

INNIO ACCELERATES HEAT TRANSITION

Ulm completes its coal phaseout, thanks to two Jenbacher J920 FleXtra cogeneration plants

Background

Fernwärme Ulm GmbH, also known as FUG, is a 100-year-old municipal utility that provides the German city of Ulm with a reliable supply of district heating. The company has about 200 employees across four locations. In addition to the operation, maintenance, and optimization of the generation and distribution units, FUG's core competencies include primary energy procurement and energy trading. Third parties also contribute to FUG's district heating network, such as a waste-fed thermal power plant FUG operates in Donautal, as well as several biogas plants. In total, FUG supplies about 50% of Ulm's households and businesses with high-quality, round-the-clock clean energy.

Early on, FUG recognized the growing trend—not to mention the necessity—of moving to less impactful ways of generating heat, and it took appropriate and decisive action to transform its energy production. An important step was to decommission two coal-fired boilers, which were replaced by a biomass-fueled thermal power plant in 2013. Now, the last coal boiler has been exchanged for two INNIO Jenbacher cogeneration plants, which were located in the area previously used to store stockpiles of coal. The installation of the new plants in 2022 marks the successful completion of FUG's bid to phase out coal, thus ensuring that the city of Ulm has a secure, efficient, and environmentally responsible district heating supply for the years ahead.

Leading-edge solution

FUG's philosophy centers on the four cornerstones of ecology, quality, customer focus, and safety. The company puts this into practice by continuing to increase the proportion of renewables in its fuel mix, continually expanding its grid, and always delivering the highest standard of services in alignment with the needs of the market.

For many years, the thermal power plant in Magirusstraße consisted of two gas/oil boilers, two wood-fired biomass boilers, and a coal boiler. It's the latter that recently was replaced by the

»Thanks to the installation of two high-efficiency Jenbacher cogeneration plants, we are bringing over a hundred years of coal incineration in the city of Ulm to a close. The new plant is replacing the last coal-fired boiler and represents a great step forward in terms of environmental sustainability.«

Michael Berger, Engineering Director, Fernwärme Ulm



two Jenbacher cogeneration plants. The boilers produce steam that is fed directly into FUG's existing steam grid and used to supply three hydraulically separated heating networks via steam conditioning stations.

Heat is recovered from the new cogeneration plants and used in heating networks—at a temperature of 185°C for the university network and 110°C for other city areas. This repurposing supports the long-term goal of replacing the city's steam grid with the pre-existing and continually growing heating-water network.

Result

The J920 FleXtra is the largest INNIO Jenbacher engine and, at 48.8%, offers the best electrical efficiency of any Jenbacher engine. When used as part of a cogeneration plant, the overall efficiency can increase to over 90%¹.

The peak efficiency values and the significant reduction in emissions were the main reasons FUG opted for an energy solution from INNIO. Since the early 1990s, FUG has relentlessly worked to lower emissions, reducing them by around 80%. The integration of two Jenbacher cogeneration plants plays a key role in shifting the traditional utility's focus and setting it on a course to deliver on a sustainable and dependable heat supply.

The technical properties of the J920 FleXtra engine make it ideal for combined heat and power (CHP) generation. By forgoing a low-temperature connection, and thus avoiding the associated heat loss, the overall viability of the project is greatly enhanced, and overall efficiency is increased.

Key technical data for Ulm CHP plant

Installed units	2 x J920 FleXtra
Electrical power	2 X 10 MW
Thermal output	2 x 9.6 MW
Electrical efficiency	48.8% ¹
Emissions: CO	100 mg/Nm ³ @ 5% O ₂ -tro (daily average)
Emissions: NO _x	100 mg/Nm ³ @ 5% O ₂ -tro (daily average)
Fuel	Pipeline gas
Year of commissioning	2022

¹ incl. 5% tolerance in accordance with DIN-ISO 3046 and DIN 6271

Customer benefits

The Jenbacher J920 FleXtra offers numerous advantages:

- Improved carbon footprint due to greater energy efficiency
- High power densities in return for low investment costs
- Optimized heat output thanks to total utilization of engine heat
- Stable power output and reliable performance in all situations
- Short startup time for grid firming and simple maintenance



Engineering Director Michael Berger (right) and Sales Manager Sebastian Pongratz from Fernwärme Ulm next to the new Jenbacher J920 FleXtra



Fernwärme Ulm video:

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