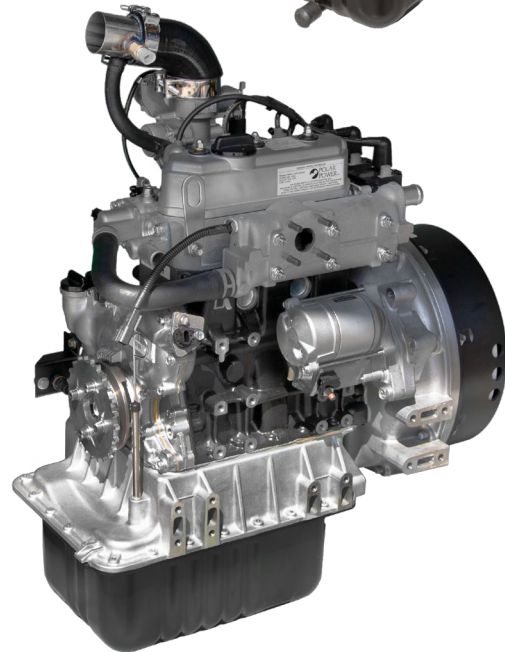
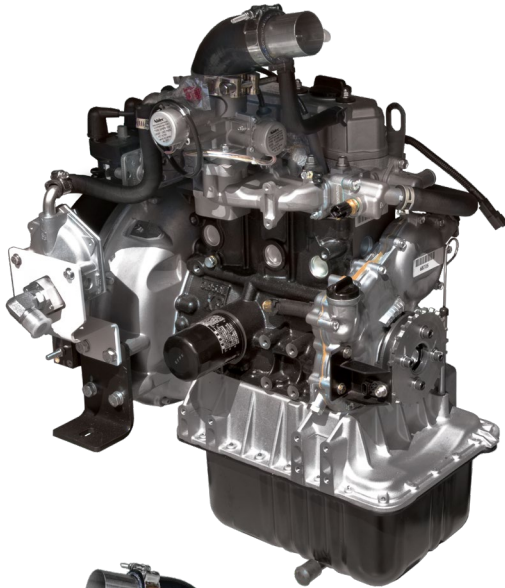


Polar's Ideal LPG & Natural Gas Generator - Telecom



6 KW – 15 KW CONTINUOUS OUTPUT



Polar has combined a Toyota engine specifically designed to run 24/7 for natural gas engine driven air-conditioning applications with a Bosh engine control unit and Polar 8000 series alternator and system controls. This resulting package provides:

ENGINE HIGHER FUEL ECONOMY IN A LEAN BURN CONFIGURATION

- Closed loop combustion control with electronic carburetor controlling air / fuel mixture and speed control.
- Increased compression ratio for the highest fuel efficiency.
- To further increase fuel efficiency we removed the engine's parasitic loads – water pump, engine fan, starting battery alternator, belts and pulleys.

ENGINE LOWER MAINTENANCE AND INCREASE RELIABILITY

- Replace belt driven water pump and radiator cooling fan with energy efficient electric fan and coolant pump. Coolant pump is without seals and driven with brushless dc motor for long life and ease of replacement.
- 15-liter oil sump capacity for oil maintenance intervals of 3000 hours and longer
- Increase engine maintenance intervals up to 1 year over 2 to 4 weeks for traditional LPG engines
- Cast iron engine block with 4 crankshaft bearings (between each cylinder)
- Stellite valves to meet the higher combustion temperatures of LPG and Natural

PROPRIETARY LONG LIFE 8000 SERIES ALTERNATOR, MORE THAN 100,000 HOUR LIFE

- No bearings
- No Brushes, slip rings, excitors

POLAR ALL ALUMINUM CORROSION RESISTANT ENCLOSURE

- for rugged outdoor use outlasting steel enclosures by decades.

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LOW CO2 EMISSIONS LONGER LIFE DC GENERATOR



Comparison	Diesel	LPG
ENVIRONMENTAL	<ul style="list-style-type: none"> • Rapidly changing emission standards reduce engine availability to OEM's and increases engine cost. • Strict emission controls is increasing Diesel engine complexity thereby reducing reliability and making maintenance more difficult. • Diesel contaminates soil when spilled • Diesel exhaust smell • Higher CO2 Emissions 	<ul style="list-style-type: none"> ✓ Environmentally Clean Fuel, rarely effected by change in environmental regulations. ✓ Clean exhaust ideal for use near population centers. ✓ Reduction in greenhouse gases and Carbon Credits ✓ 14% Lower CO2 Emissions compared to Diesel.
STORAGE, SHELF LIFE TRANSPORTATON	<ul style="list-style-type: none"> • Diesel fuel has limited storage life and sometimes requires additives. Transportation of Diesel to the site exposes the fuel to water contamination which can damage the engine. • Diesel engines require clean and moisture free fuel to operate reliably. 	<ul style="list-style-type: none"> ✓ Clean fuel LPG eliminates fuel maintenance and has unlimited shelf life which clean fuel provides greater engine reliability. ✓ During emergencies LPG may be more Obtainable. ✓ Using Vapor feed contaminants remain in the tank.
ENGINE NOISE	<ul style="list-style-type: none"> • Due to compression ignition, Diesel engines produce much higher noise (knock) thereby requiring a noise attenuation system. Noise is a concern when systems are installed close to population centers. 	<ul style="list-style-type: none"> ✓ Low operating noise of LPG engine allows for deployment of engines in close proximity to population centers and indoor facilities.
FUEL THEFT	<ul style="list-style-type: none"> • Diesel theft is a key factor increasing operating costs by 10% to 25%. In addition, the practice of diluting diesel fuel as a means of pilferage leads to premature engine failure. 	<ul style="list-style-type: none"> ✓ LPG is more difficult to steal; making it the ideal fuel for telecom applications.
LIFE CYCLE COSTING	<ul style="list-style-type: none"> • Diesel engines are subject to damage (wet stacking) if run with light loads. • Quality Diesel engines will have a service life of 14,000 to 30,000 hours. 	<ul style="list-style-type: none"> ✓ The service life of a "quality" LPG engine is 30,000 to 90,000 hours. ✓ Due to environmental benefits most nations provide subsidies to use of LPG thereby reducing operating costs.

Note: In many areas the LPG is lower cost than Diesel. The combined cost of Diesel theft and higher maintenance costs, makes LPG the most cost effective Solution.