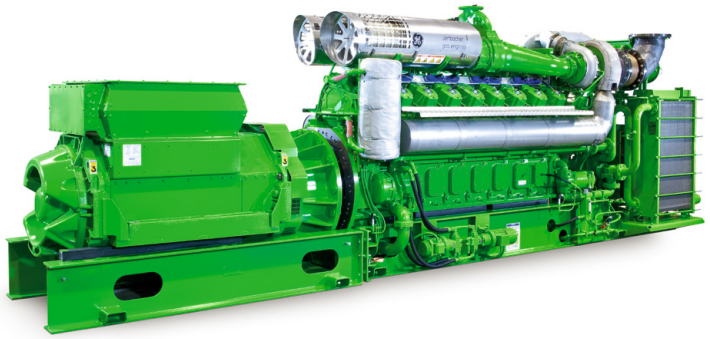
NORTHEAST — WESTERN™
ENERGY SYSTEMS
Power Systems Specialists

Jenbacher type 6

Cutting-edge technology

Continuously refined based on our extensive experience, Jenbacher type 6 engines are reliable, advanced products serving the 2.0 to 4.4 MW power range. The 1,500 rpm engine speed provides high power density and low installation costs. The type 6 precombustion chamber enables high efficiency with low emissions. Proven design and enhanced components support a service life of 60,000 operating hours before the first major overhaul. The J624 model features the advanced 2-stage turbocharging technology, which offers high electrical efficiency combined with improved flexibility over a wide range of ambient conditions.



Reference installations

J612 Adelphi University; Garden City, NY

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	1 x J612	1,979 kW	6,053 MBTU/hr	2016

A single engine is located in the second floor basement of Woodruff Hall at Adelphi University. This unit has a special designed enclosure that disassembles into component pieces to access any portion of the gen-set, yet still supports the weight of the exhaust equipment. This unit plant is designed to reduce the university's energy consumption by providing base load for a portion of the campus.

J616 Powdered Milk Factory; Central Valley, CA

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	2 x J616	5,312 kW	17,812 MBTU/hr	February 2016

Two Jenbacher generators provide valuable electricity to a food processing facility while the heat is used to provide chilling and hot water.

J620 Eisenhower Hospital; Rancho Mirage, CA

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	2 x J620	6,000 kW	21,000 MBTU/hr	March 2007

The Jenbacher cogeneration systems provide power and heat to hospital. Heat is used for steam production.

J624 2-stage Houwelings; Camarillo, CA

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Natural gas	3 x J624	13,100 kW	41,841 MBTU/hr	October 2013

At this greenhouse facility, three Jenbacher J624 2-stage turbocharged gas engines enable tomato and cucumber grower Houwelings to generate the CO2, hot water and electricity required for its extensive greenhouse operations. This environmentally attuned implementation of natural gas fueled generation rejects no heat and saves 9500 gallons of water per day.

J616 Ox Mountain Landfill Gas Facility

Fuel	Engine type	Electrical output	Thermal output	Commissioning
Landfill gas	6 x J616	12 MW	0 MBTU/hr	October 2008

This plant near Half Moon Bay owned and operated by Ameresco was the first effort to clean landfill gas and operate successfully with oxidation catalysts and a SCR system in California. This pioneering effort by Ameresco has now been duplicated in many biogas and landfill gas projects in California.

Technical features

Feature	Description	Advantages
Four-valve cylinder head	Centrally located purged pre-combustion chamber, developed using advanced calculation and simulation methods (CFD)	Reduced charge-exchange losses, highly efficient and stable combustion, optimal ignition conditions
Heat recovery	Flexible arrangement of heat exchanger, two stage oil plate heat exchanger on demand	High thermal efficiency, even at high and fluctuating return temperatures
Air / fuel mixture charging	Fuel gas and combustion air are mixed at low pressure before entering the turbocharger	Main gas supply with low gas pressure, mixture homogenized in the turbocharger
Pre-combustion chamber	The ignition energy of the spark plug is amplified in the pre-combustion chamber	High efficiency, lowest NOx emission values, stable and reliable combustion
Gas dosing valve	Electronically controlled gas dosing valve with high degree of control accuracy (for natural gas)	Very quick response time, rapid adjustment of air / gas ratio, large adjustable calorific value range
2-stage turbocharging	Next generation turbocharging technology concept (for J624 only)	Improved performance in terms of output and efficiency, increased flexibility regarding ambient conditions

Technical data

Configuration	V 60°			
Bore (inch)	190			
Stroke (inch)	220			
Displacement / cylinder (cu.in)	6.24			
Speed (rpm)	1,500 (50 Hz) 1,500 with gearbox (60 Hz)			
Mean piston speed (in/s)	11 (1,500 1/min)			
Scope of supply	Generator set, cogeneration system, containerized package			
Applicable gas types	Natural gas, flare gas, biogas, landfill gas, sewage gas. Special gases (e.g., coal mine gas, coke gas, wood gas, pyrolysis gas)			
Engine type	J612	J616	J620	J624*
No. of cylinders	12	16	20	24
Total displacement (cu.in)	74.9	99.8	124.8	149.7

Dimensions l x w x h (inch)		
Containerized package	J612–J620	470/590 x 120/240 x 320
	J624	740 x 240 x 380
Generator set	J612	360 x 90 x 110
	J616	400 x 90 x 110
	J620	420 x 90 x 110
	J624*	570 x 100 x 120
Cogeneration system	J612	360 x 90 x 110
	J616	400 x 90 x 110
	J620	420 x 90 x 110
	J624*	570 x 100 x 120

Weights empty (lbs)	J612	J616	J620	J624*
Generator set	53,360	67,470	80,030	112,680
Cogeneration system	54,460	68,570	81,360	112,680

1) Dimensions and weights are valid for 50 Hz applications
*J624 with 2-stage turbocharging

Outputs and efficiencies *

Natural gas — **1,500 rpm | 60 Hz**

NOx <	Type	Pel (kW)	ηel (%)	Pth (MBtu/hr)	ηth (%)	ηtot (%)
1.0 g/bhp.hr	J612	1,979	44.6	6,522	43.1	87.8
	J616	2,649	45.2	8,534	42.7	87.9
	J620	3,325	45.2	10,692	42.6	87.8
	J624*	4,394	46.5	13,359	41.5	88.0
0.5 g/bhp.hr	J612	1,979	43.9	6,518	42.3	86.2
	J616	2,649	44.4	8,526	41.9	86.3
	J620	3,325	44.4	10,717	41.9	86.3
	J624*	4,394	45.6	13,390	40.7	86.4

Biogas — **1,500 rpm | 60 Hz**

NOx <	Type	Pel (kW)	ηel (%)	Pth (MBtu/hr)	ηth (%)	ηtot (%)
1.0 g/bhp.hr	J612	1,795	43.3	5,726	40.5	83.8
	J616	2,405	43.6	7,636	40.5	84.1
	J620	3,017	43.7	9,544	40.5	84.2
0.5 g/bhp.hr	J612	1,795	42.4	5,893	40.4	83.3
	J616	2,405	42.7	7,864	40.9	83.5
	J620	3,017	42.8	4,821	40.8	83.6

* Subject to site conditions and established tolerances. Contact us for specific detail.