



A new tower every five days

On the Dutch North Sea coast, at the Westereems wind farm, the energy supplier Essent is currently implementing one of Europe's largest repowering projects. A total of 88 new wind turbines are going up at Dollart Bay.

Just like tin soldiers, the Enercon wind turbines stand one behind the other in seemingly endless rows near the town of Eemshaven. Strong gusts sweep across the 9 x 3 km² area, which Essent NV has leased from the local port operator on a 25-year contract.

When this massive repowering will have been completed, 88 turbines of 3 MW each will be generating wind power. Essent is constructing 52 of the turbines itself, using E-82s with 100 m hub height and a total height of 141 m, and is investing over

€ 156 million. A further 21 Vestas V90s with 3 MW each are being put up by Growind, set up by a group of private investors for this purpose. Growind will then be the largest privately funded wind farm operator in the Netherlands.

The mammoth project is being rounded off with nine E-82s being erected by Electrabel, plus a further three E-82s and three V90s, again in private hands. The E-82 wind turbines, which in series are rated at 2 MW, are fitted with a water cooling technology here – a requirement in order to raise the rated capacity of the generators to 3 MW. This means that the high wind speeds which dominate on the coast can be utilised even better.

Project of superlatives

The Westereems wind farm, which Essent aims to officially inaugurate in May 2009, is a project of superlatives. Components weighing tons are piling up on



The method of prefabricated construction speeds up the erection of the concrete towers enormously. Construction with slipform or climbing formwork methods would take several weeks.

the industrial areas around the harbour. Tower segments are being unloaded from ships, nacelles and rotor blades are being lifted off the heavy load transporters and placed in the outdoor material stores where they can be “grabbed” directly by the cranes. With every passing minute loaded lorries move across the site to keep the project “fed” with materials. Groups of construction workers and technicians are on the move in all corners of the enormous site.

Between the modern Enercon wind turbines stand “veteran” Kenetech turbines. These turbines, which used to be manufactured in the USA, generate 360 kW. Originally there were 94 of the turbines at the Westereems wind farm. Soon they will all have disappeared. Essent has already found a buyer for the old 40 Micon turbines with a rated power of 250 kW, which have already been dismantled.

“Westereems is the largest wind farm in the Netherlands. Its turbines are visible from quite a distance. This has awakened the interest of people in the

region and has attracted them in droves. For Essent this important project shouldn’t remain a one-off. It is much more the starting shot for more wind power in the Netherlands, which will come along with better support and tariffs. At least for Essent I can confirm that we are planning further wind farms”, announces Jan Boorsma, who is responsible for all onshore projects by the Dutch energy supplier.

Boorsma thus happily compares Westereems to the Dutch offshore wind farm Princess Amalia, which with 60 Vestas turbines only achieves 120 MW: “Strictly speaking we are building a power station here and not a wind farm.”

Six-fold yield

In terms of repowering, the figures for Westereems are even unique in Europe. The 52 new wind turbines (total 156 MW) replace 134 old turbines (44 MW). Essent aims to increase the annual yield from the wind farm from 80 to 470 GWh. This means: the installed power is to grow by a factor of 3.5 and the yield almost six-fold.

There is a touch of irony here. The American Kenetech Windpower went bankrupt in 1996, but before this the American company had picked a fight

Specifications of the Westereems repowering project

Original wind farm	
94 x Kenetech 360 kW	34 MW
40 x Micon 250 kW	10 MW
Total	44 MW
New wind farm	
52 x Enercon E-82/3 MW (Essent)	156 MW
9 x Enercon E-82/3 MW (Electrabel)	27 MW
3 x Enercon E-82/3 MW (private)	9 MW
21 x Vestas V90/3 MW (Growind)	63 MW
3 x Vestas V90/3 MW (private)	9 MW
Total	264 MW

The water-cooled ring generator achieves a rated power of 3 MW.

Photos (4): Essent

A total of 88 wind turbines will be erected in the new wind farm, and will be owned by Essent, Electrabel, Growind and individual private operators.

Source: Essent



Jan Boorsma is the Onshore Project Manager for Essent NV.

over patents with Enercon lasting until 2004, which prevented the German manufacturer from exporting to the USA. Enercon won the bid for the Westereems project within the framework of a European tender, knocking out the competition. "After consulting our colleagues in Germany, we decided on the E-82. The technology and availability of the Enercon turbines form a convincing concept. One advantage to the tender may have been Enercon's direct proximity to the Dollart. This saves time, but brings mainly logistical advantages", surmises Boorsma.

Construction just like on a production line

The companies involved went completely new ways to be able to put the princely sum of 52 turbines up in record time between February and December 2008. To this end a logistical concept was developed, which enabled a production line approach to be implemented on such a scale for the first time ever.

Starting with the foundation, then the tower shaft, the nacelle and the rotor blades, each wind turbine was assembled step by step in several stages. As soon as a step had been completed, the "caravan" moved on a few hundred metres and did the next wind turbine. During the construction phase there were eight cranes in permanent use, including crawler cranes which were able to travel along the construction site roads by themselves. Thanks to the sophisticated logistics a new tower went up every five days.

"All the logistics for the components and the construction concept worked marvellously. After the first foundations were poured in February 2008, Essent was able to finish the erection of all 52 wind turbines at the end of December. The first two joined the grid as early as July, the last ones followed in January. On balance we were able to put up a tower in five days. Assembling or installing the rotor blades, the nacelle and the generator each took up one day. Completing all the cabling then took a further week", sums up Boorsma. During the weeks of the main phase there

were approx. 500 workers busy in Eemshaven every day.

Strong winds delayed construction

The wind, of all things, which blows at an average speed of 8.5 m/s in Eemshaven, did cause problems, however. Depending on its strength it meant working night shifts or taking forced breaks. "The wind was indeed the biggest challenge. When it blew too hard, the towers couldn't be put up or the rotor blades mounted", says Boorsma.

The approval procedure was less speedy than construction; it took almost ten years to get all the assessments carried out and receive approval. By Dutch standards this is within the norm, assures Boorsma. One has to have a little patience, that's all.

On the other hand, the conditions in Eemshaven are almost paradisiac: other wind farm operators can only dream of such. Obstruction warnings for flight safety, which keep being discussed and make new studies necessary in Germany, for example, are largely unknown in the whole kingdom. "We are in the Netherlands. Warnings for aircraft are only required for constructions over 150 m in height. Even in the wind power sector that is still pretty high right now", laughs Boorsma.

He is also happy because of the rate for wind power electricity, which a subsidiary of the energy supplier Essent sells. After strong cuts there is now once again to be more money for electricity from renewables. The old tariff system consisted of a market price (2 to 7 €-ct/kWh) and a subsidy payment of 7.6 €-ct/kWh, paid over 10 years or 18,000 full-load hours. In the modified regulations from 2006, there was a base price of 8.8 €-ct/kWh, but no market price component anymore. From 2009 the base price is 9.1 €-ct/kWh. Under these conditions the Westereems repowering project should turn out to be nothing other than a great success.

Torsten Thomas

Further information:
www.westereems.nl
www.growind.nl



A look at part of the new Westereems wind farm: the front rows are of Enercon E-82s, with Vestas V90s behind.



www.windpowerasia.com.cn

2009年7月8 - 10日
北京 中国国际展览中心
8 - 10 July 2009
China International Exhibition Center, Beijing

亚洲风电主导展会

Asia's Leading Wind Energy
Exhibition & Conference

25,000m² 展览面积、400展商、20,000专业观众
汇聚国内外名企，构建一站式国际化综合采购平台
25,000m² Exhibition space, 400 Exhibitors,
20,000 Professional visitors

WPA 2009 第六届亚洲风能大会 暨国际风能设备展览会

Wind Power Asia 2009

The 6th Asian Wind Energy Exhibition & Conference

Contact Us / 联系我们

Koelnmesse
科隆展览中国有限公司
Ms. Helen Chen
Tel: +86 10 6590 7766
Fax: +86 10 6590 6139
h.chen@koelnmesse.cn

Held in conjunction with
Clean Energy Expo China (CEEC)
同期举办

