



STANDARD EQUIPMENT

- **Biogas Engine and Synchronous Generator** connected with flexible coupling
- **Digital Electronic Ignition**
- **Heat Exchangers** for jacket water and exhaust piped and insulated at the factory
- **Electric Circulation Pump** for jacket water, with electric temperature control valve
- **Electric Circulation Pump** for Inter cooler water
- **Secondary Exhaust Silencer**
- **Vibration Isolators** between engine/ generator and base frame as well as between base frame and foundation
- **Sound Attenuated Enclosure**, 72-75 dB(A) avg. at 3 ft, for indoor installation, with ventilating fan
- **Utility Grade Protective Relay**
- Electrically operated **Power Circuit Breaker** with trip unit
- 24 V maintenance-free **Batteries**, 10 amp **Battery Charger**
- **Hot water temp up to 190 °F**
- **Lube Oil Make-up System** with 15 gal storage tank, unit mounted
- **Electric Pre-lubrication Pump**
- **Dual Solenoid Gas Train**, with zero pressure regulator per NFPA 37
- **Low Fuel Pressure** system 0.5-3 PSI
- **Remote Monitoring**

KMBL-350-4SH

KRAFT ENERGY/MAN Biogas Engine

Electrical Output	350 kW
Thermal Output	1,689,576 BTU/hr
Fuel Consumption	9,240 BTU/kWhe
Overall Efficiency	89.17 %

BENEFITS

- **Most Reliable MAN Gas Engines**
- **Turbocharged & Intercooled Engine**
- **High Efficiency**
- **Low Emissions**
- **Compact Design**
- **Easy On-site Installation**
- **PLC-based Digital Controls**
- **Remote Communication Capabilities**

OPTIONAL EQUIPMENT

- **Outdoor Enclosure**
- **Remote Heat Dump Radiator**
- **Induction Type Generator**
- **Secondary Exhaust Silencer**
- **Electric Circulation Pump for Process Hot Water**
- **Hot Water Temperature Control Valve**
- **Load Sharing Controls for Multiple Unit Applications**
- **Island Mode Operation Capability**

TECH DATA: KMBL-350-4SH BIOGAS

		100%
MAN Engine Model		E 2842 LE 322
Generator Model		HCI534C
Electric Output	kWe	350
Amps @ 480 Volts @ 0.8 P.F.	Amps	526
Amps @ 208 Volts @ 0.8 P.F.	Amps	1214
Max. Engine BHP	BHP	510
Number of Cylinders/Arrangement		12 V
Bore & Stroke	Mm	128 x 142
Displacement	Ltrs (cu in)	21.93 (1338)
BMEP	Psi	167.6
Compression Ratio		12 : 1
Combustion Air Required	Scfm	822
Generator Cooling Air Required	Scfm	2780
Total Air Required	Scfm	3602
Fuel Consumption	Th/Hr	32.34
Electric Heat Rate (LHV)	BTU/kWhe	9,240
Hot Water Recovery - Jacket Water & Exhaust Combined		
Cogen Thermal Output	kW	495
Thermal Output	Th/Hr	16.90
Recoverable Heat from Jacket	BTU/Hr	890,827
Recoverable Heat from Exhaust	BTU/Hr	798,749
Total Heat Recovered	BTU/Hr	1,689,576
Process Water Flow	GPM @ 15° F Rise	224
Process Water Temp	Deg F	190
Exhaust Flow	Lbs/Hr	4198
Exhaust Temp	Deg F	917
Efficiencies		
Electrical Efficiency	%	36.93
Thermal Efficiency	%	52.24
Combined Efficiency	%	89.17
Environmental		
Emissions at 100% Load (Correlation 15% O2)		
NOx Emission	Gms/BHP-Hr (ppm)	< 1.0 (< 91)
CO Emission	Gms/BHP-Hr (ppm)	< 2.5 (< 300)
NMHC	Gms/BHP-Hr (ppm)	< 0.2 (< 36)
HCHO (Formaldehyde)	Gms/BHP-Hr (ppm)	< 0.07 (< 13.4)
Sound Level at 1 Meter	dBA	73-75
Gas Pressure-min	Inches of WC	20
Gas Pressure-max	Inches of WC	40
Dimensions & Weight	LxWxH (lbs.)	178"x65"x108" (13,500)
i) Tech data is based on gas mixture of 60% methane & 40% carbon dioxide with a calorific value of 580 Btu/cu ft. ii) Gas quality must be per engine manufacturer's specifications & must be cleaned, if necessary. iii) The tolerances: electrical output: +/- 0%, fuel consumption: +/- 5%, thermal output: +/- 8% iv) Tech data is based on standard conditions acc to DIN ISO 3046-1. Standard conditions: atmospheric pressure: 14.5 psi or 328 ft above sea level, air temperature: 77 deg F, relative humidity: 30%. v) The coolant data is based on 40% antifreeze.		

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