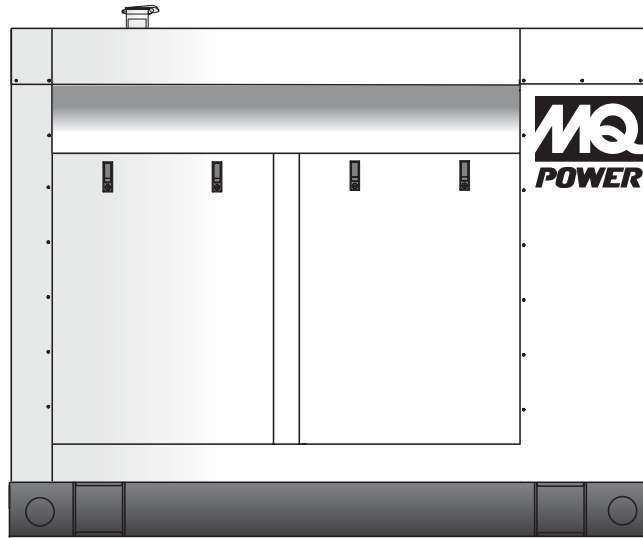




# 20kW Diesel On-Site Power Industrial Generator

Model	Emissions	Standby Rating	Prime Rating
MQP20IZ	EPA Certified	60 Hertz	
		20 kW (25 kVA)	18 kW (22.5 kVA)



## Standard Features

### Heavy Duty Engine

- Heavy duty, 4-cycle, diesel engine; naturally aspirated, overhead valves, indirect injection, water cooled.
- Manual speed control governor.
- Meets EPA Tier 2 emissions standards.

### Alternator

- Brushless, 4-pole, synchronous, 12 lead design.
- Class H insulation system conforms to NEMA MG1-22, BS5000, CSA-C22-2, IEC-34-1 standards for temperature rise.
- Sustained short-circuit capability allowing downstream coordination breakers to trip without collapsing the generator field.
- Drip-proof, self-venting, amortisseur windings.
- Epoxy impregnated windings with tropical insulation for increased environmental protection and long life.
- Exceptional waveshape and voltage balance; 2/3 pitch winding to minimize harmonic distortion.

### Electronic Voltage Regulator

- Encapsulated electronic voltage regulator precisely regulates the current into the exciter field.
- Voltage regulation of  $\pm 1.0\%$  no load to full load.

### Full Load Acceptance

- Accepts 100% of standby nameplate rating in one step, in compliance with NFPA, para 5-13.2.6.

### Cooling System

- Closed circuit, pressurized system with ambient temperature rating of 40°C (104°F).

### Generator Control Panel

- MEC 20™ microprocessor-based, digital control panel; vibration isolated and NFPA 110 compliant.
- Liquid crystal display screen with alphanumeric readout for display and programming.
- Self-diagnostic feature continuously verifies processing, memory circuits and input/output.

### Skid and Housing

- Generator available as skid-mount or sub-base tank mount design.
- Integral vibration isolators.
- Outdoor weather-protective or sound-attenuated housings.
- Steel battery rack and battery cables.

### Warranty

- Engine-generator sets are covered by an express written 2-year/2000 hour (whichever occurs first) limited warranty.
- Optional extended warranties available.

### Agency Approval

- UL 2200 certification.



# 20kW Diesel On-Site Power Industrial Generator

<b>Alternator Specifications</b>	<b>Standard 3-Phase Generator</b>	<b>Optional Full Output 1-Phase Generator</b>
Manufacturer/Model	Marathon MagnaPlus 282PSL1705	Marathon MagnaPlus 282PSL1716
Type	4-Pole, Rotating Field	4-Pole, Rotating Field
Exciter Type	Brushless, Shunt Excitation Design	Brushless, Shunt Excitation Design
Number of Leads	12 Lead, Broad Range, Reconnectable	4 Lead, Broad Range, Reconnectable
Voltage Regulator	SE350, Solid State, Volts-per-Hertz	SE350, Solid State, Volts-per-Hertz
Insulation	NEMA MG1-1.66	NEMA MG1-1.66
Material	Class H	Class H
Temperature Rise	125°C, Standby Rating	125°C, Standby Rating
Bearing, Type	Single, Sealed	Single, Sealed
Coupling	Flexible Disk Type	Flexible Disk Type
Cooling Air Volume	250 cfm	250 cfm
Amortisseur Windings	Full	Full
Voltage Regulation (no load to full load)	±1%	±1%
Single Step Load Acceptance per NFPA 110	100% of Rating	100% of Rating

## Engine Specifications

Manufacturer/Model	Isuzu / 4LE1PV02
Type	4-cycle, indirect injection, naturally aspirated, water cooled
Cylinder Arrangement	4 In-Line
Displacement	134 in <sup>3</sup> (2.2 liter)
Bore	3.35 in. (85 mm)
Stroke	3.78 in. (96 mm)
Compression Ratio	21.5 : 1
Cylinder Block	Cast iron
Cylinder Head	Cast iron, overhead valves
Crankshaft	Ductile cast iron
Brake Mean Effective Pressure (BMEP)	113.3 psi (781.2 kPa)
Rated RPM	1800 RPM
Max. Power @ Rated RPM (with fan)	34.5 hp (25.7 kW)
Governor Type	Mechanical
Frequency Regulation: no load to full load	Isochronous under varying loads from no load to 100% rated load.
Frequency Regulation: Steady State	±0.25% of mean value for constant loads from no load to full load.
Air Cleaner Type	Dry

## Rating Guidelines

**STANDBY POWER:** Rating corresponds to ISO Standard Fuel Stop Power. It is applicable for supplying standby electrical power at variable load in areas with well established electrical networks in the event of normal utility power failure. No overload capability is available for this rating.

**PRIME POWER:** Rating corresponds to ISO Standard Power for continuous operation. It is applicable for supplying electrical power at variable load for an unlimited number of hours instead of commercially purchased power. A 10% overload capability is available for this rating.

**SINGLE PHASE OUTPUT:** Broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 P.F. Refer to Amperage chart.

## Amperage

Voltage	Phase	Wire	Amperage
120/208 Volt	3	4	69
120/240 Volt	3	4	60
277/480 Volt	3	4	30
120/240 Volt	1	3	63
120/240 Volt Full Output	1	3	83

## Fuel System

Fuel Injection Pump Make	Bosch/Zexel
Recommended Fuel	ASTM-D975/No.2 Diesel
Feed Pump Maximum Suction Head	1.64 feet (0.5 meter)
Fuel Filter	Replaceable, spin-on
Maximum Fuel Flow	6.24 Gal/hr (24 L/hr)
<b>Fuel Consumption</b>	
Diesel Fuel At % of Load	gal/hr (L/hr)
100%	2.1 (7.9)
75%	1.5 (5.7)
50%	1.1 (4.1)
25%	0.8 (3.0)

## Engine Electrical System

Battery Charging Alternator - Make	Kokusan Denki
Ground Type	Negative
Volts (DC)	12VDC
Ampere Rating	20A
Starter Motor Make/Model	Denso
Starter Motor Rated Voltage	12VDC
Starter Motor Battery Capacity	580 Ah



# 20kW Diesel On-Site Power Industrial Generator

## Lubrication System

Type	Gear Driven
System Capacity - Less Filter	1.5 gallons (5.6 liters)
System Capacity - With Filter	2.1 gallons (8.1 liters)
Oil Filter	Full flow disposable spin-on
Oil Pressure at Rated Speed	35 psi (241.3 kPa)
Maximum Oil Temperature	230°F (110°C)

## Cooling System

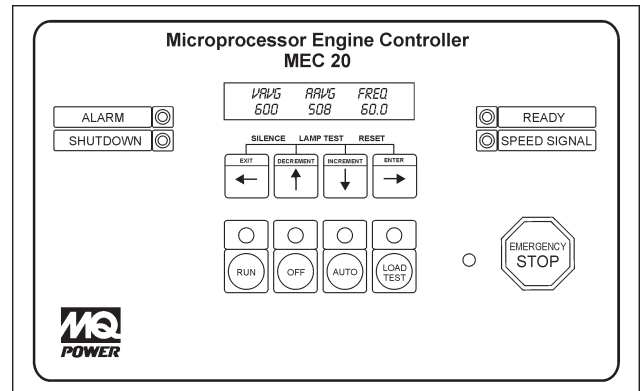
Exhaust Manifold Type	Dry
Radiator Design	Horizontal Discharge
Ambient Temperature Rating	104°F (40°C)
Coolant Capacity - Engine Only	0.7 gal (2.8 L)
Water Pump Design/Type	Belt driven, Centrifugal
Coolant Flow	54 gal/min (205L/min)
Radiator Cooling Air	3810 cfm (108m³/min)
Heat Rejection From Engine	222.0 Btu/min (3.9 kW)
Heat Rejection To Coolant	1309.2 Btu/min (23 kW)
Fan Diameter	15.0 in. (380 mm)
Fan Horsepower	0.8 hp (0.6 kW)
High Water Temperature Indication	221.0 °F (105 °C)
Pressure Cap Setting	14 psi (97 kPa)

## Exhaust System

Exhaust Flow at Rated kW	162.4 cfm (4.6 m³/min)
Exhaust Temperature at Rated kW	1000.4° F (538° C)
Maximum Allowable Backpressure	40.9 in/H <sub>2</sub> O (10.2 kPa)
Heat Rejection To Exhaust	1081.4 Btu/min (19 kW)

## Derating Factors

Derating Factors	Altitude	Ambient Temperature
The engine may be operated up to 500 ft. and up to 25°C without derating. For operation at higher altitudes and ambient temperatures, the power should be derated according to the following factors:	3% / 1000 ft.	0.4% / °C



## GENERATOR CONTROLLER

- MEC 20™ microprocessor-based digital generator controller.
- 12 or 24 Volt DC compatible.
- Meets all NFPA 110 requirements for emergency power systems Level I installations.
- Backlit LCD display screen with alphanumeric readout.
- Front panel keypad provides password protected programming.
- Self diagnostic features continuously verify processing, input/output and memory circuits.
- Metering accurate to  $\pm 1\%$  within temperature range of 0°C to +50°C.
- EMI/RFI noise immunity and surge performance per IEEE C62.41.
- Certified to UL508 and CSA 22.2 #14 Industrial Control Equipment Standards.

## Standard Controller Features

### AC Metering Display:

- Voltage/Amperage/ Frequency
- Generator Phase Voltage / Current
- Generator Frequency

### Engine Information Display:

- Engine Temperature / Oil Pressure (psi)
- Battery Voltage (DC) / Tachometer
- Hourmeter

### Minor Fault Warning Display:

- Switch Not In Auto
- Low Fuel Level
- Low Oil Pressure Alarm
- Low Engine Temperature
- High Engine Temperature Alarm
- Low Battery Voltage
- High Battery Voltage
- Weak Battery Condition
- Battery Charger Input Fail
- Undervoltage
- Over / Underfrequency
- Overcurrent

### Major Fault Shutdown Display:

- Overvoltage
- Emergency Stop
- Loss Of Speed
- Overcrank
- Overspeed
- Low Oil Pressure
- High Engine Temperature
- Low Coolant Level
- Spare Programmable Digital Faults

### Switches And Operating Controls:

- Run / Off / Auto / Load Test Buttons
- Decrement / Increment / Previous (Exit) /Next (Enter) Program Buttons
- Emergency Stop Button
- Audible Alarm Horn – 80 dB(A) at 2 ft.
- Alarm Horn Silence Button
- Lamp Test Button
- Fault Reset Function
- RJ45 Remote Communications, External Expansion Module Ports

### Timer Countdown Display:

- Engine Start Delay
- Oil Bypass
- Overcrank
- Cycle Crank
- Starter Re-engage Delay
- Bypass Delay

### Control LED Indicators:

- Switch Position (Run,Off,Auto,Test)
- Common Alarm (Minor Fault)
- Common Shutdown (Major Fault)
- Generator Ready (When in Auto)
- Speed Signal
- Emergency Stop

### Diagnostic LED Indicators:

- Run Output Energized
- Crank Output Energized
- Remote Start Signal Initiated
- Common Fail Output Energized
- Watchdog - CPU Running
- Programmable Output Contacts



# 20kW Diesel On-Site Power Industrial Generator

## Generator Set Options

### Alternator

- Full output 1 Phase Alternator
- Generator Strip Heater
- Permanent Magnet Generator (PMG)

### Control Panel

- Remote Monitoring and Generator Network Communications Link
- Voltage Adjusting Rheostat
- Frequency Adjusting Potentiometer (Requires Electronic Governor Option)

### Engine

- Electronic Governor
- Engine Crankcase Ventilation Filter

### Enclosed Unit

- Outdoor Weather-protective Housing
- Outdoor Sound-Attenuated Housing
- Critical Grade Exhaust Silencer
- Exhaust Mounting Package
- Rain Cap

### Open Unit

- Critical Exhaust Silencer
- Exhaust Mounting Package

### Electrical System

- Battery
- Environmental Plastic Battery Box with Lid
- Battery Charger, Equalize/Float Type 3.5 Amperes / 20 VAC
- Battery Charger w/Alarms, Equalize/Float Type, 10 Amperes / 20 VAC

### Fuel System

- Sub-base Fuel Tank (12-hr / 45 gal), Double Wall, UL142
- Sub-base Fuel Tank (24-hr / 84 gal), Double Wall, UL142

### Cooling System

- Coolant Heater
- Low Coolant Shutdown Safety
- Radiator Duct Flange

### Automatic Transfer Switch

- Amperage \_\_\_\_\_
- No. Poles \_\_\_\_\_
- Type Enclosure \_\_\_\_\_
- Options \_\_\_\_\_

### Miscellaneous

- Main Line Circuit Breaker
  - 120/208 Volt, 3 Phase, 3 Pole
  - 120/240 Volt, 3 Phase, Delta, 3 Pole
  - 139/240 Volt, 3 Phase, 3 Pole
  - 277/480 Volt, 3 Phase, 3 Pole
  - 120/240 Volt, 1 Phase, 2 Pole
- Main Line Circuit Breaker Options
  - Auxiliary Contacts
  - DC Shunt Trip
- Remote Annunciator Panel
- Remote Emergency Stop Kit
- Vibration Isolators, Spring Type

## Weights and Dimensions

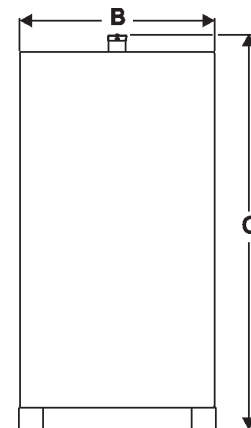
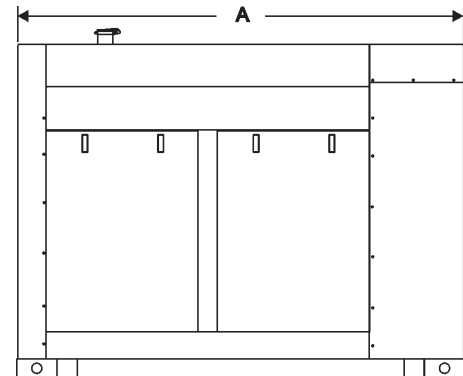
Housing Options	A	B	C		
			Skid-mount	12hr fuel tank*	24hr fuel tank*
Open Genset	84 in. (2,133 mm)	34 in. (863 mm)	48 in. (1,219 mm)	55 in. (1,397 mm)	61 in. (1,549 mm)
	Weight		1,076 lbs (488 kg)	1,535 lbs (696 kg)	1,640 lbs (744 kg)
Standard	84 in. (2,133 mm)	34 in. (863 mm)	66 in. (1,676 mm)	72 in. (1,829 mm)	81 in. (2,057 mm)
	Weight		1,503 lbs (682 kg)	1,962 lbs (890 kg)	2,067 lbs (937 kg)
Sound Attenuated	84 in. (2,133 mm)	34 in. (863 mm)	66 in. (1,676 mm)	72 in. (1,829 mm)	81 in. (2,057 mm)
	Weight		1,556 lbs (706 kg)	2,015 lbs (913 kg)	2,120 lbs (962 kg)

\* Optional

NOTE: Weights are approximate based on dry gensets with standard equipment. The total weight may vary according to fluid additions and/or optional equipment ordered with the unit.

Backfeed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device. Specifications are subject to change without notice.

Your MQ Power dealer is:



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