

APS230G

ALTORFER
Power Systems



| Frequency (Hz) | Voltage (V) | LP kW (kVA) Prime | NG kW (kVA) Prime |
|----------------|-------------|-------------------|-------------------|
| 60 | 600/347 | 118 (147) | 180 (225) |
| 60 | 480/277 | 118 (147) | 180 (225) |
| 60 | 240/139 | 118 (147) | 180 (225) |
| 60 | 208/120 | 118 (147) | 173 (216) |

MOBILE GAS PACKAGE FEATURES

❖ FUEL/EMISSIONS STRATEGY

- Factory EPA certified Non-Road Mobile & Stationary NSPS SI emissions (CARB compliant)
- Capable of running on field or pipeline natural gas and liquid propane gas
- Automatic switch over between liquid propane and natural gas
- Air-fuel-ratio-control and three way catalyst
- 800-1400 BTU fuel flexibility

❖ PSI® HD 11.1L TA GAS ENGINE

- Based upon a marine diesel block to provide prolonged life for lower owning and operating costs
- ECU that integrates and coordinates all critical functions including Electronic Governor, Variable Ignition Timing, Air Fuel Ratio Control, Knock Suppression and Engine Protection
- Spark ignited 6-cylinder inline configuration, turbocharged and after-cooled engine features replaceable dry liners and water-cooled exhaust
- 123mm bore x 155mm stroke
- Engine mounted closed crankcase ventilation
- Engine mounted 45A 24VDC charging alternator
- Heavy-duty single element air cleaner
- Oil sampling valve
- 24VDC electric starting motor
- Dual 12V 1400 CCA maintenance free batteries
- 673 cubic inch displacement
- 10.5:1 compression ratio
- Heavy-duty engine mounted ATAAC cooling system
- Cooling system provides 50°C (122°F) ambient capability
- Blower fan, fan drive, fan guard and belt guards
- Coolant sight gauge and low level switch shutdown
- 50/50 coolant (NGEC)
- 240VAC coolant heater with circulating pump and thermostat

❖ LEROY SOMER GENERATOR

- LSA 46.2 L9 frame generator designed to match the output characteristics of the PSI® gas engine
- 4 pole, permanent magnet excited, random wound
- Factory supplied coastal protection

- 120V anti-condensation heaters
- Class H insulation
- 2/3 pitch windings
- 12 wire wye connection
- IP 23 drip proof enclosure
- Single bearing, close coupled
- Pilot shaft alignment
- 0.8 power factor and continuous duty cycle
- ±0.5% voltage regulation
- <5% total harmonic distortion
- <50 telephone influence factor
- 125° C temperature rise

❖ INTEGRATED VOLTAGE REGULATOR (IVR)

- Three-phase or single-phase generator voltage (RMS) sensing with adjustable volts-per-hertz regulation
- Provides precise control, excellent block loading, and constant voltage in the normal operating range

❖ ENCLOSURE/BASE

- Highly corrosion resistant sheet steel construction
- Two coat polyester powder-coated finish
- Four access doors for ease of maintenance
- Sound attenuated to meet 75 db(A) at 7meters (23 feet) per SAE J1704
- Secure and safe design with lockable doors
- Four point lift skid base frame with fork pockets
- Spill containment for 100% of engine fluids with external drains
- Generator set soft mounted base frame

❖ CUSTOMER ACCESS

- Separate control, load connection, circuit breaker/voltage change over, and package power distribution with gas shock assist lockable doors
- Magnetic lock and safety switch on load connection and circuit breaker/voltage change over access doors
- External emergency stop
- (1) 5 lb. fire extinguisher
- Safety glass control panel viewing window
- Exterior mounted control and load connections
- Exterior 2" NPT natural gas and ¾" NPT liquid propane fuel connections

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- Exterior coolant and oil drains with internal shut off valves
- QuickFit™ engine oil drain and fill connection mounted on engine rail system, reducing downtime and labor costs during scheduled maintenance
- MasterTrak™ telematics system for remote monitoring (cellular with satellite backup) 1-year service included

❖ EXHAUST SYSTEM

- Vertical exhaust discharge plenum
- Stainless steel exhaust piping
- Industrial grade stainless steel exhaust silencer with spark arrester mounted in discharge plenum
- Thermal blankets on engine compartment piping
- 90° exhaust elbow with rain cap

❖ CATERPILLAR EMCP 4.4 CONTROL PANEL

- Simple user friendly interface and navigation
- Automatic set-point adjustment integrated with voltage changes
- Package mounted EMCP 4.4 provides power metering, protective relaying, engine, and generator control and monitoring
- NEMA 12, IP 44 dust proof enclosure
- Convenient service access for Cat service tools (tooling not included)
- Integration with the IVR provides enhanced ability to view and reset diagnostics of all controls networked on primary CAN data link (Cat EMCP and IVR only, engine ECM requires additional tooling)
- Real-time clock allows for date and timestamping of diagnostics and events
- Controls:
 - Run/Auto/Stop
 - Emergency stop
 - Speed adjust
 - Cycle crank
 - Voltage adjust
 - Cool-down timer
- Engine Monitoring:
 - RPM
 - DC volts
 - Operating hours
 - Oil pressure
 - Coolant temperature
 - Oil temperature
- True RMS generator monitoring
 - L-L volts, L-N volts, phase amps
 - Average volts, amps, frequency
 - ekW, kVA, kVAR, kW-hr, %kW
 - Power factor (average, phase)
 - kW-hr, kVA-hr (total)
- Shutdowns with common indicating light for:

- Low engine oil pressure
- Engine over speed
- High coolant temperature
- High oil temperature
- Emergency stop
- Low coolant level
- Failure to start (over crank)
- Display navigation keys including two shortcut keys for Engine parameters or Generator parameters
- Fuel source indicator lamp
- Generator protective features:
 - Phase over/under voltage (Device 27/59)
 - Over/under frequency (Device 81 O/U)
 - Reverse power (Device 32/32RV)
 - Current balance (Device 46)
 - Overcurrent (Device 50/51) (GCB trip unit)
 - Loss of excitation (Device 40) (Cat IVR)
 - Generator phase sequence

❖ LOAD CONNECTION PANEL

- 600/347V 3 phase
- 480/277V 3 phase
- 240/139V 3 phase
- 208/120V 3 phase
- Ethernet paralleling connections with 10 amp “best battery source” for customer supplied Ethernet switch
- Single point shore power connection 240V 40A
- NEMA main bus bar connections
- Remote start/stop connections
- Single point customer grounding connection
- (2) 120V, 15A duplex customer convenience GFI receptacles protected by miniature circuit breaker

❖ BREAKER/VOLTAGE SELECTION PANEL

- Electrically operated 600 amp 100% rated LSI fixed type 3-pole main circuit breaker
- 100KA interrupting capacity at 480VAC
- DC under-voltage trip coil on any monitored engine or electrical fault
- Excitation disable switch on access door
- 208/240/480/600 manual voltage change over board
- Auto-configuration metering based upon voltage selection

❖ PACKAGE DISTRIBUTION

- 120V 10A UL listed battery charger
- Solar battery maintainer
- Branch breakers for all AC electrical circuits
- Integrated voltage regulator
- DC connections and controls

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❖ FUEL SYSTEM

- Gas pressure regulator –10 psi (69 kPa) natural gas
- Liquid propane maximum pressure 150 psi (1034 kPa)
- Engine mounted electronic pressure regulator
- Low pressure fuel system
- Auto-change over with pressure control switch
- Lockable manual isolation valves
- 25 psi relief valve
- Methane detector with shutdown
- Engine mounted liquid propane vaporizer and regulator
- **PIPELINE CONFIGURED PACKAGE ARRANGEMENT**
1-micron natural gas particulate filter
Oil recovery system (optional)
- **OIL FIELD CONFIGURED PACKAGE ARRANGEMENT**
PecoFacet® model 89 coalescing filter
DynaCeptor™ model NNGC PEACH® saturated depth coalescer 0.3 micron filter
Auto drain system with by-pass and isolation valves
Sight glass with isolation valves
High liquid level alarm switch
Differential pressure gauge
¾" external drain connection
Oil recovery system (standard)

❖ OIL RECOVERY SYSTEM

- 5 gallon capacity tank with isolation valves
- Sight glass
- Vented lockable cap
- FW Murphy oil level regulator
- Low level alarm

❖ TRAILER

- Tandem axle trailer with electric brakes
- DOT compliant LED lights and sealed harness
- 3" adjustable pintle hitch
- Drop leg jack
- D-ring tie downs
- Skid resistant steps and fenders
- 7 pin DOT RV plug
- 3/8" heavy duty safety chains with hooks
- Safety breakaway switch

❖ SINGLE-SOURCE SUPPLIER

- Altorfer Power Systems designed and tested
- For warranty, product support and package documentation visit:
<http://www.althorfer.com/power/APS.shtml>
- Contact us for sizing and application needs for non-standard pipeline quality fuel

WEIGHTS AND DIMENSIONS

| Model | Length mm (in) | Width mm (in) | Height mm (in) | Weight with lube oil and coolant kg (lb.) |
|------------------------|-------------------|------------------|-------------------|---|
| APS290G w/o trailer | 4877 (184) | 1727 (68) | 2442 (96) | 4173 (9200) |
| APS290G w/ trailer | 6566 (259) | 2400 (95) | 2896 (114) | 4990 (11000) |

PACKAGE RATING GUIDELINES

Emergency Standby Power Rating:

Applicable for supplying emergency power for the duration of utility power outage. There is no overload capability for the emergency standby rating. Any use of the generator above the emergency standby rating is prohibited. Any unit operating in parallel with a public utility is not considered emergency standby. Emergency standby engine is applicable to a variable load with a maximum average load factor of 82% and 200 hours of operation per year. Emergency standby rating should only be applied in emergency power outages.

Prime Power rating:

Applicable for supplying electrical power in lieu of commercially purchased power or providing guaranteed standby power. The prime power rating is applicable for variable loads with limited number of operating hours per year. The average power output shall not exceed 75% of the prime power rating. The total time at 100% Prime power shall not exceed 500 hours per year. A 110% overload rating is available one hour in every twelve hours with the total hours at 110% not to exceed 25 hours per year. Maximum number of hours per year is 2500.

Continuous Power Rating:

The continuous power rating is applicable for variable loads with unlimited number of operating hours per year. The power output shall not exceed 75% of the prime power rating. There is no overload capability.

