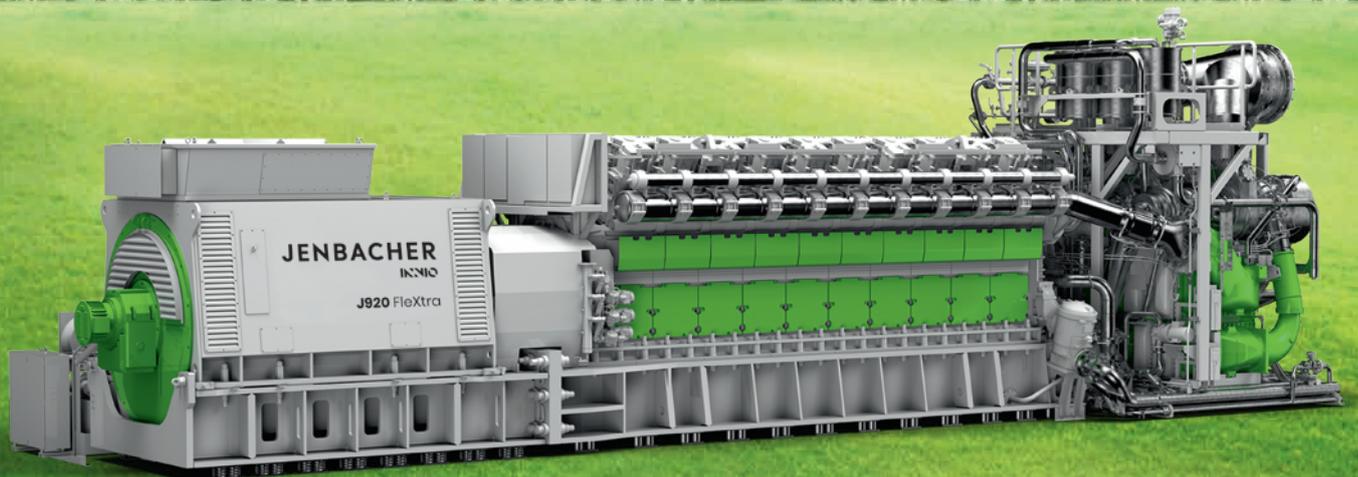


JENBACHER

MORE INNOVATION, POWER & EFFICIENCY

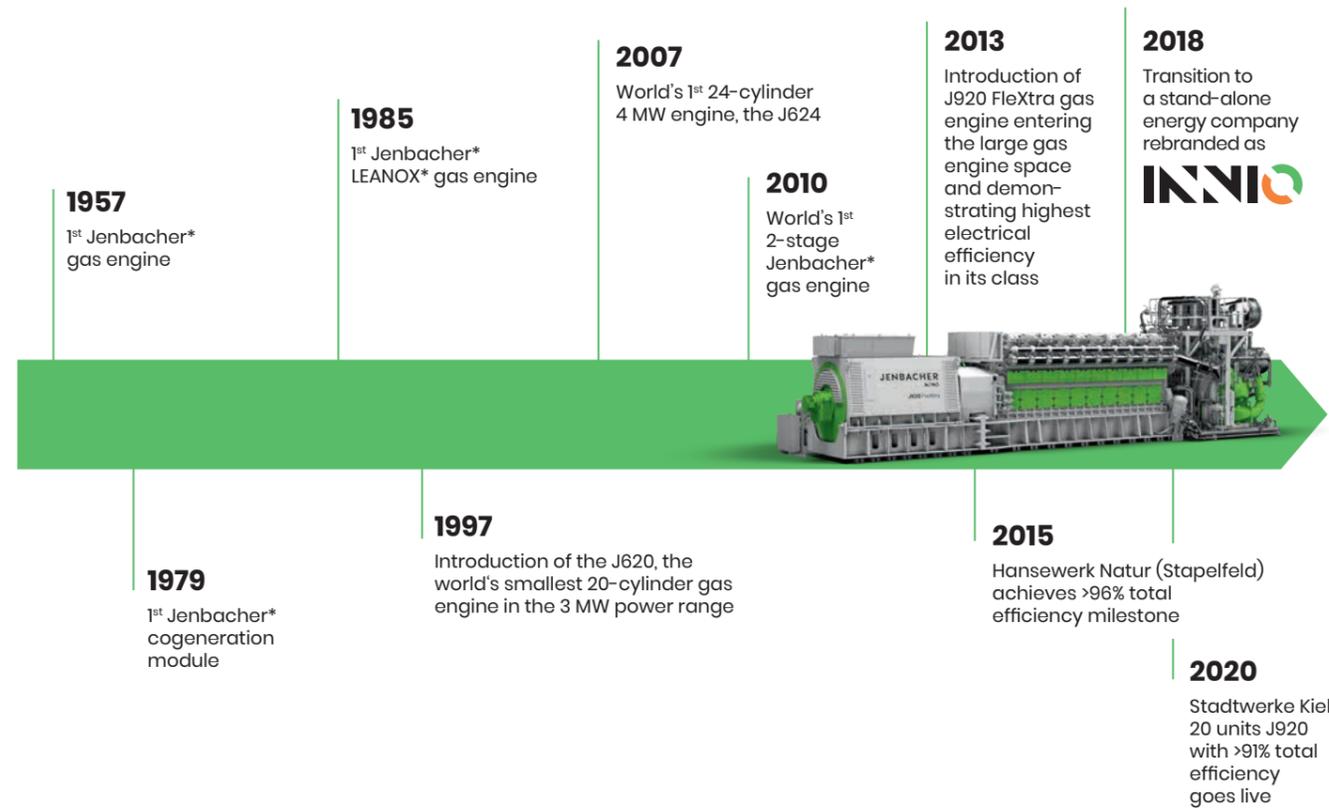
Lasting power with the incredible 10 MW range Jenbacher gas engine



Lasting power with
the incredible 10 MW
range Jenbacher gas engine



A RANGE OF INNOVATIVE SOLUTIONS LEADING TO THE J920 FLEXTRA GAS ENGINE



LASTING POWER WITH LESS FUEL CONSUMPTION AND CO₂ EMISSIONS

Whether you're seeking full power at high-efficiency levels or a unit capable of short start-up times, INNIO's J920 Flextra gas engine is your ideal solution for reliable lasting power and grid stabilization with a lower carbon footprint.

J920 FLEXTRA – CUSTOMER BENEFITS:

- Excellent electrical efficiency of up to 48.7 % and a total efficiency of up to 94% (CHP version)
- High power density at low investment costs
- Stable power output and reliable efficiency in any ambient condition
- Quick startup for grid stabilization
- Fast and easy installation
- Simple maintainability
- Full plant flexibility available with any multiple-engine installation
- Combined heat and power solution with more than 90 percent efficiency
- Lower water usage
- Designed for high reliability, renewable backup power, extended maintenance intervals

*Indicates a trademark ** Tolerance on fuel consumption according ISO 3046

INNOVATIVE DESIGN FOR EASE, INSTALLATION, AND MAINTAINABILITY

INNIO's J920 Flextra gas engine is offering outstanding electrical efficiency and is designed for durability, simple installation, and maintainability. The genset consists of three modules – a generator, engine, and turbocharger module – that provides a high-quality, pre-fabricated, standardized module. Each module is factory-tested, then shipped separately and plugged together on site, offering reduced installation time. In addition, the modules have highly standardized interfaces that work well with the balance of plant (BoP) systems, and ultimately simplify BoP installations and total plant construction time. To increase plant availability, INNIO's J920 Flextra gas engine is designed for smooth operation and maintainability.

Power unit

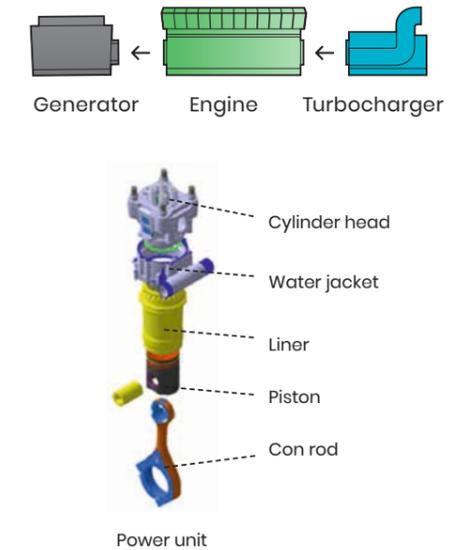
The J920 Flextra power unit helps to ensure low downtime, as it is easily replaced without major disassembly of the engine.

Divided camshaft

The J920 Flextra is equipped with a segmented camshaft, allowing easy exchange through a maintenance window at the top of the crankcase.

Coupling

With the modular engine design, decoupling the units is a simple process. Major engine parts stay in place and are easily accessible.



MAKE THE MOST OUT OF ENERGY SOURCES

Combustion

Based on the extensive experience of INNIO's Type 6 gas engine combustion system, the J920 Flextra unit is equipped with an advanced pre-chamber combustion system with spark ignition and advanced conditions for longer part life. In addition, the individual gas mixing achieved by port injection in combination with cylinderspecific sensors allows each cylinder to be controlled to operate at optimized performance. The J920 Flextra mechanical structure is designed to allow high-peak firing pressure. In combination with the latest miller technology and two-stage turbocharging, the J920 Flextra engine can achieve an excellent electrical efficiency of up to 48.7 %.

2-stage turbocharging

The 2-stage turbocharger design enables improved miller technology and high-power density. Compared to single-stage turbocharging, INNIO's 2-stage turbocharging technology allows higher cooling water temperatures, making it an ideal fit for independent power production projects in hot ambient conditions. Combined heat and power (CHP) applications benefit from the use of charge air cooling heat at high temperatures. No deration at higher altitudes is another advantage.

Engine management system

The J920 Flextra is equipped with INNIO's well-proven comprehensive Jenbacher gas engine management system with a programmable logic unit, handling engine and plant controls as well as visualization. To allow for smooth plant operation, the system specifically supports adaptive condition-based controls, individual cylinder balancing, optimization and protection of core controls, and limp homemode. Designed as part of the entire module system, with all core competencies in-house, every function is developed with a holistic point of view.

REVOLUTIONARY THREE-MODULES CONCEPT

GENERATOR

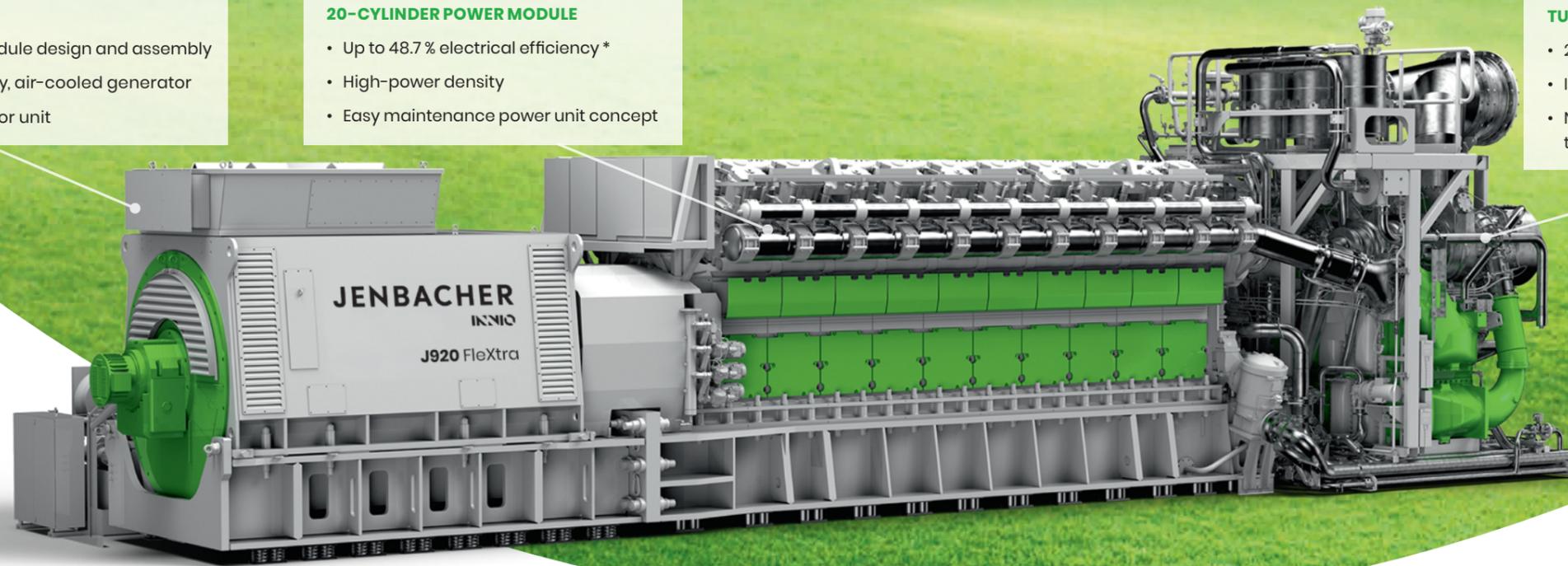
- Integrated module design and assembly
- High-efficiency, air-cooled generator
- Digital regulator unit

20-CYLINDER POWER MODULE

- Up to 48.7 % electrical efficiency*
- High-power density
- Easy maintenance power unit concept

TURBOCHARGER MODULE

- 2-stage turbocharging technology
- Increased efficiency
- No derating at high ambient temperatures or altitudes



KEY PERFORMANCE DATA CHP VERSION

Performance Data CHP* Version*	J920 FleXtra (50Hz / 1,000 rpm)
Electrical output	10,400 kW
Electrical efficiency	48.7 %
Heat rate	7,393 kJ/kWh 7,007 BTU/kWh
Thermal output	9,620+ kWth
Total efficiency	~ 94 %

Output and efficiency at generator terminals, ISO 3046 with 5% tolerance for energy input, Natural Gas MN >80, Power Factor 1.0, 500 mg/Nm³ (@ 5 % O₂) all Efficiency at LHV

* CHP* Version (C101) dedicated engine version for max. total efficiency @ 70/90°C water circuit, full recovery of low temperature intercooler other versions on request

INSTALLED DIMENSIONS

	Length	Width	Height	Weight
Engine	8.4 m	3.0 m	3.5 m	91 t
Generator	4.0 m	3.0 m	3.2 m	45 t
TC Module	3.2 m	3.8 m	5.8 m	30 t

SOLVING MORE THAN SIMPLE ELECTRICITY NEEDS

INNIO's J920 Flextra gas engine is engineered to support a broad variety of multiple-engine power plant solutions – from remote power supply to combined heat and power (CHP) generation.

Powerhouse solutions

INNIO's J920 Flextra is specially adapted to large gas engine power plants. It offers a highly standardized powerhouse plant concept with fast delivery times and low installation costs. While the size of the plant, actual plant design, and layout depend on your specific customer needs and site requirements, the J920 Flextra plant solution is developed as a modular system with a minimal footprint. This design allows for seamless installation with any multiple-engine configuration, and, therefore, offers flexible size options for a multiple 10 MW system at constant high electrical efficiency levels. Combining the multiple-engine concept with a 5-minute engine start-up time provides flexible power – from baseload to cyclic and peak operations.

Combined heat and power

The simple use of jacket water heat and heat from oil and charge air coolers, combined with heat from the gas engine exhaust makes CHP in combination with the J920 Flextra gas engine a favorable solution. When the heating water circle is designed to include return water at 70°C and hot water at 90°C or more a high total efficiency is achieved. The 2-stage turbocharging technology has the ability to increase the total efficiency for providing power and heat to more than 90% – about 3% – 4% points better than that of a single-stage turbocharging gas engine.



20 Jenbacher J920 Flextra gas engines make up the heart of the coastal power plant, generating 190 megawatts of electrical power for the German city of Kiel. "Photo Copyright -Stadtwerke Kiel"

Reducing life-cycle costs and environmental impact

Created to achieve excellent electrical efficiency levels, INNIO's J920 Flextra solutions allow you to benefit from low fuel consumption, operating costs, and CO₂ emissions. Operating a J920 Flextra at 48.7% electrical efficiency for 50 Hz or has the capacity to produce more than 83 million kWh of electricity, enough to power over 20,000 European households for a year.

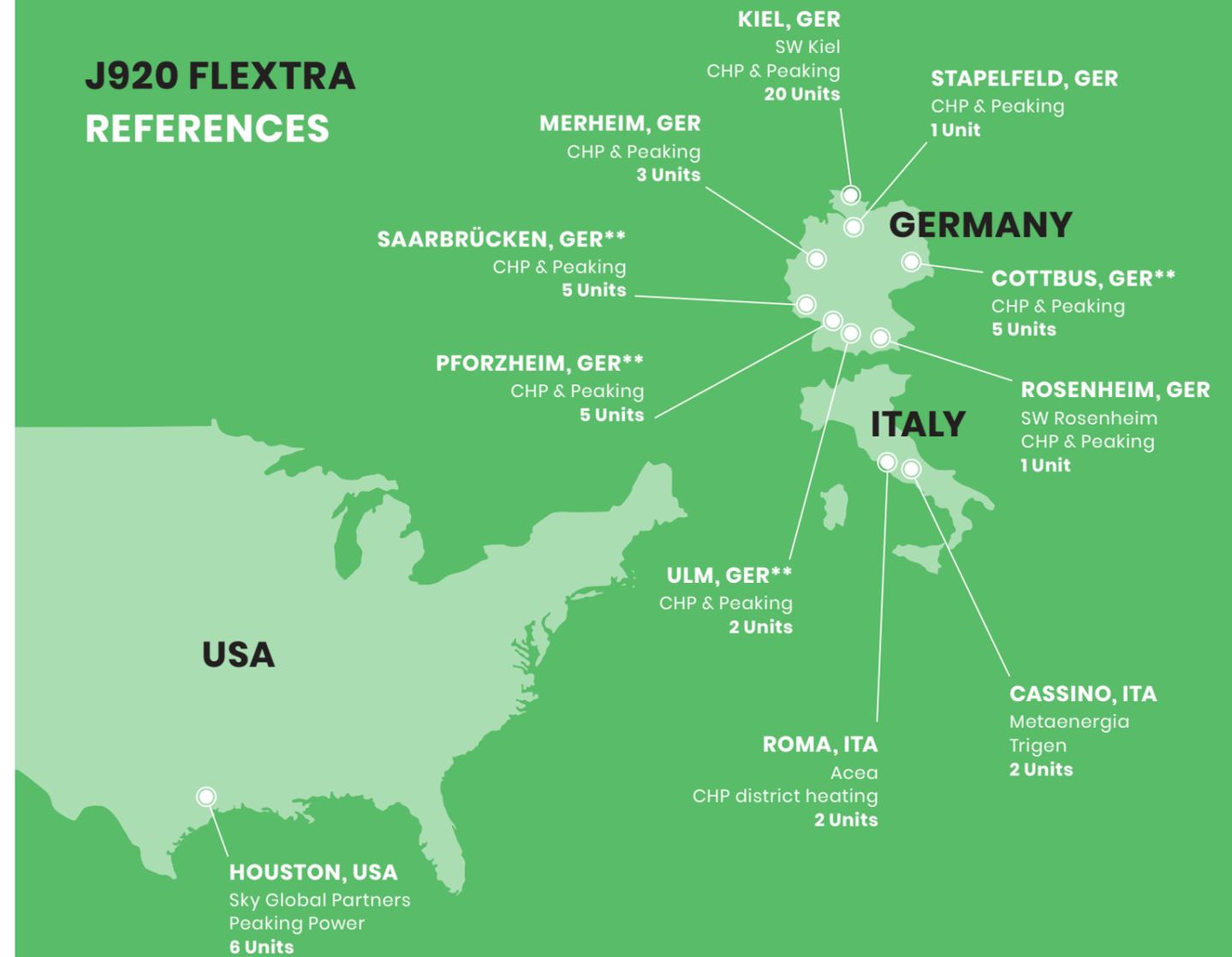
By offering a high electrical efficiency, the J920 Flextra gas engine avoids:

- The consumption of more than 6.4 million kWh of natural gas per year
- The emission of approximately 1,500 metric tons of CO₂ per year, equivalent to the annual CO₂ emissions of about 800 cars on European roads

With more than 90% overall efficiency compared to the separate production of heat and electricity, a J920 Flextra as a CHP solution achieves over the course of a year¹:

- Over 130 millions kWh primary energy savings, equivalent to the energy contained in more than 76,000 barrels of oil
- Emission reduction of more than 7,800 metric tons of CO₂, equivalent to the CO₂ emissions of over 4,100 cars on European roads

J920 FLEXTRA REFERENCES



Operation

Our contractual service agreements are designed to provide flexible, advanced care for your plant during operation. Through our global service network, you'll have dedicated personnel who can help to ensure predictable operating costs and risk mitigation. INNIO's online monitoring and diagnostic tool provides you with online access to your plant and J920 Flextra equipment. In addition, myPlant* technology enables us to monitor and control your global

fleet of Jenbacher gas engines. The myPlant 2.0 technology transmits sensor data back to our enterprise servers so that we can calculate your plant's operational state, predict faults and analyze any issues. All maintenance work on your J920 Flextra gas engine system—including upgrade, repair and overhauls—is performed at your plant, saving you time while updating your engine to the latest technology.

Service benefits

- Longer lifetime service
- Advanced service design for easier maintainability and shorter downtime
- Easy access to consumable parts
- Remote Monitoring & Diagnostics cut costs and boost equipment availability
- Sensors that monitor vital engine parts
- Excellent engine operations through fleet comparison

¹Compared to the separate production of heat by a natural gas-fired boiler and delivery of electricity on the EU grid

** going live soon

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.

Follow INNIO on Twitter and LinkedIn.

For more information, visit the company's website at www.innio.com or contact your local representative:

AUSTRIA

Achenseestraße 1-3
6200 Jenbach, Austria
T +43 5244 600

CANADA

200 Buchner Road
Welland, Ontario, Canada L3B 5N4
T +1 289 932 3537

CHINA

No.1 Hua Tuo Rd.
Zhangjiang Hi-Tech Park
Shanghai 201203, China
T +86 21 38771888

DENMARK

Samsøvej 31
8382 Hinnerup, Denmark
T +45 86966 788

GERMANY

Carl-Benz-Str. 25
67227 Frankenthal, Germany
T +49 6233 5110 150

ITALY

Via Staffali 1
37062 Dossobuono (VR) Italy
T +39 045 6760211

LEBANON

Central Building, 1st floor
Section 12, lot 2381
Dimitri Hayek Street
Sin El Fil - Horsh Tabet

MEXICO

Antonio Dovali Jaime 70
Piso 4, Torre B
Ciudad de Mexico
CP 01210, Mexico

NETHERLANDS

Kelvinring 58
2952 BG Alblasserdam
The Netherlands
T +31 88 0019700

RUSSIA

Presnenskaya Naberezhnaya 10A
1233112 Moscow, Russia
T +7 495 933 0187

SINGAPORE

Level 9, The Metropolis Tower 2
11 North Buona Vista Drive
Singapore 138589
T +65 326 2014

SPAIN

Josefa Valcarcel 26
Edificio Merrimack III
28027 Madrid, Spain
T +34 91 587 05 00

USA

Westway Plaza,
11330 Clay Road
Houston, TX 77041, USA
T +1 713 408 6930

1101 West St. Paul Avenue
Waukesha, WI 53188-4999, USA
T +1 262 547 3311



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**TOMORROW BELONGS
TO THE BOLD.**

