Nidec
All for dreams

Case study

Turnkey cogeneration plant

Project Summary

Project: Cogeneration plant
Application: 2,678 kW Trigeneration system for a glass manufacturing plant

Nidec's Role

Nidec Industrial Solutions was chosen to design, construct, install and commission a cogeneration plant (heat and power generation) to be integrated in a pharmaceutical glass manufacturing plant's trigeneration system.

Scope of Suppy

- Spark-ignited gas engine
- Generator for power supply
- Heat exchangers for thermal energy recovery
- Waste heat boiler
- Electrical switching and control equipment for power distribution and engine management

The challenge:
To help a pharmaceutical glass manufacturer reduce its energy costs and dependence on the power grid

To improve its energy efficiency and system security, a pharmaceutical glass company wished to add a new 2,678 kW trigeneration system to its manufacturing facility in Italy. Trigeneration – also known as combined cooling, heat and power – is a process that links a chiller to an onsite cogeneration unit, using some of the heat produced to generate chilled water for air conditioning or refrigeration.

Several issues would complicate the cogeneration unit's design and construction. Due to the company's location near a residential area, the unit's operation would need to meet stringent noise requirements, registering less than 50 dB(A) at 10 meters in an open field. That is roughly the noise level of a normal conversation in a home.

The cogeneration unit and its auxiliary components would also need to fit on a highly constrained site. And it would need to be installed in a short time frame.

Given these challenging project constraints, the manufacturer sought an experienced design and construction partner with expertise in both energy generation and turnkey project delivery. It selected Nidec Industrial Solutions.

The solution:
A pre-engineered, modular “plug-and-play” cogeneration solution

To address the manufacturer’s time and space limitations, Nidec delivered a pre-engineered, containerized solution with a minimal footprint and simplified installation. Extensive factory testing prior to shipment further shortened the time needed to install and commission the plug-and-play solution.

In addition to the power and thermal energy produced, a waste heat boiler fed by engine exhaust generates steam at 10 bar. Cogeneration is a highly efficient process which delivers significant cost advantages and reduces greenhouse gas emissions, with the likelihood of achieving primary energy savings of approximately 40% compared to the separate purchase of electricity from the grid and a gas boiler for onsite heating.

Functional Diagram of the System: