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.
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.