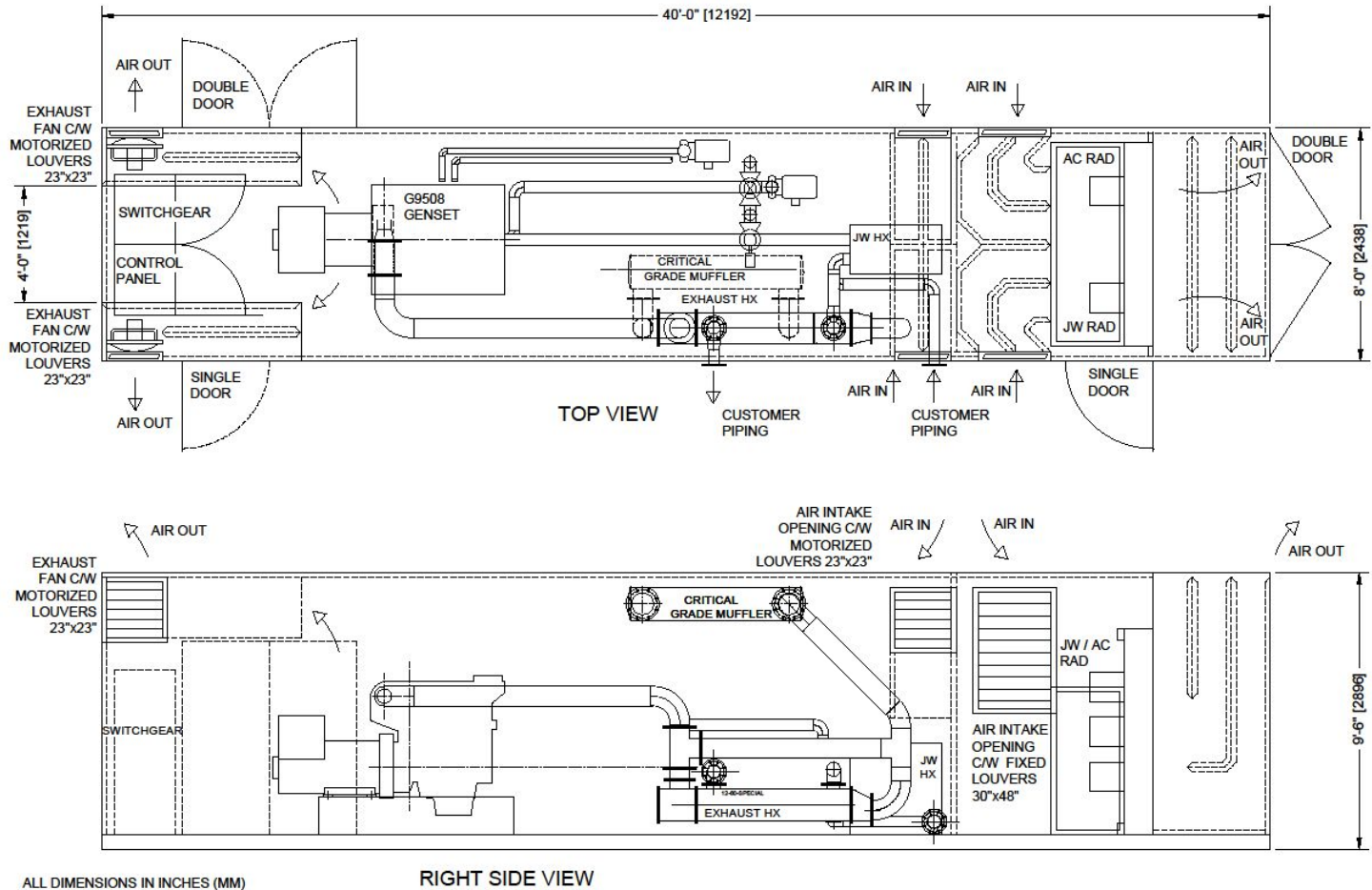


CogenLine Model LS-330-CHP - 334 kWe Generator



General Information

- Turnkey cogeneration system fully packaged inside a 40ft sound attenuated and thermally insulated container
- Highly efficient genset based on a Liebherr G9508 gas engine and a Stamford HCI434F generator
- Simultaneous production of 334 kWe prime electrical power and 418 kW thermal power as hot water at 90°C improves fuel efficiency from 37% to over 80%
- Automatic operation control and switchgear included.
- Silent operation with an average of 75 dBA at 7m using a critical grade muffler and custom acoustic designed air inlet and discharge ducting
- Extended service life based on indoor installation of equipment and waterproof protection
- Engine low emissions of NOX, CO and HC make the package very environmental friendly

Standard Features

- Engine and generator are directly coupled and mounted on a rugged steel skid. All components are designed for continuous usage, and suitable for prime or intermittent service
- Equipment mounting provides easy accessibility and service. Removable enclosure walls allow for equipment overhaul or replacement when required
- Spark plug ignition (non self-igniting) provides knock resistance operation even with alternating gas compositions
- Rating is based on operation on ambient temperatures from -40°C to +30°C and an altitude up to 1000 meters (3300 ft). When conditions exceed these values please consult manufacturer for recommendations and derating information
- One-year limited warranty for all systems and components

Engine

Manufacturer	Liebherr
Model	G9508
Displacement (L)	16.67 L
Configuration	V-8
Bore and Stroke (mm)	130 x 157
Rated Speed	1800 rpm
Compression Ratio	13.3 : 1
Engine Weight (Dry)	1700 kg
Flywheel Housing	SAE 1
Fuel type	Natural gas
Fuel Requirements -100% Load	75 kg/hr
- 80% load	62 kg/hr
- 60% load	47 kg/hr

(Actual fuel consumption varies with site conditions and fuel energy content)

Fuel Connection	2" NPT
Motor Oil Capacity (min/ max)	48/ 60 L
Cooling water Capacity	40 L
Max. Pressure of Cooling Water	36 psi
Engine Combustion Air Flow	2042 kg/hr (1017 cfm)
Intake Air Max. Temperature	35°C
Engine exhaust flow at rated kW _e	2117 kg/hr (2553 cfm)
Engine exhaust temperature at rated kW _e	448°C
Engine maximum allowable back pressure	20 inw (50 mbar)
Critical grade muffler installed inside for extended service time	
Remote backup radiator for jacket water system	
Remote radiator for continuous cooling of the intercooler low temperature system	

Engine Standard Features:

- coordinated turbocharger
- two-stage stainless steel intercooler
- throttle actuator
- ignition system specially developed for Liebherr
- gas mixer
- engine control unit
- knock control
- sensors and wiring harness as required

Heat Recovery

- Available waste heat recovered in two steps, from exhaust gas and engine jacket water, as hot water at 90°C:
 - 418 kW_t @ 100% load
 - 360 kW_t @ 80% load
 - 284 kW_t @ 60% load
- Estimated overall efficiency 81%
- Exhaust gas shell and tube heat exchanger
- Jacket water plate and frame heat exchanger
- Jacket water remote radiator for backup cooling
- Three-way solenoid thermostatic valves for automatic transition from heat recovery to backup cooling
- Three-way solenoid exhaust diverter valve for automatic transition from exhaust heat recovery to gas evacuation
- Flanged connections on container walls for customer piping

Generator

Manufacturer	Newage Stamford
Model	HCI434F
Construction	Four pole, brushless Single Bearing
60 Hz Voltages and Ratings (3 phase)	
• 334 kW _e / 417 kVA - 240/480V @ 0.8 PF	
• 336 kW _e / 420 kVA - 600V @ 0.8 PF	
Voltage Regulator (standard)	MX341 AVR +/- 1.0%
Three-phase full-wave bridge rectifier	
Winding Leads	12
Temperature Rise	105C rise Prime (40C ambient) 125C rise Intermittent (40C)
Telephone Interference	THF < 2%
Winding Pitch	Two thirds
Control System	Self excited
Weight	1160 kg
Cooling Air Flow	1700 cfm

Enclosure

- Modified 40' ISO high cube container
- Sheet metal construction 40' (L) x 8' (W) x 9'-6" (H)
- Estimated overall weight 33,000 lbs (15,000 kg)
- 3" Roxul insulation covered with perf. metal in walls and roof
- Two double doors and two single doors for convenient access
- Remote radiators located in a separate room for better cooling and noise control
- Custom acoustic designed air inlet and discharge ducting for reduced noise operation estimated at 75 dBA at 7m