

RATINGS 400V - 50 Hz		
Standby	kVA	1650
	KWe	1320
Prime	kVA	1500
	KWe	1200

### Benefits & features

#### KOHLER SDMO premium quality

- KOHLER SDMO provides **one source responsibility** for the generating system 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, running without power derating up to 50°C

##### 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	
Alternator commercial brand	KOHLER	
Voltage (V)	400/230	
Performance class	G3	
One step load acceptance (out of ISO criteria)	100%	
Standard Control Panel	M80-D, APM403, APM802, TELYS	
<b>Genset Fuel consumption</b>	<b>PRP</b>	<b>ESP</b>
Consumption @ 100% PRP load (L/h)	306,70	335,60
Engine optimisation	E	
Type of Cooling	Radiator	

### GENERATOR SETS RATINGS

		Standby Rating			Prime Rating			
		Voltage	PH	Hz	kWe	kVA	Amps	kWe
KD1650-E	415/240	3	50	1320	1650	2296	1200	1500
	400/230	3	50	1320	1650	2382	1200	1500
	380/220	3	50	1320	1650	2507	1200	1500

*Data Center Continuous (DCP) Power rating is the same as the prime rating when a reliable grid is available*

**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 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 is <75%.

**Data Center Continuous Power (DCP):** At varying or constant load, the number running hours is unlimited. 10% overload capacity is available for one hour within 12 hour of operation.

For limited running time, continuous or other ratings details, consult your contact and obtain technical information for ratings guidelines, complete ratings definitions, and site condition derates.

# Industrial Diesel Generator Set – KD1650-E

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

### KOHLER DIESEL ENGINE

#### General

Engine brand	KOHLER
Engine ref.	KD45V20-5DES
Distribution	4T
Air inlet system	Turbo
Fuel	GO
Engine optimisation	E
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
Cylinder Head Material	Cast Iron
Crankshaft Material	Steel
Intake and Exhaust Valve Material	Steel
Piston type & material	Steel
Charge Air coolant	Air/Air DC
Frequency regulation, steady state (%)	+/- 0.25%
Injection Type	Direct
Governor type	Electronic
ECU type	KODEC
Air cleaner type, models	Dry

#### Fuel system

Maximum fuel pump flow (L/h)	470
Fuel Inlet Minimum recommended size (mm)	19,05
Fuel Outlet Minimum recommended size (mm)	9,53
Max. restriction at fuel pump (m)	3,50
Max head on fuel return line (m)	3,10
Maximum allowed inlet fuel temperature (°C)	60

#### Consumption with cooling system

	PRP	ESP
Consumption @ 100% PRP load (L/h)	306,70	335,60
Consumption @ 75% PRP load (L/h)	245,40	270,60
Consumption @ 50% PRP load (L/h)	171,50	190,60
Consumption @ 25% load PRP (L/h)	94,60	104,80

#### Lubrication System

Oil system capacity including filters (L)	180
Min. oil pressure (bar)	3,50
Max. oil pressure (bar)	6,50
Oil sump capacity (L)	180
Oil cooler	Plate Exchanger
Oil consumption 100% ESP (L/h)	0,17

#### Air Intake system

Max. intake restriction (mm H2O)	510
Intake air flow (L/s)	1501,41

#### Exhaust system

Heat rejection to exhaust (kW)	1077
Exhaust gas temperature (°C)	PRP: 499   ESP: 519
Exhaust gas flow (L/s)	PRP: 3973   ESP: 4218
Max. exhaust back pressure (mm H2O)	867

#### Radiator Charge Air Cooling System

Ambiant temperature design (°C)	40
Radiated heat to ambient (kW)	102
CAC Heat Rejection (kW)	317
Heat rejection to coolant HT (kW)	535
Radiator & Engine capacity (L)	264
Coolant capacity HT, engine only (L)	143
Flow on the HT circuit at 0.7Bars pressure drop off engine (L/min)	1904
Maximum Coolant temp without derating (°C)	105
Outlet coolant temperature (°C)	100
Type of coolant	Gencool
Compressor Discharge Temp at 25°C (°C)	212
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	92
Fan power (kW)	37,60
Fan air flow w/o restriction (m3/s)	26
Available restriction on air flow (mm H2O)	30

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.

## Industrial Diesel Generator Set – KD1650-E

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

#### 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)	0,80
Voltage regulation at established rating (+/- %)	0,50
Wave form : NEMA=TIF	<40
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	2,5
Total Harmonic Distortion, on linear load DHT (%)	3,0
Recovery time (Delta U = 20% transient) (ms)	200

#### Performance datas

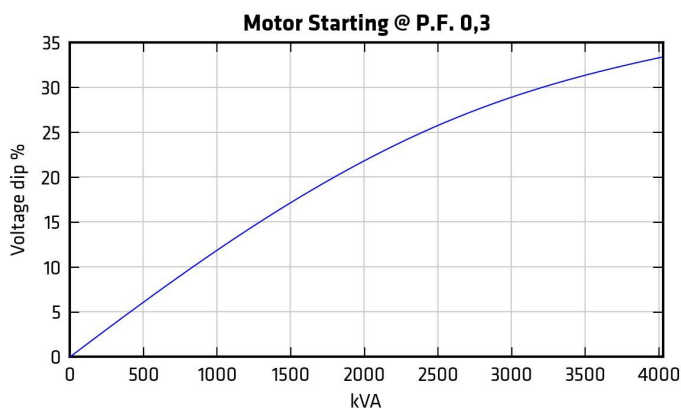
Continuous Nominal Rating 40°C (kVA)	1500
Unbalanced load acceptance ratio (%)	100

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

Length (mm) * Width (mm) * Height (mm)	5090* 2122 * 2481
Dry weight (kg)	10100
Tank capacity (L)	465



\* Sounds level in dB(A) are given at 75% Prime Power

#### Contener dimensions ISO20 version

##### 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)	97
Measured acoustic power level (Lwa)	118
Acoustic pressure level @7m in dB(A)	88



\* Sounds level in dB(A) are given at 75% Prime Power

#### Contener dimensions ISO20 super soundproofed version

##### 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)	80
Measured acoustic power level (Lwa)	102,70
Acoustic pressure level @7m in dB(A)	72



\* Sounds level in dB(A) are given at 75% Prime Power

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**M80-D**

The M80-D can be used as a basic terminal block for connecting an electrical cabinet box 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.

**TELYS****ERGONOMIC AND USER FRIENDLY**

Large display screen,  
buttons and scroll wheel,

Electrical measurements: voltmeter, frequency meter, ampmeter, voltage.

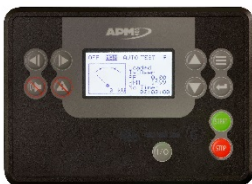
Engine parameters: working hours counter, oil pressure, coolant temperature, fuel level, engine speed, battery

Alarms and faults: oil pressure, coolant temperature, failure to start, overspeed, alternator min/max., battery voltage min. /max., emergency stop, fuel level.

Ergonomics: wheel for navigating around the various menus.

Communication: remote control and operation software,  
USB connections, PC connection.

For more information on the product and its options, please refer to the sales documentation.

**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 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

### 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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