

# J920 FLEXTRA ENGINES DELIVER ENHANCED FLEXIBILITY

## greater efficiency, and lower emissions

### Background

Italian utility Acea Produzione SpA, a subsidiary of Acea SpA—one of Italy's principal multi-utilities—supplies energy, water, and other environmental services in southwestern Rome. The utility recently modernized its largest district heating power plant—the 1990 Tor di Valle combined heat and power (CHP) plant—to improve its operating flexibility and energy efficiency as well as reduce its environmental impact. The district heating power plant originally was constructed as a gas turbine combined cycle (GTCC) plant with heat extraction, providing about 120 MW of power and 70 MW of heat to the nearby Torrino area district heating network.

### Solution

The modernization of the existing district heating power plant led to the establishment of a new 28.5 MW CHP plant. This plant features three of INNIO Group's 9.5 MW Jenbacher J920 Flextra engines, three 23 MW auxiliary gas boilers, six 215 m<sup>3</sup> heat storage tanks, and associated balance of plant systems to connect to the existing district heating system. The new equipment, including the Jenbacher engines and auxiliary gas boilers, was installed in the modernized engine hall.

In addition to the engines, INNIO Group provided related engineering and associated balance-of-plant equipment. An important Italian industrial engineering supplier, developed the plant's engineering, managed the project, ensured equipment supplies, and oversaw the installation of the entire plant, including the civil infrastructure.

The engines are integrated with a thermal energy storage system consisting of six 215 m<sup>3</sup> outdoor heat storage tanks. This storage system guarantees a continuous heat supply without the need to increase electric power generation during periods of low power demand from engines. Acea's three Jenbacher J920 Flextra engines are connected to INNIO Group's myPlant Asset Performance Management solution. Through this core web and mobile

»The three Jenbacher J920 Flextra engines run only when power and heat demand is high and when the cost of generation is lower than the cost of electricity from the grid. The engines easily can be shut down within minutes if plenty of solar or wind power is provided on the grid and enough heat is available from storage. Because the engines can go from start to full output in less than five minutes, they provide exceptional operating flexibility for frequent starts and stops.«

Ing. Luca Caracciolo, ACEA Produzione SpA, Operations and Maintenance Manager, Nucleo Tor di Valle e Montemartini



monitoring application, Acea gained a new level of real time control over its fleet. The myPlant Asset Performance Management solution leverages intelligent predictive monitoring and remote data access to enhance the engines reliability and reduces site visits.

## Results

The upgraded 19 MW Tor di Valle CHP plant began commercial operation near the end of 2017, and subsequently underwent an expansion to 28.5 MW in 2020, supplying electricity to Acea's nearby sewage treatment plant and Rome's distribution grid. The plant also provides heat for the local district heating network, serving more than 40,000 residential customers in the Torrino area.

The Jenbacher J920 Flextra units, which operate between 5,000 and 6,000 hours annually, enhance the plant's ability to achieve high fuel utilization and total efficiency above 80%. This efficiency qualifies the plant for white certificates from the Italian government. Compared to the older GTCC plant, the new CHP plant reduces annual CO<sub>2</sub> emissions by approximately 24,000 tons. Furthermore, the power plant possesses the adaptability and capacity to engage in the Italian balancing market and auctions. This participation not only diversifies its operations but also ensures an additional revenue stream for the end user.

## Key technical data

Installed engines	3 x J920 Flextra
Energy source	Pipeline gas
Electrical output	28.5 MW
Thermal output	21.9 MW
Total efficiency	> 80%
Start time	5 minutes
Heat from peak gas boilers	3 x 23 MW
Heat storage system	6 x 215 m <sup>3</sup>
Years of commissioning	2017, 2020

## Customer benefits

- Total efficiency exceeding 80%
- Economical CHP from three 9.5 MW Jenbacher J920 Flextra engines
- Rapid startup time of less than five minutes and swift shutdown capability
- Reduced CO<sub>2</sub> emissions—by approximately 24,000 tons annually



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