



Project Profile: Nerefco, The Netherlands

Project name:	Nerefco Wind Park
Owner:	BP/Texaco
Contractors:	BP Energy Marketing BV
Power utility:	Eneco
Installed capacity:	22.5 MW
Wind turbine type:	N80/2500 kW
Tower height and type:	80 m. tubular tower
Number of wind turbines:	9
Wind speed:	7.7 m/s at 80 m. hub height
Site:	The site is situated at the Nerefco refinery near Rotterdam
Site description:	The site is characterized by a strong steady wind
Wind turbine siting:	Please see the aerial view on the next page
Building Period:	June – November 2002
Grid connection:	November 2002
Commissioning	December 2002
Extent of delivery:	Turnkey project
Maintenance:	Nordex
Warranty period:	5 years

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In the spring of 2002, Nordex received a contract from the oil companies BP and Texaco for the delivery of nine N80/2500 kW wind turbines. In total the wind park has a capacity of 22.5 MW. The nacelles and blades were already manufactured in May/June and the manufacturing of the towers started in June 2002.

The nine giant Nordex wind turbines at the refinery Nerefco, Europoort Rotterdam, were erected in the end of November 2002 and commissioned in December 2002. All the turbines with a hub height of 80 metres have been built along the shoreline characterized by a strong steady wind. At the same time it is possible to feed the power generated into the existing public electricity grid. The modern technology featured by the turbines and compliance with strict safety regulations ensure problem-free operation at this industrial site.

Very intensive coordination work has been carried out before the mounting of the N80/2500 kW wind turbines at the Dutch refinery.

First of all, the existing safety rules had to be followed when working at the refinery. Therefore, safety training was required before the staff were allowed to work at the site, and also the site organisation had to be certified to meet the safety standards. Furthermore, risk assessments required that the crawler crane had to be disassembled before moving it from one place to another. This was done in order to minimize the risk of an accident at the refinery. Then, also according to the safety rules, each wind turbine was installed with extra safety equipment. "The site has very strict security and safety regulations and Nordex has been very successful meeting our standards" summarises Eric Bakker, director wind energy at BP.

Aerial view with cable routes at the Nerefco site in Rotterdam



Lifts in the turbines are one of the special features in order to make safe access possible for the refinery's employees. Also automatic fire extinguishing systems have been installed in each nacelle as well as a lightning sensor system for switching off the wind farm in case of lightning. Furthermore, a connection of the NC2 and the SCADA computer to the control system of the refinery and an ice sensor on each nacelle enables the switching off the turbine in case of possible ice on the blades are parts of the installation..

The installation of the wind turbines went according to schedule. When one turbine was erected the main crane was dismantled, moved to the next foundation and assembled again ready to erect the next wind turbine. While one team was erecting the wind turbines, another team made the final installation and commissioning of the erected wind turbines.

The wind park marks BP's first major wind power project and is in line with BP's strategy to add value to the business, lower emissions and extend cleaner energy offers to customers. The wind park will cut carbon-dioxide emissions by 20,000 tons per year.

