Industrial Diesel Generator Set – J220
50 Hz

RATINGS 400 V - 50 Hz		
Standby	kVA	220
	kWe	176
Prime	kVA	200
	kWe	160

Benefits & features

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
- 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

Cooling
- A compact and complete solution using a mechanically driven radiator fan
- Designed or optimized by KOHLER
- 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
- Robust design optimized for transportation

GENERAL SPECIFICATIONS	
Engine brand	JOHN DEERE
Alternator commercial brand	KOHLER
Voltage (V)	400/230
Standard Control Panel	APM303
Optional control panel	APM403
Optional Control Panel	M80
Optional control panel	Terminal block
Consumption @ 100% load ESP (L/h) *	48
Consumption @ 100% load PRP (L/h) *	43
Emission level	Fuel consumption optimization
Type of Cooling	Radiator
Performance class	G2

GENERATOR SETS RATINGS

				Standby Rating			Prime Rating	
	Voltage	PH	Hz	kWe	kVA	Amps	kWe	kVA
J220	415/240	3	50	176	220	306	160	200
	400/230	3	50	176	220	318	160	200
	380/220	3	50	176	220	334	160	200
	240 TRI	3	50	176	220	529	160	200
	230 TRI	3	50	176	220	552	160	200
	220 TRI	3	50	176	220	577	160	200

DIMENSIONS COMPACT VERSION	
Length (mm)	2497
Width (mm)	1103
Height (mm)	1592
Tank capacity (L)	334
Dry weight (kg)	1825

DIMENSIONS SOUNDPROOFED VERSION	
Type soundproofing	NOT AVAILABLE
Length (mm)	3590
Width (mm)	1200
Height (mm)	1775
Tank capacity (L)	334
Dry weight (kg)	2405
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	79
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	68

* 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.
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.

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Engine

General	
Engine brand	JOHN DEERE
Engine ref.	6068HFG20-202 *
Air inlet system	Turbo
Fuel	Diesel Fuel/HVO
Emission level	Fuel consumption optimization
Cylinder configuration	L
Number of cylinders	6
Displacement (l)	6,72
Bore (mm) * Stroke (mm)	106 * 127
Compression ratio	17 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	202
Charge Air coolant	Air/Air
Injection Type	Direct
Governor type	Mechanical
Air cleaner type, models	Dry

Fuel system	
Maximum fuel pump flow (l/h)	108
Max head on fuel return line (m fuel)	1,20
Consumption with cooling system	
Fuel consumption @ ESP Max Power (l/h)	49,30
Fuel consumption @ PRP Max Power (l/h)	44,70
Fuel consumption @ 75% of PRP Power (l/h)	35,20
Fuel consumption @ 50% of PRP Power (l/h)	23,10

Emissions	
Emission PM 50Hz (g/kW.h)	0,4070
Emission CO 50Hz (g/kW.h)	1,80
Emission NOx 50Hz (g/kW.h)	6,10
Emission HC 50Hz (g/kW.h)	0,10

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

Lubrication System	
Oil system capacity including filters (l)	32
Min. oil pressure (bar)	1
Max. oil pressure (bar)	
Oil sump capacity (l)	31,50
Oil consumption 100% ESP 50Hz (l/h)	0,1240

Air Intake system	
Max. intake restriction (mm H2O)	625
Combustion air flow (l/s)	232

Exhaust system

	PRP	ESP
Exhaust gas flow (L/s)	533	587
Exhaust gas temperature @ ESP (°C)	519	
Heat rejection to exhaust (kW)	152	
Max. exhaust back pressure (mm H2O)	750	

Cooling system	
Radiator & Engine capacity (l)	26,30
Fan power 50Hz (kW)	3,40
Fan air flow w/o restriction (m3/s)	4,10
Available restriction on air flow (mm H2O)	20
Type of coolant	Glycol-Ethylene
Radiated heat to ambiant (kW)	20
Heat rejection to coolant HT (kW)	65
HT circuit flow rate (l/min)	144
Coolant capacity HT, engine only (l)	11,30
Max coolant temperature, Shutdown (°C)	105
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	94

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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Alternator Specifications	
Alternator commercial brand	KOHLER
Kohler Alternator description	KH01221T
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 2.7 In for 5 s	Yes
Application data	
Overspeed (rpm)	2250
Power factor (Cos Phi)	0,80
Voltage regulation at established rating (+/- %)	0,50
Wave form : NEMA=TIF	<50
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	<2.5
Total Harmonic Distortion, on linear load DHT (%)	<5
Recovery time (Delta U = 20% transcient) (ms)	500
Performance datas	
Continuous Nominal Rating 40°C (kVA)	230
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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Dimensions compact version

Length (mm) * Width (mm) * Height (mm)	2497 * 1103 * 1592
Dry weight (kg)	1825
Tank capacity (L)	334

M139 - Dimensions soundproofed version

Length (mm) * Width (mm) * Height (mm)	3590 * 1200 * 1775
Dry weight (kg)	2405
Tank capacity (L)	334
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	79
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	96
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	68

Dimensions DW compact version

Length (mm) * Width (mm) * Height (mm)	3560 * 1200 * 1889
Dry weight (kg)	2348
Tank capacity (L)	868

M139 - Dimensions DW soundproofed version

Length (mm) * Width (mm) * Height (mm)	3590 * 1200 * 2072
Dry weight (kg)	2930
Tank capacity (L)	868
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	79
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	96
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	68

M139 - Dimensions DW 48h soundproofed version

Length (mm) * Width (mm) * Height (mm)	3590 * 1200 * 2242
Dry weight (kg)	3100
Tank capacity (L)	1790
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	79
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	96
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	68

* dimensions and weight without options

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.
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.

Basic terminal block

It is used as a basic terminal block for connecting a control unit. Offers the following functions:

- emergency stop button
- customer connection terminal block
- CE certified

M80

The M80 is a dual-function control panel. It can be used as a basic terminal block for connecting a control unit and as an instrument panel with a direct read facility, with displays giving a global view of your generating set's basic parameters. Offers the following functions:

- Engine parameters: tachometer, working hours counter, coolant temperature indicator, oil pressure indicator
- emergency stop button
- customer connection terminal block
- CE certified

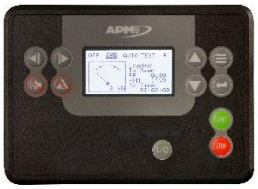
APM303

The APM303 is a versatile unit which can be operated in manual or automatic mode. It offers the following features:

- Measurements: phase-to-neutral and phase-to-phase voltages, fuel level (In option : active power currents, effective power, power factors, Kw/h energy meter, oil pressure and coolant temperature levels)
- Supervision: Modbus RTU communication on RS485
- Reports: (In option : 2 configurable reports)
- Safety features: Overspeed, oil pressure, coolant temperatures, minimum and maximum voltage, minimum and maximum frequency (Maximum active power P<66kVA)
- Traceability: Stack of 12 stored events

For further information, please refer to the data sheet for the APM303

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

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

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 <70%.

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 <70%.

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.