



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-100-4SH

KRAFT ENERGY/MAN Biogas Engine

Electrical Output	100 kW
Thermal Output	499,582 BTU/hr
Fuel Consumption	9,348 BTU/kWhe
Overall Efficiency	89.94 %

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-100-4SH BIOGAS

		100%
MAN Engine Model		E 0836 LE 202
Generator Model		HCI274E
Electric Output	kWe	100
Amps @ 480 Volts @ 0.8 P.F.	Amps	150
Amps @ 208 Volts @ 0.8 P.F.	Amps	346
Max. Engine BHP	BHP	148
Number of Cylinders/Arrangement		6 IL
Bore & Stroke	Mm	108 x 125
Displacement	Ltrs (cu in)	6.87 (419)
BMEP	Psi	154.8
Compression Ratio		11 : 1
Combustion Air Required	Scfm	226
Generator Cooling Air Required	Scfm	1308
Total Air Required	Scfm	1534
Fuel Consumption	Th/Hr	9.35
Electric Heat Rate (LHV)	BTU/kWhe	9,348
Hot Water Recovery - Jacket Water & Exhaust Combined		
Cogen Thermal Output	kW	146
Thermal Output	Th/Hr	5.00
Recoverable Heat from Jacket	BTU/Hr	283,906
Recoverable Heat from Exhaust	BTU/Hr	215,676
Total Heat Recovered	BTU/Hr	499,582
Process Water Flow	GPM @ 15° F Rise	66
Process Water Temp	Deg F	190
Exhaust Flow	Lbs/Hr	1153
Exhaust Temp	Deg F	909
Efficiencies		
Electrical Efficiency	%	36.50
Thermal Efficiency	%	53.44
Combined Efficiency	%	89.94
Environmental		
Emissions at 100% Load (Correlation 15% O2)		
NOx Emission	Gms/BHP-Hr (ppm)	< 1.0 (< 91)
CO Emission	Gms/BHP-Hr (ppm)	< 1.5 (< 180)
NMHC	Gms/BHP-Hr (ppm)	< 0.2 (< 36)
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.)	150"x65"x98" (6500)
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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