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
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Engine

General	
Engine brand	VOLVO
Engine ref.	TAD1642GE-B *
Air inlet system	Turbo
Fuel	Diesel Fuel/HVO
Emission level	Emission optimization - Stage II Compliant
Cylinder configuration	L
Number of cylinders	6
Displacement (l)	16,12
Bore (mm) * Stroke (mm)	144,00 * 165,0
Compression ratio	16.8 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	565,0
Charge Air coolant	Air/Air
Frequency regulation, steady state (%)	+/- 0.25%
Injection Type	Direct
Governor type	Electronic
Air cleaner type, models	Dry

Fuel system	
Maximum fuel pump flow (l/h)	180,0
Max head on fuel return line (m fuel)	2,0
Maximum allowed inlet fuel temperature (°C)	60

Consumption with cooling system	
Fuel consumption @ ESP Max Power (l/h)	130,3
Fuel consumption @ PRP Max Power (l/h)	116,7
Fuel consumption @ 75% of PRP Power (l/h)	88,9
Fuel consumption @ 50% of PRP Power (l/h)	59,9

Emissions	
Emission PM 50Hz (g/kW.h)	0,1100
Emission CO 50Hz (g/kW.h)	0,670
Emission NOx 50Hz (g/kW.h)	5,420
Emission HC 50Hz (g/kW.h)	0,250

Lubrication System	
Oil system capacity including filters (l)	48,00
Min. oil pressure (bar)	2,8
Max. oil pressure (bar)	6,5
Oil sump capacity (l)	42,00
Oil consumption 100% ESP 50Hz (l/h)	0,110

Air Intake system	
Max. intake restriction (mm H2O)	510
Combustion air flow (l/s)	650,00

Exhaust system	PRP	ESP
Exhaust gas flow (L/s)	1573,0	1708,0
Exhaust gas temperature @ ESP (°C)	482	
Heat rejection to exhaust (kW)	427	
Max. exhaust back pressure (mm H2O)	1020	

Cooling system	
Radiator & Engine capacity (l)	60,00
Fan power 50Hz (kW)	9,00
Fan air flow w/o restriction (m3/s)	10,00
Available restriction on air flow (mm H2O)	30,00
Type of coolant	Glycol-Ethylene
Radiated heat to ambiant (kW)	20,0
Heat rejection to coolant HT (kW)	218
HT circuit flow rate (l/min)	384
Coolant capacity HT, engine only (l)	33,0
Outlet coolant temperature (°C)	93
Max coolant temperature, Shutdown (°C)	107,0
Max. pressure at inlet of HT water pump (mbar)	1000
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	96

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
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* Engine reference may be partially modified depending on genset application, options selected by the customer and lead time required.

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Alternator Specifications	
Alternator commercial brand	KOHLER
Kohler Alternator description	KH02401T
Number of pole	4
Number of bearing	Single Bearing
Technology	Brushless
Indication of protection	IP23
Insulation class	H
Number of wires	06
AVR Regulation	Yes
Coupling	Direct
Capacity for maintaining short circuit at 300% of rated current for 10 s	Yes (PMG)
Application data	
Overspeed (rpm)	2250
Power factor (Cos Phi)	0,8
Voltage regulation at established rating (+/- %)	0,50
Wave form : NEMA=TIF	<50
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	<4
Total Harmonic Distortion, on linear load DHT (%)	<4
Recovery time (Delta U = 20% transcient) (ms)	500
Performance datas	
Continuous Nominal Rating 40°C (kVA)	660,0
Unbalanced load acceptance ratio (%)	8

Peak motor starting (kVA) based on x% voltage dip power factor at 0.3

Alternator Standard Features

- All models are brushless, rotating-field alternators
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- The AVR voltage regulator provides superior short circuit capability
- Self-ventilated and dip proof construction
- Superior voltage waveform

Note: See Alternator Data Sheets for alternator application data and ratings, efficiency curves, voltage dip with motor starting curves, and short circuit decrement curves.

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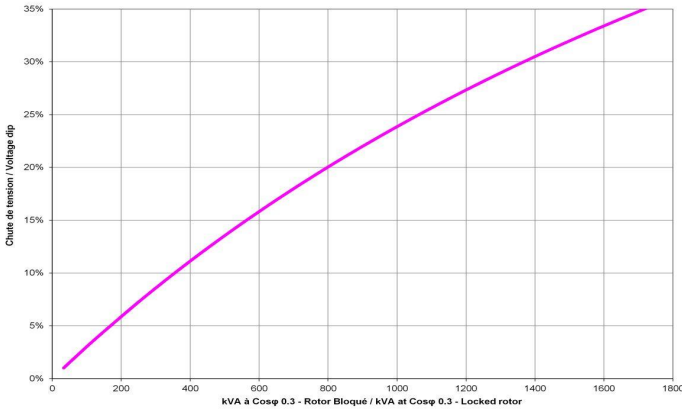

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Dimensions compact version

Length (mm) * Width (mm) * Height (mm)	3470 * 1630 * 2095
Dry weight (kg)	3860,00
Tank capacity (L)	610,00

M230 - Dimensions soundproofed version

Length (mm) * Width (mm) * Height (mm)	5031 * 1690 * 2672
Dry weight (kg)	5380,00
Tank capacity (L)	610,00
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	84
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	105
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	74

Dimensions DW compact version

Length (mm) * Width (mm) * Height (mm)	5083 * 1690 * 2355
Dry weight (kg)	4468,00
Tank capacity (L)	1950,00

M230 - Dimensions DW soundproofed version

Length (mm) * Width (mm) * Height (mm)	5083 * 1690 * 2932
Dry weight (kg)	5980,00
Tank capacity (L)	1950,00
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	84
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	105
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	74

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
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* dimensions and weight without options

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APM802

ADVANCED POWER PLANT MANAGEMENT CONTROL
Dedicated to power plant management APM802 provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility

- Graphic display with touchscreen
- User language selectable
- Specially researched ergonomics
- High level of equipment availability
- USB and Ethernet ports
- Modbus protocol
- Making it easy to extend the installation
- Complies with the international standard IEC 61131-3

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STANDARD SCOPE OF SUPPLY

All our gensets are fitted with:

- Industrial water cooled DIESEL engine
- Electric starter & charge alternator
- Standard air filter
- Schneider or ABB electric circuit breaker, adapted to the short-circuit current of the generating set
- Single bearing alternator IP 23 T° rise/ insulation to class H/H
- Welded steel base frame with 85% vibration attenuation mounts
- 4 lifting points on the chassis, lifting bar on the top included from 165 kVA ESP or optional
- highly durable QUALICOAT certified epoxy paint
- frame height optimized to allow it to be moved safely by forklift
- enclosure made of new high-quality European steel with enhanced corrosion resistance
- IP 64 locks, made from stainless materials
- enclosures and base frames tested and analyzed by the French Corrosion Institut
- 100% of tanks tested for permeability
- Personal protection ensured by protective grilles on hot and rotating parts
- Separate 9 dB(A) silencer
- Fuel tank welded inside the genset frame
- Retention bund included for gensets up to 110 kVA ESP
- Charged DC starting battery with electrolyte
- Emergency stop button on the outside
- Flexible fuel lines & lub oil drain cock
- Exhaust outlet with flexible and flanges
- User’s manual (1 copy)
- Packing under plastic film
- Delivered with oil and antifreeze liquid

CODES AND STANDARDS

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
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Engine-generators set is designed and manufactured in facilities certified to standards ISO9001:2015 & ISO14001:2015. The generator sets and its components are prototype-tested, factory built and production tested and are in compliance with the relevant standards:

- Machinery Directive 2006/42/EC of May 17th 2006
- EMC Directive2014/30/UE
- Safety objectives set out in the Low Voltage Directive 2014/35/UE
- EN ISO 8528-13, EN 60034-1, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 55011, EN 1679-1 et EN 60204-1
- German grid code regulation VDE-AR-N 4110

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TERMS OF USE

According to the standard, the nominal power assigned by the genset is given for 25°C Air Intlet Temperature, of a barometric pressure of 100 kPA (100 m A.S.L), and 30% relative humidity. For particular conditions in your installation, refer to the derating table.

WARRANTY INFORMATIONS

Standard Warranty Period:

- for Products in "back-up" service
    - 30 months from the date the Product leaves the plant
    - 24 months from the Product's commissioning date
    - 1,000 running hours

  The warranty expires when one of the above conditions is met.

- for Products in "prime" or "continuous" service (continuous supply of electricity, either in the absence of any normal electricity grid or to complement the grid),
    - 18 months from the date the Product leaves the plant
    - 12 months from the Product's commissioning date
    - 2,500 running hours

  The warranty expires when one of the above conditions is met.

For more details regarding conditions of application and scope of the warranty please refer to our General "terms & conditions of sales".

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