

JENBACHER J624 ENGINES

to support high efficiency combined heat and power in South Korea

To power the growing Hakha region of Daejeon, CNCity Energy added six Jenbacher J624 engines from INNIO to create one of the largest gas engine power plants in South Korea. This inaugural launch of the J624 two-stage turbocharged units in Asia's 60 Hz segment provided a game-changing technology to support the region's increasing heat and power demands.

Background

Founded in 1985, CNCity Energy (Choongnam City Gas Co Ltd), builds pipelines and distributing natural gas and liquefied natural gas to the cities of Daejeon and Gyeryong in South Korea. In 2001, driven by government policies related to distributed power, the company began work on Community Energy System (CES) projects to extend its reach to new development areas. As part of this effort, INNIO supplied 13 Jenbacher J620 engines for an earlier project. Combined heat and power (CHP) energy conversion saves about 39%* of primary energy compared to the separate generation of power and heat. By efficiently generating both heat and power, CHP plants are helping Korea meet its extensive district heating needs.

* Based on IEA '16 electricity production figures for EU-28 and EIA '17 average power plant heat rate references

Solution

In 2011, CNCity Energy once again turned to Jenbacher technology and began work on the Hakha CES project to supply heat and power to nearly 8,000 homes, commercial buildings, schools, and public buildings in the growing Hakha region of Daejeon. As the town's development continued over a five-year period, CNCity selected the high efficiency J624 engines for a solution that could meet the region's energy requirements in a step-by-step progression and reach full demand by 2015.

The CNCity agreement with INNIO was for six J624 two-stage turbocharged engines as well as the silencer, radiator, and

»The operational characteristics of the Jenbacher J624 engines from INNIO offered an ideal long-term development rhythm to meet the region's growing district heating demand over the five-year development period.«

Mr. IK Hwang, CEO, CNCity Energy



exhaust gas heat exchanger. RNP Enterprise—INNIO's authorized distributor and service provider—delivered the major mechanical and electrical balance of plant equipment. INNIO was able to win the project by offering a competitive capital expenditure, excellent reference projects and service capability.

Additionally, the Jenbacher J624 engine provides high efficiency at partial load, and its engineering excellence offers significant advantages, particularly for CHP solutions with multiple engines.

Result

The Hakha CES project implementation succeeded in keeping pace with the region's growing power needs. In February 2013, the first project phase involving the installation of four J624 units and supporting equipment was completed, and by the end of 2014 the last two units were installed.

The new cogeneration plant with its six J624 engines running on pipeline gas provides a total of 25,182 kW of electrical output and 24,600 kW of thermal output, and it achieves total efficiency of 87%. The installation of the six Jenbacher J624 engines at Hakha, Daejeon, creates one of the largest gas engine power plants in South Korea.

In addition, the two-stage turbocharged engines, with leading efficiency and power density in their class, make them more economical than any other gas engines with a similar output.

Key technical data

Installed engines	6 x J624 2-stage turbocharging units
Electrical output	25,182 KW
Thermal output	24,600 KW
Total efficiency	87%
Energy source	Pipeline gas
Year of commissioning	2013, 2014



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Customer benefits

Ideal for district heating applications, a CHP plant with Jenbacher J624 two-stage turbocharging engine technology provides:

- Class-leading total efficiency at 87%
- Energy savings of 40%
- Low NO_x emissions with less than 50 ppm
- Flexible and modular design
- Fast start-up time in 5 minutes

INNIO is a leading energy solution and service provider that empowers industries and communities to make sustainable energy work today. With our product brands Jenbacher and Waukesha and our digital platform myPlant, we offer innovative solutions for the power generation and compression segments that help industries and communities generate and manage energy sustainably while navigating the fast-changing landscape of traditional and green energy sources. INNIO is individual in scope, but global in scale. With our flexible, scalable, and resilient energy solutions and services, we enable our customers to manage the energy transition along the energy value chain wherever they are in their transition journey.

INNIO is headquartered in Jenbach (Austria), with other primary operations in Waukesha (Wisconsin, U.S.) and Welland (Ontario, Canada). A team of more than 4,000 experts provides life-cycle support to the more than 55,000 delivered engines globally through a service network in more than 100 countries.

INNIO's improved ESG Risk Rating again secures the number one position across more than 500 companies globally in the machinery industry assessed by Sustainalytics.

For more information, visit the INNIO website at www.innio.com

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