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INFORMATION OUTLINE DGPS MODEL 50 AND MODEL 70 GENSETS

The engine-driven DGPS Model 50 and Model 70 Cogeneration Systems can effectively reduce power bills by co-generating combined heat and power (CHP) on site. Heat is captured from the hot water produced by the engine. The combination of electrical and thermal savings can amount to 20-40% of the power bill. Net metering, where permitted, can further increase savings. Multiple gensets, if called for by the buildings' load profile, can be installed in parallel and brought on line as needed and can be operated in either a base loading or peak shaving mode.

DGPS incorporates proven engine and fuel technologies in its reliable, maintenance-friendly 5.7 liter and 7.4 liter naturally-aspirated, reciprocating engines utilizing General Motors 350 and 454 cubic inch blocks. These engines are powered by clean burning natural gas and turn Lincoln induction motors to create all or a portion of the facility's electricity on site. The utility's power grid is there to provide the rest. Optional sound attenuating insulation can reduce sound levels to 72 decibels at a distance of 20 feet.

These high compression, high performance engine systems are built by DGPS to deliver peak fuel efficiency, enhanced thermal output and long life through proprietary components including low-lift cam shafts and air-gap intake manifolds as well as specially modified heads and pistons. The solid state, crank fire ignition system eliminates distributors and their associated maintenance.

A base level of 300,000 BTU's (50 kW) and 450,000 BTU's (70 kW) per hour of heat can be captured from a combination of the engine's wet manifolds and exhaust heat exchangers. Recovered heat can be used to drive building heating and cooling systems. Combined heat and power cogeneration dramatically increases return on investment and shortens payback periods.

Emissions from this equipment can meet stringent state and local requirements through the use of catalytic converters, if necessary.

The DGPS modular controls are intelligent, configurable and enable scalable solutions. The system monitors and controls all genset operations through proprietary protocols that are

capable of running in a load following and/or constant output mode. Programmable options include setting up to two operating time windows daily when power and thermal efficiencies are optimized. The system will handle from one to four gensets simultaneously.

The control system can be programmed and monitored – or alarms received – at the genset, via wired on-site remote panels or remotely over either dial-up or Ethernet connections. Critical functions that are monitored include over/under voltage, over/under current, reverse current, over/under frequency, over revolution protection, low oil pressure, engine temperature and oxygen levels in the exhaust as well as intake and outlet water temperatures and flows for heat rate calculations. The two-step threshold alarm system responds to adverse readings by sending an alarm above the low threshold and under the high threshold, then shutting down the machine when above the high threshold.

The DGPS Model 50 and Model 70 gensets are the perfect solution for projects under one-half megawatt. Ideal applications include apartment buildings and hotels, nursing and retirement homes, restaurants, schools and YMCA's and other commercial, institutional, small industrial and military applications.

DGPS gensets can be an essential element of green buildings and contribute points toward LEED certification. Many states offer cash incentives to encourage the installation of cogeneration systems, and many gas companies offer discounted natural gas to power cogeneration equipment.

Actual system specifications follow on the next page.

	MODEL 50 (50 kW)	MODEL 70 (70 kW)
Engine	Specifications	Specifications
Engine Block	GM 350 cu. in.	GM 454 cu. in.
Number of Cylinders	V8	V8
Displacement	5.7 Liters	7.4 Liters
Bore	101.6 mm (4.00 in.)	106.3 mm (4.25 in.)
Stroke	88.4 mm (3.48 in.)	101.6 mm (4.00 in.)
Compression Ratio	15:1	12:1
Intake	Air-Naturally Aspirated	Air-Naturally Aspirated
Fuel	Natural Gas	Natural Gas
Heat Rate (Without Emissions)	12,000 BTUs per kWh	12,000 BTUs per kWh
Fuel Consumption	600 cfh	840 cfh
Exhaust Temperature	1265 degrees Fahrenheit	1265 degrees Fahrenheit
Exhaust Flow	465 cfm	532 cfm
Brake Horsepower	75 bhp	105 bhp
Heat Recovery (Manifolds and Exhaust)	300,000 BTUs	450,000 BTUs
Piston Type	Aluminum Alloy	Aluminum Alloy
Generator		
Prime/Continuous Rating (kW / Amperes)	@1800rpm, 60Hz Natural Gas Rated at: 120/208V, 3-phase 0.8 pf 50 kW, 173 amp 240/416V, 3-phase 0.8 pf 50 kW, 87 amp 277/480V, 3-phase 0.8 pf 50 kW, 75 amp	@1800rpm, 60Hz Natural Gas Rated at: 120/208V, 3-phase 0.8 pf 70 kW 242 amp 240/416V, 3-phase 0.8pf 70 kW 121 amp 277/480V, 3-phase 0.8pf 70 kW 105 amp
Generator Type	Reactive Controlled	Reactive Controlled
Ability to Parallel with Utility	Yes	Yes
Switch Gear Required	No	No
Excitation	Brushless	Brushless
Controls		
Programmable Peak Shaving	Yes	Yes
Remote Software Control	Optional	Optional
Attenuation for Sound	Optional	Optional
Electronic Governor	Microprocessor Controlled	Microprocessor Controlled
Alarm Paging	Yes	Yes
Critical Functions Protection	Yes	Yes
Parallel Multiple Generators	Yes-Up to 4 Units	Yes-Up to 4 Units
Load Following	Yes	Yes
Ignition	Solid State	Solid State

Emissions: DGPS generator systems – particularly the 50 kW model – are exempt in many areas from emissions control. Where required by state or local standards an emissions control system and a catalytic converter are added to decrease NOx emissions to .15 grams per Brake Horsepower Hour (5 ppm). Emissions equipment will cause a 6 – 10% decrease in the stated fuel efficiency numbers depending upon requirements.