

RATINGS 400 V - 50 Hz		
Standby	kVA	1650
	kWe	1320
Data Center / Mission Critical	kVA	1650
	kWe	1320
Prime	kVA	1500
	kWe	1200

### Benefits & features

#### KOHLER SDMO premium quality

- KOHLER SDMO 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
- The generator sets are designed in accordance to ISO8528-5 performance **class G3** and accepts rated load in one step

#### KOHLER SDMO 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 SDMO 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 SDMO 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)	324
Consumption @ 100% load PRP (L/h)	296
Engine optimisation	Emission optimisation
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	
	kWe	kVA	Amps	kWe	kVA	kWe	kVA
415/240	1320	1650	2296	1320	1650	1200	1500
400/230	1320	1650	2382	1320	1650	1200	1500
380/220	1320	1650	2507	1320	1650	1200	1500

#### DIMENSIONS COMPACT VERSION

Length (mm)	5090
Width (mm)	2122
Height (mm)	2481
Tank capacity (L)	500
Dry weight (kg)	10100

#### DIMENSIONS SOUNDPROOFED VERSION

Type soundproofing	ISO20 Si
Length (mm)	6058
Width (mm)	2438
Height (mm)	2896
Tank capacity (L)	465
Dry weight (kg)	15900
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	88
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	79

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.

Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Test conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results. Data and specifications subject to change without notice.

Engine			
<b>General</b>			
Engine brand	KOHLER KD Series		
Engine ref.	KD45V20-5DES *		
Air inlet system	Turbo		
Fuel	Diesel Fuel		
Engine optimisation	Emission optimisation		
Cylinders configuration	V		
Number of cylinders	20		
Displacement (l)	44.95		
Bore (mm) * Stroke (mm)	135 * 157		
Compression ratio	15 : 1		
Speed (RPM)	1500		
Maximum stand-by power at rated RPM (kW)	1463		
Piston type & material	Steel		
Charge Air coolant	Air/Air		
Frequency regulation, steady state (%)	+/- 0.25%		
Injection Type	Direct		
Governor type	Electronic		
Air cleaner type, models	Dry		
<b>Fuel system</b>			
Maximum fuel pump flow (l/h)	470		
Fuel Inlet Minimum recommended size (mm)	19.05		
Fuel Outlet Minimum recommended size (mm)	9.53		
Max head on fuel return line (m)	3.1		
Maximum allowed inlet fuel temperature (°C)	60		
<b>Consumption with cooling system</b>			
	<b>PRP</b>	<b>ESP</b>	
Consumption @ 100% load (g/kW.h)	196	195	
Consumption @ 75% load (g/kW.h)	209.1	209.6	
Consumption @ 50% load (g/kW.h)	219.2	221.5	
Consumption @ 25% load (g/kW.h)	241.9	243.6	
<b>Lubrication System</b>			
Oil system capacity including filters (l)	180		
Min. oil pressure (bar)	3.5		
Max. oil pressure (bar)	6.5		
Oil sump capacity (l)	180		
Oil consumption 100% ESP 50Hz (l/h)	0.17		
<b>Air Intake system</b>			
Max. intake restriction (mm H2O)	510		
Intake air flow (l/s)	1501.41		
<b>Exhaust system</b>			
	<b>PRP</b>	<b>ESP</b>	
Heat rejection to exhaust (kW)		1077	
Exhaust gas temperature (°C)	499	519	
Exhaust gas flow (L/s)	3973	4218	
Max. exhaust back pressure (mm H2O)	867		
<b>Cooling system and charge air cooler</b>			
Ambient temperature design (°C)	40		
Radiator & Engine capacity (l)	286		
Fan power 50Hz (kW)	37.6		
Fan air flow w/o restriction (m3/s)	26		
Available restriction on air flow (mm H2O)	30		
Type of coolant	Gencool		
Radiated heat to ambient (kW)	102		
Heat rejection to coolant HT (kW)	535		
Flow on the HT circuit at 0.7Bars pressure drop off engine (l/min)	1904		
Coolant capacity HT, engine only (l)	143		
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)	317		
Compressor Discharge Temp at 25°C (°C)	212		

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### Alternator Specifications

Alternator commercial brand	KOHLER
Alternator ref.	KH03850T
Number of pole	4
Number of bearing	Single Bearing
Technology	Brushless
Indication of protection	IP23
Insulation class	H
Number of wires	12
Capacity for maintaining short circuit at 3 In for 10 s	Yes
AVR Regulation	Yes
Coupling	Direct

### Application data

Overspeed (rpm)	2250
Power factor (Cos Phi)	0.8
Voltage regulation at established rating (+/- %)	0.50
Wave form : NEMA=TIF	<40
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	2,5
Total Harmonic Distortion, on linear load DHT (%)	3,0
Recovery time (Delta U = 20% transient) (ms)	200

### Performance datas

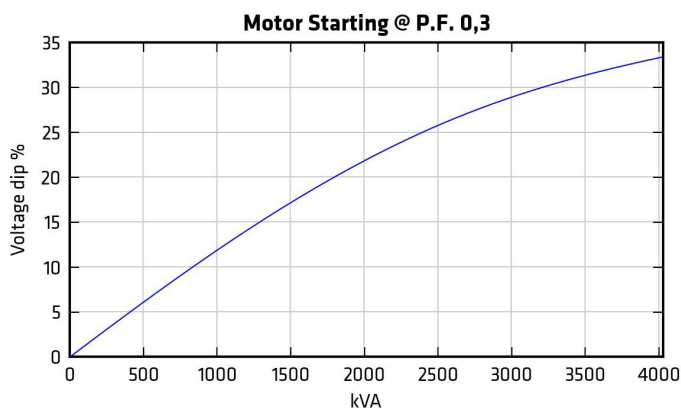
Continuous Nominal Rating 40°C (kVA)	1500
Unbalanced load acceptance ratio (%)	100

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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# Industrial Diesel Generator Set – KD1650-E

## 50 Hz - Emission Optimized – EPA Tier 2 Compliant

### Dimensions compact version with baseframe fuel tank

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Length (mm) * Width (mm) * Height (mm)	5090 * 2122 * 2481
Dry weight (kg)	10100
Tank capacity (L)	500

### Dimensions compact version

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Length (mm) * Width (mm) * Height (mm)	5090 * 2122 * 2481
Dry weight (kg)	10000
Tank capacity (L)	0

### Container dimensions ISO20 soundproofed version

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#### ISO20 Si

Length (mm) * Width (mm) * Height (mm)	6058 * 2438 * 2896
Dry weight (kg)	15900
Tank capacity (L)	465
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	88
Measured acoustic power level (Lwa) 50Hz (75% PRP)	109
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	79

### Container dimensions ISO20 super soundproofed version

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#### ISO20 Ssi

Length (mm) * Width (mm) * Height (mm)	9140 * 2438 * 2896
Dry weight (kg)	16500
Tank capacity (L)	465
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Measured acoustic power level (Lwa) 50Hz (75% PRP)	102.7
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	72

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### M80-D



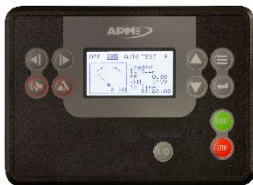
The M80-D can be used as a basic terminal block for connecting a control unit and as an instrument panel with a highly intuitive LCD screen giving an overview of your generating set's basic parameters:

- 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

### 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

### 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 Directive 2014/30/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%.

**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 Power (DCP):** Data center 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.



## Industrial Diesel Generator Set – **KD1650-E** 50 Hz - Emission Optimized – EPA Tier 2 Compliant

### TERMS OF USE

According to the standard, the nominal power assigned by the genset is given for 25°C Air Inlet 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
  - o 30 months from the date the Product leaves the plant, **extended to 42 months for KD series**
  - o 24 months from the Product's commissioning date, **extended to 36 months for KD series**
  - o 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),
  - o 18 months from the date the Product leaves the plant, **extended to 30 months for KD series**
  - o 12 months from the Product's commissioning date, **extended to 24 months for KD series**
  - o 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".

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