DRESSER-RAND
A Siemens Business

GAS TURBINES

KG2-3G/PO

ENER-CORE

KG2-3G/PO gas turbine with Ener-Core power oxidizer technology generates up to 1.85 MW of clean power using low-quality gases.

The Dresser-Rand KG2-3G/PO gas turbine with Ener-Core power oxidizer technology is the only clean power generation that runs directly on low-pressure, low-quality gases that otherwise could not be used. The system integrates oxidation technology with the field proven 2 MW KG2-3G gas turbine, to efficiently generate electricity with near-zero emissions.

The KG2-3G/PO gas turbine's wide fuel range enables operation on extremely low-grade or waste fuels, landfill gas, biogas, coal gas, and associated petroleum gas. Its ability to maintain near-zero emissions excels in regulated air quality markets without additional emissions controls.

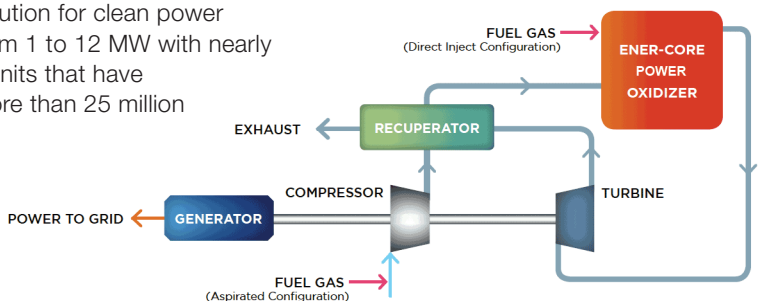
The Dresser-Rand KG2-3G gas turbine is the preferred solution for clean power requirements from 1 to 12 MW with nearly 1,000 installed units that have accumulated more than 25 million operating hours.

How it Works

A power oxidizer replaces the combustor in the 1.85 MW system and produces the heat to drive the turbine. With low-Btu fuels, fuel is aspirated with air prior to the inlet and oxidation, eliminating external compression and accepting low-pressure gas. Higher quality fuels can be directly injected at a higher pressure upstream of the oxidizer, which results in virtually undetectable emissions. In both the aspirated and direct-inject configurations, low oxidation temperature enables the KG2-3G/PO gas turbine to avoid the thermal formation of NOx.

Features

- Class-leading fuel efficiency
- Highly effective recuperator
- Wide fuel specification tolerance
- Ultra-low emissions power oxidizer, <1 ppm NOx
- No catalyst; no chemicals used
- H_2S and siloxane acceptance



Package Arrangement

The KG2-3G/PO gas turbine is a complete packaged solution that includes the KG2-3G turbine, power oxidizer, generator, and skid.

Gas Turbine

- Industrial, single-shaft KG2-3G turbine
- Single-stage compressor and turbine
- Cantilevered rotor configuration (no "hot" bearings)

Generator

- Brushless synchronous generator
- Manufacturer of client's choice

Package

- Steel base frame
- Integrated lube oil system
- PLC control system with monitoring
- Weatherproof acoustic enclosure
- Inlet and exhaust system

Power Oxidizer

- Packed bed power oxidizer (no moving parts)
- ASME pressure vessel
- Multi-fuel gas operation
- Ultra-low emissions

Gas Energy vs. Fuel Supply Rate

Caloric Value HHV (Btu/scf)	30	50	100	200	300	500	1,000	1,200	1,600	2,000	2,300	2,600
Flow Rate (scfm)	11,132	6,679	3,340	1,670	1,113	668	334	278	209	167	145	128
Caloric Value HHV (MJ/NM^3)	1.2	2.0	3.9	7.9	11.8	19.7	39.4	47.3	63.0	78.8	90.6	102.4
Flow Rate (NM^3/hr)	17,899	10,739	5,370	2,685	1,789	1,074	537	447	336	269	233	206

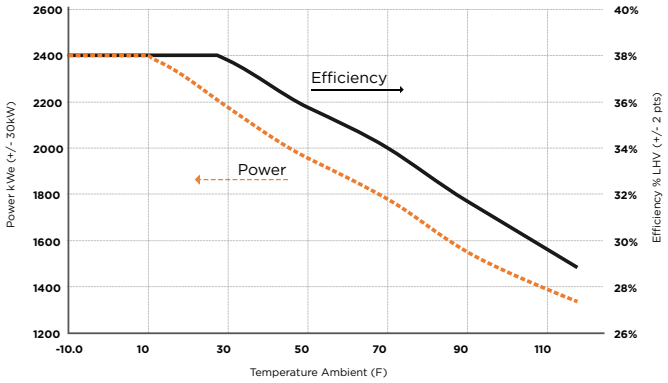
Fuel Requirements

Characteristic		Specification
Fuel operating range (HHV)	Aspirated configuration Direct injection configuration	25 - 2,600 Btu/scf (0.93 - 97 MJ/m^3) 350 - 2,600 Btu/scf (13 - 97 MJ/m^3)
Nominal fuel supply pressure	Aspirated configuration Direct injection configuration	5 psig (35 kPa) 140 psig (965 kPa)

Electrical Performance*

Characteristic	Specification
Nominal electrical output	1,850 kW (±30 kW)
Electrical efficiency (LHV) (±2)	35% (±2)
Nominal heat rate (LHV)	9,750 Btu/kWh (10,286 kJ/kWh)
Generator voltage	400 V - 11 kV
Frequency	60 Hz/50 Hz

Electrical Output Graph Shows Change in Power and Efficiency with Temperature



kWe is electrical output at terminals corrected for parasitics, but not including gas booster power.

*At ISO conditions (59˚F [15˚C] at sea level, 60% RH) unless otherwise noted
**Some configurations may require additional cold-weather options

Generator Braking Resistor

Characteristic	Specification			
Weight	5,000 lb (2,268 kg)			
Dimensions		Length	Width	Height
	Feet	7.5	5.9	11.3
	Meters	2.3	1.8	3.5

Emissions

Characteristic	Specification
Aspirated configuration	<1 ppmv NO_x
Direct inject configuration	<1 ppmv NO_x, CO, VOC

Exhaust

Characteristic	Specification
Exhaust mass flow	20.7 lb/sec (9.4 kg/sec)
Exhaust gas temperature	600˚F (316˚C)

Ambient Temperature Limit

Characteristic	Specification
Temperature limits**	-40˚ to 115˚F (-40˚ to 46˚C)

Physical Specifications

Characteristic	Specification			
System weight	105,000 lb (47,627 kg)			
Dimensions		Length	Width	Height
	Feet	50	22	27
	Meters	15.2	6.7	8.2

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