



CASE STORY

Shining a light on tomatoes

A single J624 from GE Energy with an output of 4 MW can cover the power needs of about 9,000 European households. Moreover, this flagship is helping to shine a light on Dutch tomatoes consumed all over Europe. SWEP's B427 is an integral part of this impressive unit.

CHALLENGE EFFICIENCY

SWEP
A DOVER COMPANY



SWEP's B427 is used in many different heating and industrial applications, and is easy to adapt to suit a wide variety of situations.

The Jenbacher flagship, the first 24-cylinder gas engine J624, was presented to the public in June 2007. What followed was a year of testing at the production location, followed by a successful evaluation. In September 2008, it was finally ready: GE's most powerful Jenbacher model. The J624 GS is a high-speed engine that combines the benefits of high power density, low installation and operational costs and low fuel consumption.

The J624 GS engine became commercially available to global customers at the beginning of 2009.

The product went into operation with pilot customer Royal Pride Holland to supply the Dutch greenhouse complex with reliable electricity and heat. Royal Pride Holland is



one of the Netherlands' largest commercial tomato greenhouse operators. Their greenhouse facility at Middenmeer, 50 kilometers north of Amsterdam, is the first to operate the world's first commercial 24-cylinder gas engine.

Royal Pride Holland is using the engines to power the greenhouse's new cogeneration plant. The new project highlights the increased emphasis on combined heat and power in Europe as the region increases its focus on energy efficiency. The Netherlands is at the forefront of Europe's efforts to



encourage industries to expand the use of advanced cogeneration technology to improve local energy efficiency and security, while reducing fossil fuel consumption and overall site emissions.

In September 2008, the engines, which run on natural gas, went into operation. Since then, the nine Jenbacher JMS 620 units already installed there have been supplemented. This brings the total electrical output of the complex to 35.2 MW. It also supplies CO₂ as a fertilizer to accelerate plant growth and boost crop production, by recycling the approximately 5% CO₂ content in the engines' exhaust gas in the greenhouse instead of venting the gas into the atmosphere.

Some of the power generated is used for lighting for the tomatoes, but most is supplied to the public power grid. Because the waste heat from the engines can be used at very low temperatures, and the CO₂ in its exhaust gas can also be used, the overall level of efficiency is 95 percent. The Jenbacher units have been installed as part of a pilot project to demonstrate the engine's commercial viability for the horticultural industry.

The cogeneration plant project has enabled Royal Pride Holland to expand the greenhouse to 102 hectares from the site's original 45 hectares. This makes it one of the largest facilities in the Netherlands, and a major international horticultural production center.

FACTS

J624 gas engine

- First 24-cylinder gas engine for commercial operation
- Lean burn, turbocharged, mixture-cooled gas engine
- Compact high-speed engine running at 1,500 rpm
- First fast-running gas engine in the 4 MW power range
- About 11.6 m long, 2 m wide and 2.5 m high
- Total weight: 41 tons
- Bore x stroke: 190 mm x 220 mm
- Total displacement: 150 l
- Fuel flexibility: natural gas or a variety of renewable or alternative gases
- Electrical output: 4 MW
- Electrical efficiency: approximately 46 percent
- Allows overall plant efficiencies of up to 95 percent

GE Energy

GE Energy is one of the world's leading suppliers of power generation and energy delivery technologies. Based in Atlanta, Georgia, GE Energy works in all areas of the energy industry including coal, oil, natural gas and nuclear energy; renewable resources such as water, wind, solar and biogas; and other alternative fuels.

GE Energy's Jenbacher Gas Engines

GE Energy's Jenbacher gas engine business, based in Jenbach, Austria, is a leading manufacturer of gas-fueled reciprocating engines, packaged generator sets and cogeneration systems for power generation. Jenbacher engines cover an output range of 0.25 to 4 MW and operate on natural gas or a variety of specialty fuels, including flare gas and coal mine gas or alternative fuels like biogas, landfill gas, wood gas, sewage gas and industrial waste gas. Patented combustion systems coupled with advanced engine and plant management systems enable customers to meet stringent international emission standards while offering high levels of efficiency, durability and reliability.



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