

*Waukesha Engine Case History Series*

## Dutch heat and power projects fueled by Waukesha Engine



TRAEDON greenhouses throughout the northeastern part of The Netherlands are powered by Waukesha VGF Series engines.

**Subject:**

Energie Distribution, Oost & Noord (EDON), The Netherlands

**Facility Profile:**

EDON is a Dutch holding company. Through its energy service company, TRAEDON, EDON develops combined heat and power (CHP) projects throughout the northern half of the country to produce electricity through alternative means. TRAEDON operates approximately 300 CHP systems in a wide variety of applications: greenhouses, senior citizen homes, hospitals, other medical care facilities, swimming pools, office buildings, schools, apartment complexes and industrial facilities.

**Installation Requirements:**

EDON began building CHP projects in 1987 to help its customers save energy and reduce CO<sub>2</sub> emissions. Cogeneration plants provide about 30% of the electricity generated throughout The Netherlands. The first cogeneration projects generated 100 kW; as the projects grew in size, they needed engines large enough to generate up to 1 MW. The cogeneration projects rely on heat recovery from the engine cooling system, intercooler and the exhaust gases. EDON units have a total electrical capacity of 85 MW.

**Waukesha Equipment:**

Since 1989, EDON has specified Waukesha natural gas engines to power its projects. Currently, there are more than 130 Waukesha engines on-line, ranging from 6-cylinder, 250 kW VGF Series units, up to 12-cylinder, 1000 kW Waukesha VHP Series units. The engines drive synchronized generator applications rated at either 1500 or 1000 rpm.

**Why Waukesha:**

According to EDON, the need for power plants up to 1 MW coincided with the opening of Waukesha Engine's facility in Appingedam, The Netherlands. EDON works closely with Waukesha Engine's distributor in The Netherlands, Landre-Ruhaak, and its packager, Zantingh. The price of electricity from Dutch power stations is so volatile, CHP systems must come on-line in a matter of minutes. EDON puts a premium on the reliability of Waukesha engines.

**Cogeneration History:**

Typical cogeneration CHP applications average 5,000 engine operating hours each year. Some of the more technologically advanced applications are powered by landfill gas, methane, and operate up to 8,000 hours annually. Earliest applications are approaching 50,000 hours, with uptime in excess of 95%.

**Unique Characteristics:**

If allowed to leak from landfills, methane is a pollutant. So using methane to operate natural gas engines is one of the most significant examples of EDON's effort to save energy and protect the environment in The Netherlands. EDON has also developed selective catalytic reduction, which cleans engine exhaust gases before they are introduced into greenhouses. Waukesha natural gas engines help make selective catalytic reduction possible.

**Cost Effectiveness:**

On average, CHP projects save TRAEDON customers about 10% when compared to the cost of purchasing all of its energy needs from the country's electric power stations. EDON purchased a long-term maintenance contract from Zantingh that calls for a complete service check on each engine-genset every 1,000 operating hours.

For more information on this Waukesha Engine installation, or Waukesha's cogeneration capabilities, contact Waukesha Engine Division, A Dresser Company, 1000 West St. Paul Ave., Waukesha, WI 53188-4989, (414) 547-3311, Fax: (414) 549-2795.



Shepherd Hospital, Emmen, is one of 100-plus CHP projects powered by Waukesha engines. Below, this VGF L36GLD Waukesha engine supplies energy to the hospital.



Selective catalytic reduction cleans engine exhaust gases before they are used to heat greenhouses.



Many Waukesha engines in Dutch CHP projects are approaching 50,000 hours running time.



A popular CHP application in The Netherlands is swimming pools.

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*“The price of electricity from the power stations is so volatile, we sometimes have to start up a CHP system on a moment’s notice; that’s why we put a high premium on engine reliability.”*

*Klaas de Jong  
CHP Project Manager  
EDON*



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