



Rose Poultry A/S

Cogeneration

> Case History

Rose Poultry, Denmark



Power Generation

Our energy working for you.™

Where:

Vinderup, Denmark

What:

2 MW GQNC lean-burn natural gas generator set from Cummins Power Generation installed in a chicken production facility

Purpose:

Produce 11.5 million kilowatt hours of power along with 11,000 megawatts of heat and 5,300 megawatts of steam annually; also to deliver 3,700 megawatts of heat annually to nearby village

Primary choice factors:

The combination of significantly reduced NOx emissions and higher fuel efficiency achieved with the QSV91 Cummins Inc. engine meets current Danish standards for environmental and effectiveness ratings for a cogeneration system

Rose Poultry relies on Cummins Power Generation cogeneration to power production operations

VINDERUP, DENMARK — The Rose Poultry chicken production facility, located in this historic rural village of Vinderup, has replaced two generator sets rated at 900 kW each with a new 2 MW lean-burn natural gas generator set from Cummins Power Generation Inc.

The 2 MW GQNC lean-burn natural gas engine generator set's major benefits include the combination of better fuel economy with high power output and low NOx emissions, as evidenced by numerous installations around the world. With lean-burn technology, used on the QSV91 Cummins Inc. engine, excess air is introduced into the engine during combustion, which provides two positive effects — significantly reduced NOx emissions and higher fuel efficiency.

The Rose Poultry installation marks one of the first natural gas generator sets manufactured by Cummins Power Generation and delivered by NISSEN energi teknik A/S. Nissen — a nationwide energy services company — worked in close collaboration with Hollensen Energy A/S, which managed the installation and optimization of Rose Poultry's heat recovery system.



The major benefits of model QSV91 lean-burn gas engine generator set include the combination of better fuel economy with high power output and low NOx emissions.



The Rose Poultry installation marks one of the first gas generator sets manufactured by Cummins Power Generation and delivered by NISSEN energi teknik A/S, a nationwide energy services company.

Rose Poultry employs 600 people at its Vinderup facility, which processes 115,000 chickens daily — approximately 250 tons of chicken at live weight. The factory has an electricity consumption that amounts to 16 million kilowatt hours annually. The new Cummins Power Generation pre-integrated system will produce 11.5 million kilowatt hours of power annually, which amounts to approximately 72 percent of the plant's total annual energy consumption.

In addition to its electrical power needs, the factory has a large daily consumption of hot water, heat and steam. The new system is capable of running continuously for as long as the factory requires. In addition, the 2 MW generator is capable of producing 11,000 megawatts of heat and 5,300 megawatts of steam annually. Rose Poultry's new power generation system also helps to deliver 3,700 megawatts of heat annually to the nearby Danish village of Ejsing.

The new natural gas generator set meets current Danish standards for environmental and effectiveness ratings for a cogeneration system — also known as a combined heat and power (CHP) system.

Once again demonstrating Cummins Power Generation's leadership in providing advanced emissions solutions to the marketplace, the system also meets current Danish standards for gas emissions requirements.

The system's engine was built at Cummins' Daventry factory, while the generator set was manufactured at Cummins Power Generation's Ramsgate facility southeast of London. Other components, including the alternator, filtration system, housing, cooling system, fuel system and control, were also manufactured by divisions of Cummins. The generator set also features PowerCommand®, a digital control system for precise control of voltage, frequency and power quality.

Rose Poultry also purchased a service agreement designed to meet a wide range of customer needs. NISSEN energi teknik A/S technicians have been fully trained and certified by Cummins and are qualified to independently perform all service and repairs on systems, including commissioning and adjustment.

Cummins Power Generation offers complete energy solutions that can include project management, turnkey power plant development, maintenance contracts and operations management. It also has lean-burn technology for cogeneration, alternative fuels and waste-to-energy solutions.

For more information about cogeneration power systems or other energy solutions, contact your local Cummins Power Generation distributor or visit www.cumminspower.com/energysolutions.

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