

J920 FleXtra in Stapelfeld, Schleswig-Holstein

Innovative and efficient energy concepts support the energy transition plan

J920 FleXtra, centerpiece of the largest cogeneration plant in North Germany

HanseWerk Natur GmbH, in its endeavor to meet the ambitious German climate protection target, relies on the high-efficiency J920 FleXtra gas engine made by INNIO* in Jenbach. This is the 53rd system by the gas engine specialists from Jenbach that has been configured for HanseWerk Natur.

The 9.5 MW J920 FleXtra by INNIO is at the heart of North Germany's largest cogeneration plant that works in conjunction with a waste-to-energy plant as well as 19 additional heating plants, combined heat and power systems, multifunction storage and hybrid plants.

The new facility, configured as a cogeneration plant (CHP) can supply up to 76 million kilowatt-hours of electric power annually, thus supplying around 21,500 households. In addition, up to 80 million kW of heat can be recovered for more than 6,000 average North German single-family houses. Heat storage units integrated into the plant ensure that the heat supply is maintained at peak load times as well as when the engine is forced to switch off due to high feed-in of renewable energy.



The J920 FleXtra gas engine is a significant component in the INNIO portfolio. INNIO offers modular, scalable technology; in this way smaller power plants can be incrementally expanded into larger plants. Since transmission grids are not mandatory, transmission loss can be reduced to a minimum, and with simultaneous use of waste heat can increase efficiency to more than 90%.

Use of a cogeneration plant in conjunction with a large-scale heat pump provides peak values in total energy efficiency

HanseWerk Natur GmbH, a 100 percent subsidiary of HanseWerk AG, is a leading provider of distributed energy solutions in Northern Germany, offering customized energy solutions and power plant technology for optimized energy use. The company's more than 20 years of expertise in operating CHP systems were also applied to the project in Stapelfeld. By combining a cogeneration plant with an NH₃ heat pump, even a portion of the waste heat produced by the J920 Flextra can be optimally employed as thermal energy and fed into the heating circuit. In total, the heat pump can increase the annual heat output of the power plant by up to 6.7 million kW.

This "High Efficiency Power Generation" (HEPG) developed jointly by HanseWerk Natur and INNIO in Jenbach increases the efficiency of the cogeneration plant by more than 95%.

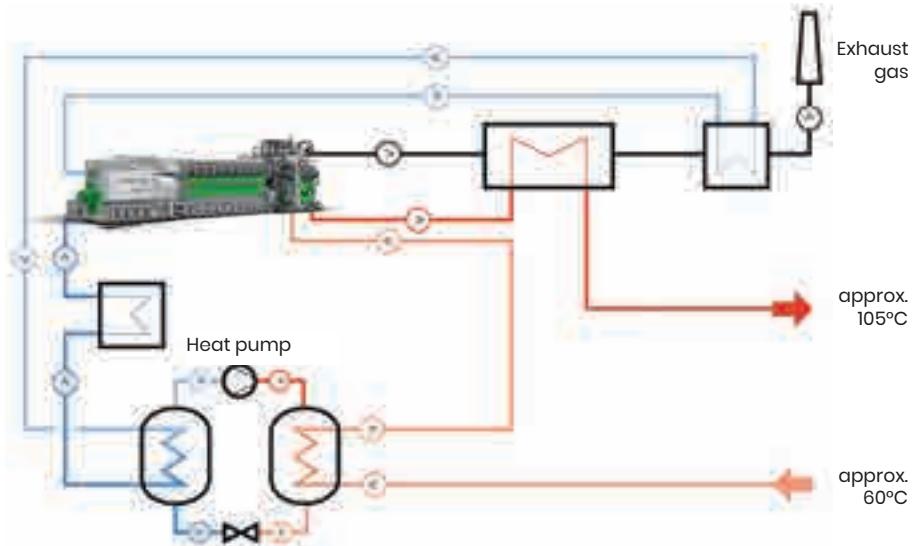
HanseWerk Natur as a prime example of the German energy transition

The high level of efficiency of the plant provides numerous advantages to operators, customers and the environment: Simultaneous generation of electric power and heat can conserve up to 35% of the primary energy utilized as well as reduce CO₂ emissions by 60% – concretely this represents more than 11,000 tons per year. The plant's low natural gas consumption likewise provides savings in annual operating costs. The reduced environmental effects of the cogeneration plant in Stapelfeld make a valuable contribution to the implementation of dedicated climate protection goals of Germany and the Hamburg metropolitan area. Country-wide, by 2030 CO₂ emissions should be reduced by 40% compared to 1990, and Germany's energy efficiency should be improved 2.1% annually. At the same time, the proportion of electric power generated by CHP systems should increase to 25%. Likewise, as one of the largest German trade and industrial centers, the Hamburg metropolitan area is pursuing ambitious climate protection goals: The target is to reduce regional CO₂ emissions by 80% by the year 2050.

Achieving these objectives will require, in addition to increased utilization of renewable energy sources, a basic increase in energy production from conventional primary energy sources. In particular, combined generation of power and heat that achieves essentially greater efficiencies than usual technologies used to produce energy is an important element for this. Furthermore, rapid-starting gas engines are ideally suited for grid stabilization, a factor growing in importance with increased power generation at solar and wind farms.

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| Engine performance | 9.513 kW |
| Thermal output | ~ 10.000 kW |
| Total efficiency | > 95% |

High Efficiency Power Generation (HEPG) circuit combined with an industrial heat pump



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 48,000 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.



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