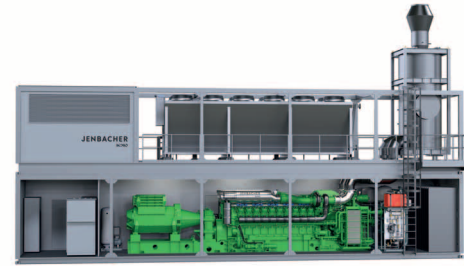


## Options for fast-start application

### Containerized package

Our containerized modular solution includes everything needed for a fast commissioning-to-startup experience, all customized to meet your data center's specific requirements. The bottom container houses the heart of the system – the Jenbacher generator. The top container holds all auxiliary components and ventilation.



LUB-119010-EN-US

Package dimensions	Length	Width	Height	Weight
<b>Engine module</b>	52-65 ft (16-20 m)	10-13 ft (3-4 m)	11.5 ft (3.5 m)	110,000-133,000 lbs (50-60 tons)
<b>Ventilation/auxiliary module</b>	52-65 ft (16-20 m)	10-13 ft (3-4 m)	11.5 ft (3.5 m)	37,000-44,000 lbs (17-20 tons)

### Customization options

<b>Frequency coverage</b>	60 Hz or 50 Hz versions
<b>Sound pressure levels</b>	85, 80, 75 and 65 dB(A) in 32.8 ft / 10 m
<b>Wind loads</b>	80 mph or 130 km/h (without fixation to ground) and 100 mph or 160 km/h (with fixation to ground) available per standard, higher wind loads upon request
<b>Ambient temperatures</b>	-40 to 104 °F or -40 to +40 °C per standard, deviations upon request
<b>Earthquake protection</b>	Customized earthquake protection available upon request
<b>Emission reduction</b>	Standardized SCR and oxidizing catalyst equipment available to support lowest permit requirements
<b>Containerized control room equipment solution</b>	Genset controller and motor control center, including circuit breakers
<b>Oil system extension</b>	Oil tank extension for increased service intervals
<b>Fire-fighting system</b>	Automatic fire extinguishing systems
<b>Country-specific certification</b>	United States: ✓ Design is in accordance with NFPA 37:2018 "Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines" ✓ Upon special request: Conformity with the provisions of UL 2200 (2nd Edition) and NRTL approval marking (LPC) Canada: ✓ Options on gas train conformity (on request): A: CSA B149.1 (Natural Gas); B: CSA B149.3 (Natural Gas); CRN: CSA B51.09 European Union and EFTA member states: ✓ Conformity to relevant EU product directives under the New Legislation Framework (CE marking directives) Document reference: EC Declaration of Conformity
<b>Heat utilization options</b>	Support of combined heat and power systems with pre-installed equipment, such as exhaust gas heat exchangers
<b>Pre-installed load bank</b>	Pre-installed load bank available for continuous standby testing purposes

**Want to find out more about the Jenbacher J620 fast-start, natural gas solution for the data center industry?**  
 For more information, visit: [innio.com/datacenter](https://innio.com/datacenter)

INNIO\* is a leading solutions provider of gas engines, power equipment, a digital platform and related services for power generation and gas compression at or near the point of use. With our Jenbacher\* and Waukesha\* product brands, INNIO pushes beyond the possible and looks boldly toward tomorrow. Our diverse portfolio of reliable, economical and sustainable industrial gas engines generates 200 kW to 10 MW of power for numerous industries globally. We can provide life cycle support to the more than 50,000 delivered gas engines worldwide. And, backed by our service network in more than 100 countries, INNIO connects with you locally for rapid response to your service needs. Headquartered in Jenbach, Austria, the business also has primary operations in Welland, Ontario, Canada, and Waukesha, Wisconsin, US.

\*Indicates a trademark

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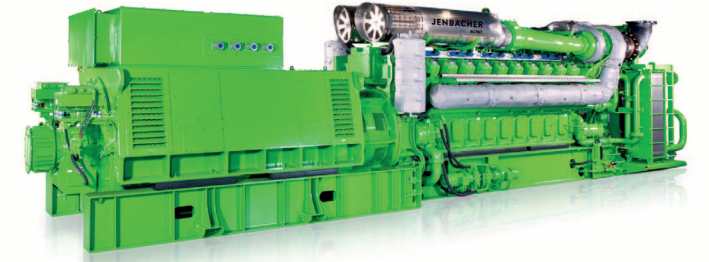
**TOMORROW BELONGS TO THE BOLD.** 

# JENBACHER

## Jenbacher J620

### FAST-START, NATURAL GAS SOLUTION

The Jenbacher\* J620 generator for fast startup applications is based on our proven Type 6 platform. Introduced in 1989, this reliable technology since has been complemented with innovative fast-start design features. The solution can provide full output in less than 45 seconds at low emission levels, helping to ensure that local regulatory requirements are met. Although these generators deliver significant advantages in emergency operation, they also provide benefits when running parallel to the grid and in island mode.



### Technical features

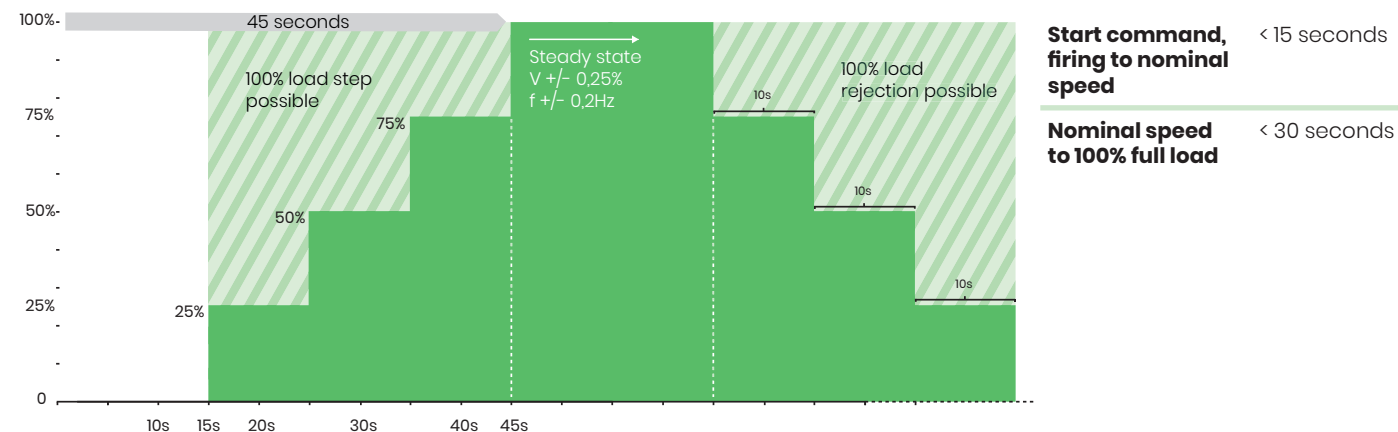
Feature	Description	Advantages
<b>Fast-start capabilities</b>	<ul style="list-style-type: none"> <li>✓ Core engine technology such as port injection and an advanced control management system</li> <li>✓ Permanent pre-lubrication and pre-heating to help ensure engine operations</li> </ul>	<ul style="list-style-type: none"> <li>✓ Robust and reliable engine start to reach nominal speed in under 15 seconds</li> <li>✓ Controlled power quality from nominal speed to full load in under 30 seconds</li> <li>✓ Load step and load shed possible up to 100%</li> </ul>
<b>Advanced Jenbacher DIA.NE* XT 4 control system</b>	<ul style="list-style-type: none"> <li>✓ Control and visualization system to intuitively start, stop, monitor, and control your core engine(s) as well as extended system components</li> <li>✓ Enhanced usability and functionality provided with a touch panel for easy and comfortable onsite engine control as well as control via a remote connection</li> <li>✓ Generator circuit breaker control, synchronization, and basic generator protection devices</li> <li>✓ New LEANOX*plus controller to fulfill upcoming emission regulations</li> </ul>	<ul style="list-style-type: none"> <li>✓ Black start, island mode, and mains parallel operation capability</li> <li>✓ High transient load and speed control</li> <li>✓ NO<sub>x</sub> monitoring and trending L15 (optional)</li> </ul>
<b>Reduced emissions compared to Tier 2 diesel generators</b>	Lower emissions for greater natural gas generator run time flexibility, facilitating ability to monetize what otherwise would be a stranded asset	Lower carbon intensity without after-treatment compared to diesel generators: <ul style="list-style-type: none"> <li>✓ As much as 25% lower carbon emissions</li> <li>✓ As much as 80%-90% lower NO<sub>x</sub> emissions</li> <li>✓ Significantly lower particulate matter (PM) emissions</li> <li>✓ No SO<sub>2</sub> emissions (with standard natural gas)</li> <li>✓ Standardized optional catalyst technology available to meet more stringent regulatory compliance</li> <li>✓ Available in either island mode (self generation on site) or in parallel to the grid</li> </ul>
<b>Flexible electrical and hydraulic plant integration</b>	Offered at 60 Hz and 50 Hz generator voltage levels as well as customized water temperature levels	<ul style="list-style-type: none"> <li>✓ Generator voltages from 480 V (400 V) up to 13.8 kV (11 kV) for cost-effective plant integration</li> <li>✓ Cooling water temperatures can be customized for use in cooling, chilling, and heating applications</li> </ul>
<b>Package design for continuous operating power</b>	Designed for continuous operating power as per ISO 8528-1	<ul style="list-style-type: none"> <li>✓ Reliable power output for full lifetime (60,000 operating hours)</li> <li>✓ Customized service offerings for high availability and reliability</li> </ul>

## Technical generator data

<b>Design</b>	Brushless, 4 pole, two bearing
<b>Voltage levels</b>	480 V (400 V) up to 13.8 kV (11 kV)
<b>Power factor range</b>	0.8 lagging to 0.95 leading – extended range upon request
<b>Insulation system</b>	Class F or H
<b>Temperature rise (at driving power)</b>	Class F (continuous @ 104 °F/ 40 °C ambient temperature), other on request. Type rating based on stator and rotor "hot-spot" (as per IEC60034-1 Ed.13) for highest reliability
<b>Alternator cooling</b>	Direct drive blower fan
<b>AC waveform for THD</b>	< 5% no load to full linear load
<b>Controller (AVR)</b>	UNITROL <sup>1</sup> digital controller, with three-phase voltage sensing (for grid code compliance) Built inside low voltage (LV) terminal box

<sup>1</sup> Indicates a trademark by ABB

## Fast-start black start profile<sup>1</sup>



<sup>1</sup> Example profile for pre-heated/-lubricated; Without synchronization; 480 V configuration; Power quality within  $\pm 10\%$  voltage,  $\pm 5\%$  frequency

## Technical engine data

<b>Engine type</b>	J620 GS-J701/J702	<b>Engine speed</b>	1,500 rpm with gearbox (60 Hz) 1,500 rpm (50 Hz)
<b>Configuration</b>	V 60°	<b>Mean piston speed</b>	11 m/s (1,500 1/min)
<b>Bore</b>	190 mm	<b>Scope of supply</b>	Generator set, cogeneration system, containerized package
<b>Stroke</b>	220 mm	<b>Applicable gas types</b>	Natural gas, > 6 bar main gas supply
<b>Displacement/cylinder</b>	6.24 L	<b>Starter motor voltage</b>	24 VDC - negative grounded
<b>Number of cylinders</b>	20		
<b>Total displacement</b>	124.8 L		

## Physical attributes

Natural gas	Generator set dimensions	Generator set weight (empty)
1,500 1/min   60 Hz	350.4 x 86.6 x 110.2 in (10.3 x 2.2 x 2.8 m)	78,264 lbs (35.5 tons)
1,500 1/min   50 Hz	350.4 x 86.6 x 110.2 in (8.9 x 2.2 x 2.8 m)	75,398 lbs (34.2 tons)

## Outputs and efficiencies (raw gas engine data)

60 Hz Standard configuration									
NO <sub>x</sub> >	Type	PeI (kW) <sup>1</sup>	Pme (bhp) <sup>1</sup>	ηel(%) <sup>1</sup>	Spec. fuel consumption of engine (BTU/bhp.hr)	Spec. fuel consumption of engine el (BTU/kWel.hr)	Pth (MBTU/hr) <sup>2</sup>	ηth(%) <sup>2</sup>	ηtot(%)
500 mg/Nm <sup>3</sup>	J620 (J701)	3,095	4,287	42.1	5,846	8,098	11,634	46.4	88.5
250mg/Nm <sup>3</sup>	J620 (J702)	3,095	4,287	41.3	5,960	8,257	11,634	46.4	87.7

50 Hz Standard configuration									
NO <sub>x</sub> >	Type	PeI (kW) <sup>1</sup>	Pme (kW)	ηel(%) <sup>1</sup>	Spec. fuel consumption of engine (kWh/kWh)	Spec. fuel consumption of engine el (kWh/kWel h)	Pth (kW) <sup>2</sup>	ηth(%) <sup>2</sup>	ηtot(%)
500 mg/Nm <sup>3</sup>	J620 (J701)	3,120	3,197	42.5	2.3	2.35	3,395	46.2	88.7
250mg/Nm <sup>3</sup>	J620 (J702)	3,120	3,197	41.7	2.34	2.4	3,391	45.3	87

- Technical data according to ISO 3046
- Total heat output with a tolerance of  $\pm 8\%$ , exhaust gas outlet temperature 248 °F / 120 °C.
- Standard rating of the engine is for installation at altitude < 1,640 ft / 500 m and combustion air temperature < 86 °F / 30 °C

## Exhaust emissions data (at 100% load point)

		J620 (J701)	J620 (J702)	Catalytic converter, additional emissions reduction option	
60 Hz	NO <sub>x</sub> (Oxides of Nitrogen as NO <sub>2</sub> )	(grams/HP-hour)	1.0	0.5	0.05 - 1.0
	CO (Carbon Monoxide)	(grams/HP-hour)	2.0	2.0	0.1 - 1.0
	VOC as NMNEHC (calculated as C <sub>3</sub> H <sub>6</sub> )	(grams/HP-hour)	0.1	0.14	0.01 - 0.1
	CH <sub>2</sub> O (calculated as C <sub>3</sub> H <sub>6</sub> )	(grams/HP-hour)	0.12	0.15	0.005 - 0.12
	SO <sub>2</sub> (Sulfur Dioxide)	(grams/HP-hour)	0.015	0.015	0.02
	PM2.5 (Particulate Matter)	(grams/HP-hour)	0.02	0.02	0.02
	PM10 (Particulate Matter)	(grams/HP-hour)	0.02	0.02	0.02
50 Hz	NO <sub>x</sub> (Oxides of Nitrogen as NO <sub>2</sub> )	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	500	250	20 - 250
	CO (Carbon Monoxide)	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	1,000	1,000	30 - 1,000
	VOC as NMNEHC (calculated as C <sub>3</sub> H <sub>6</sub> )	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	40	60	13 - 60
	CH <sub>2</sub> O (calculated as C <sub>3</sub> H <sub>6</sub> )	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	120	140	2 - 20
	SO <sub>2</sub> (Sulfur Dioxide)	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	9	9	9
	PM2.5 (Particulate Matter)	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	10	10	10
	PM10 (Particulate Matter)	(mg/Nm <sup>3</sup> @ 5%O <sub>2</sub> )	10	10	10

- Technical data according to ISO 3046
- Steady-state emissions recorded per ISO 8178-1 during operation at rated engine speed ( $\pm 2\%$ ) and stated constant load ( $\pm 2\%$ ) with engine temperatures, pressures and emission rates stabilized as half-hour averages
- Based on nominal mass flow as provided by the project-specific data sheets or mass flow calculations according to EPA method 19.
- Preliminary emission values based on fuel gas: CH<sub>4</sub> 96.5 vol%, C<sub>2</sub>H<sub>6</sub> 3 vol%, C<sub>3</sub>H<sub>8</sub> 0.2 vol%, rest N<sub>2</sub>. Fuel- and site-specific values on request
- Jenbacher after-treatment system used, if SCR required, then also controlled by our DIANE PLC