Industrial Diesel Generator Set – KD900-E

50 Hz - Emission Optimized – EPA Tier 2 Compliant

RATINGS 400 V - 50 Hz		
Standby	kVA	900
	kWe	720
Data Center / Mission Critical	kVA	900
	kWe	720
Prime	kVA	818
	kWe	654

Benefits & features

KOHLER premium quality

- KOHLER provides **one source responsibility** for the generating set and accessories
- The generator set, its components and a wide range of options have been **fully developed, prototype tested, factory built**, and production-tested
- Generators sets are designed in accordance with ISO8528-5, performance class G3
- Generators sets accept the rated load in one step outside the ISO8528-5 operating limit values
- Approved for use with HVO (Hydrotreated Vegetable Oil) according to EN15940

KOHLER premium performances

Engines

- Low fuel consumption thanks to a high technology common rail injection engine
- A smaller footprint thanks to a high power density
- Low temperature starting capability
- Long maintenance interval

Alternator

- Provide industry leading motor starting capability
- Excitation system to permit sustained overcurrent > 300% In, during 10 sec
- Built with a class H insulation and IP23

Cooling

- A compact and complete solution using a mechanically driven radiator fan
- High temperature and altitude product capacity available

Control Panel

- The KOHLER wide controller range provide the reliability and performances you expect from your equipment. You can program, manage and diagnose it easily and in an efficient way

KOHLER worldwide support

- A standard three-year or 1000-hour limited warranty for standby applications.
- A standard two-year or 8700-hour limited warranty for prime power applications.
- A worldwide product support

GENERAL SPECIFICATIONS	
Engine brand	KOHLER KD Series
Alternator commercial brand	KOHLER
Voltage (V)	400/230
Standard Control Panel	M80-D
Optional control panel	APM403
Optional Control Panel	APM802
Consumption @ 100% load ESP (L/h) *	181
Consumption @ 100% load PRP (L/h) *	165
Emission level	Emission optimization - EPA Tier 2 Compliant
Type of Cooling	Mechanical driven fan
Performance class	G3
One step load acceptance (out of ISO criteria)	100%

GENERATOR SETS RATINGS

	Standby			Data Center / Mission Critical		Prime	
Voltage	kWe	kVA	Amps	kWe	kVA	kWe	kVA
415/240	714	893	1242	714	893	650	812
400/230	720	900	1299	720	900	654	818
380/220	720	900	1367	720	900	654	818

DIMENSIONS COMPACT VERSION	
Length (mm)	4190
Width (mm)	1500
Height (mm)	2275
Tank capacity (L)	0
Dry weight (kg)	5590

DIMENSIONS SOUNDPROOFED VERSION	
Type soundproofing	NOT AVAILABLE
Length (mm)	6413
Width (mm)	2160
Height (mm)	2750
Tank capacity (L)	1035
Dry weight (kg)	8400
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	86
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	77

* 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	KOHLER KD Series
Engine ref.	KD27V12-5BES *
Air inlet system	Turbo
Fuel	Diesel Fuel/HVO
Emission level	Emission optimization - EPA Tier 2 Compliant
Cylinder configuration	V
Number of cylinders	12
Displacement (l)	26,97
Bore (mm) * Stroke (mm)	135 * 157
Compression ratio	15 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	783
Piston type & material	Forged Steel
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)	265
Fuel Inlet Minimum recommended size (mm)	19,05
Fuel Outlet Minimum recommended size (mm)	9,53
Max head on fuel return line (m fuel)	3,10
Maximum allowed inlet fuel temperature (°C)	60

Consumption with cooling system	PRP	ESP
Consumption @ 100% load (g/kW.h)	195,80	195,90
Consumption @ 75% load (g/kW.h)	202,70	201,30
Consumption @ 50% load (g/kW.h)	218,80	214,70
Consumption @ 25% load (g/kW.h)	239,90	235,20

Emissions

Lubrication System	
Oil system capacity including filters (l)	101
Min. oil pressure (bar)	3,30
Max. oil pressure (bar)	5,50
Oil sump capacity (l)	89
Oil consumption 100% ESP 50Hz (l/h)	0,09

Air Intake system	
Max. intake restriction (mm H2O)	510
Combustion air flow (l/s)	895,92

Exhaust system

	PRP	ESP
Exhaust gas temperature (°C)	469	469
Exhaust gas flow (L/s)	2142	2348
Heat rejection to exhaust (kW)	554	
Max. exhaust back pressure (mm H2O)	867	

Cooling system and charge air cooler	
Ambient temperature design (°C)	40
Radiator & Engine capacity (l)	97
Fan power 50Hz (kW)	28
Fan air flow w/o restriction (m3/s)	15
Available restriction on air flow (mm H2O)	20
Type of coolant	Gencool
Radiated heat to ambiant (kW)	55
Heat rejection to coolant HT (kW)	270
HT circuit flow rate (l/min)	822
Coolant capacity HT, engine only (l)	55
Outlet coolant temperature (°C)	100
Max coolant temperature, Shutdown (°C)	105
Max. pressure at inlet of HT water pump (mbar)	1000
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	92
CAC Heat Rejection (kW)	157
Compressor Discharge Temp at 25°C (°C)	191

* Engine reference may be partially modified depending on genset application, options selected by the customer and lead time required.

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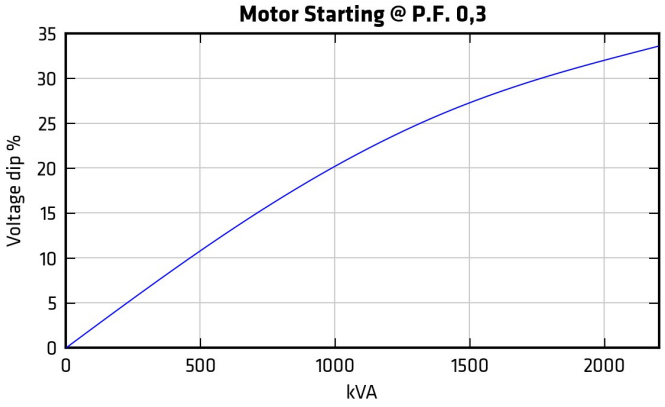
Alternator Specifications	
Alternator commercial brand	KOHLER
Kohler Alternator description	KH02970T
Number of pole	4
Number of bearing	Single Bearing
Technology	Brushless
Indication of protection	IP23
Insulation class	H
Number of wires	12
AVR Regulation	Yes
Coupling	Direct
Capacity for maintaining short circuit at 3 In for 10 s	Yes
Application data	
Overspeed (rpm)	2250
Power factor (Cos Phi)	0,80
Voltage regulation at established rating (+/- %)	0,50
Wave form : NEMA=TIF	<40
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	3,1
Total Harmonic Distortion, on linear load DHT (%)	2,8
Recovery time (Delta U = 20% transcient) (ms)	200
Performance datas	
Continuous Nominal Rating 40°C (kVA)	820
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
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds
- 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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Dimensions compact version with baseframe fuel tank

Length (mm) * Width (mm) * Height (mm)	4190 * 1500 * 2275
Dry weight (kg)	5680
Tank capacity (L)	500

Dimensions compact version

Length (mm) * Width (mm) * Height (mm)	4190 * 1500 * 2275
Dry weight (kg)	5590
Tank capacity (L)	0

M427 - Dimensions soundproofed version

Length (mm) * Width (mm) * Height (mm)	6413 * 2160 * 2750
Dry weight (kg)	8400
Tank capacity (L)	1035
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	86
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	108
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	77

M427 SSi - Dimensions super soundproofed version

Length (mm) * Width (mm) * Height (mm)	6413 * 2160 * 2750
Dry weight (kg)	8600
Tank capacity (L)	1035
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	82
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	104
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	73

Container dimensions ISO20 soundproofed version

Length (mm) * Width (mm) * Height (mm)	6058 * 2438 * 3950
Dry weight (kg)	11420
Tank capacity (L)	500
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)	75

Container dimensions ISO20 super soundproofed version

Length (mm) * Width (mm) * Height (mm)	9140 * 2438 * 3950
Dry weight (kg)	12010

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Tank capacity (L)	500
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	75
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	97
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	66

* dimensions and weight without options

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M80-D

The M80-D can be used as a basic terminal block for connecting a control unit and as an instrument panel with a highly intuitive LCD screen giving an overview of your generating set's basic parameters:

- Oil gauge
- Coolant temperature
- Oil temperature
- Engine speed
- Battery voltage
- Charge air temperature
- Fuel consumption
- etc.

The engine main functions can be controlled and events are recorded to facilitate diagnostics:

- Starting
- Speed adjustment
- Stopping
- Droop
- etc.

APM403

BASIC GENERATING SET AND POWER PLANT CONTROL
The APM403 is a versatile control unit which allows operation in manual or automatic mode

- Measurements : voltage and current
- kW/kWh/kVA power meters
- Standard specifications: Voltmeter, Frequency meter.
- Optional : Battery ammeter.
- J1939 CAN ECU engine control
- Alarms and faults: Oil pressure, Coolant temperature, Overspeed, Start-up failure, alternator min/max, Emergency stop button.
- Engine parameters: Fuel level, hour counter, battery voltage.
- Optional (standard at 24V): Oil pressure, water temperature.
- Event log/ Management of the last 300 genset events.
- Mains and genset protection
- Clock management
- USB connections, USB Host and PC,
- Communications : RS485 INTERFACE
- ModBUS protocol /SNMP
- Optional : Ethernet, GPRS, remote control, 3G, 4G,
- Websupervisor, SMS, E-mails

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 KD Series gensets are fitted with:

- Industrial water cooled DIESEL engine
- Radiator with coolant
- Electric starter & charge alternator 24 V D.C
- Electronic governor
- Standard air filter
- Single bearing alternator IP 23 T° rise/ insulation to class H/H
- Welded steel base frame with 80% vibration attenuation mounts
- Flexible fuel lines & lub oil drain pump
- Fuel water separator filter
- Exhaust outlet with flexible and flanges
- M80-D control panel
- User's manual (1 copy)
- Packing under plastic film
- Delivered with oil
- Delivered with antifreeze liquid

STANDARD DELIVERY

All our gensets are fitted with:

- Industrial water-cooled DIESEL engine
- Electric starter & charge alternator
- Standard air filter
- 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
- frame height optimized to allow it to be moved safely by forklift
- enclosure made of new high-quality European steel with enhanced corrosion resistance
- 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 250 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

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

POWER RATINGS DEFINITION according to ISO8528-1 (2018-02 edition) and ISO-3046-1

Emergency Standby Power (ESP): The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Average load factor per 24 hours of operation is <85%.

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Prime Power (PRP): At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour within 12 hour of operation. Average load factor per 24 hours of operation is <75%.

Data Center Mission Critical (DCP): Data Center Mission Critical power is defined as being the maximum power which a generating set is capable of delivering while supplying a variable or continuous electrical load and during unlimited run hours. Depending on the sites to supply and the availability of reliable utility, the generating set manufacturer is responsible to define what power level is able to supply to fulfil that requirement including hardware or software or maintenance plan adaptation.

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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, **extended to 42 months for KD series**
  - 24 months from the Product's commissioning date, **extended to 36 months for KD series**
  - 1,000 running hours

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

- for Products in "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, **extended to 30 months for KD series**
  - 12 months from the Product's commissioning date, **extended to 24 months for KD series**
  - 2,500 running hours, **extended to 8700 running hours for KD series**

  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".