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One of China's first data center to use trigeneration as main source for power, heat and cooling

Beijing, China

Data centers in China usually rely on the grid as the main power source, so using the Jenbacher genset for primary power was a break from tradition. Having worked with Jenbacher products in the past, the customer is confident in the Jenbacher performance and reliability.

Background

The customer's data center consists of a 31,000-square-meter building, including a 9,000-square-meter energy station.

In 2012, the power provider wanted to reduce CO_2 and NOx emissions when providing power for the data center in Beijing.

Solution

Although the power provider had invested in a number of INNIO* Jenbacher* products in the past, it had never employed trigeneration – the combination of cooling, heat and power – as a facility's main power source. Providing significant advantages over traditional cooling methods, trigeneration is an excellent solution for sites with fluctuating heating and cooling requirements, offering an efficient year-round source that meets both thermal and cooling power needs.

The power provider contracted for five Jenbacher J620 gas generators – four to power the data center and one as backup. The multi-year service agreement will span 59,999 operating hours.

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Result

Unlike other traditional Chinese data centers, this project – which was commissioned in 2014 – is not equipped with diesel generator sets as a backup power source. Instead, the Jenbacher gas generators will provide the primary power needs of the site, with the grid supplying backup power as needed.

The facility provides reduced CO_2 and NOx emissions while demonstrating high energy efficiency, with electrical and heat efficiency totaling 86.7%. In addition, the use of gas generators at the facility supports the local government's policy to replace coal energy sources.

Customer Benefits

- Excellent solution for sites with fluctuating heating and cooling requirements
- Efficient year-round source for both thermal and cooling power
- Uses excess energy to generate chilled water for air conditioning or refrigeration
- Nearly silent absorption chillers offer lower operating and life cycle expenses compared to compression chillers

Key Technical Data

Number and type of units	5 x J620
Electrical output	16,745 kW
Max. thermal output	16,650 kW
Total efficiency	> 88%
Water temperature level	> 86.7%
NOx emissions (according to TA-Luft based on 5% O_2)	500 mg/Nm³
Energy fuel source	Natural gas
Commissioning	March 2014

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 52,000 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.

Find more information about INNIO's data center solutions here:
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