

Jenbacher trigeneration plant provides efficient cooling, heat and power to Italian emergency system

**Vodafone Village
Milan, Italy**

“Trigeneration has been a game changer at Vodafone Village, which manages the entire Vodafone Italia network infrastructure. With combined cooling, heat and power, we can efficiently meet year-round needs of the village’s four buildings while saving significant amounts of CO₂ from being emitted to the atmosphere.”

Vodafone Village



Background

The four-building Vodafone Village is the operations center that manages the entire Vodafone Italia network infrastructure. That service covers all of Italy with emergency management, including national security and coordination of emergency requests. Nearly a decade ago, the Vodafone Village owner had the foresight to want to reduce its energy consumption and increase its cooling methods with a reliable power source.

Solution

In 2012, Jenbacher* supported the installation of a trigeneration plant, including engine room layout design, at Vodafone Village. Trigeneration — or combined cooling, heat and power — provides significant advantages over traditional cooling methods. An excellent solution for sites with fluctuating heating and cooling requirements, trigeneration offers an efficient year-round source that meets both thermal and cooling power needs.

The cogeneration unit at Vodafone Village is based on a Jenbacher J620 gas generator with Miller cycle that is supported by three boilers with a capacity of 2,300 kWt each. The system also includes a refrigeration unit consisting of a lithium bromide absorber (1,800 kW) as well as four other refrigeration units (2,000 kW each) with frequency converters.

Result

With an electrical capacity of 3,354 kW_e, a heating capacity of 9,985 kW_t and a cooling capacity of 7,800 kW_f, the highly efficient plant at Vodafone Village keeps 2,000 tons per year of CO₂ from being released into the atmosphere.

However, at 60,000 operating hours, the Jenbacher J620 gas generator has already passed end-of life, so customer Enel X – a global energy transformation company with a focus on digitalization, sustainability and innovation – is extending the existing contractual service agreement with INNIO Jenbacher with an exchange reUp engine to operate for another 60,000 hours.

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	1 x J620
Electrical output	3,354 kW
Max. thermal output	3,385 kW
Total efficiency	> 88%
Water temperature level	85–95 °C
NOx emissions (according to TA-Luft based on 5% O ₂)	80 mg/Nm ³ after SCR
Energy fuel source	Natural gas
Commissioning	September 2012

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