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„The work is still exciting.“

Interview with Lars Müller, Purchasing Manager for wind turbines



*Economist Lars Müller,
wpd*

How many employees are involved in buying wind turbines and what do they do exactly?

Lars Müller, wpd manager with signatory powers: We are a four-man team with commercial and legal backgrounds taking care of the procurement of wind energy turbines (WEA) for our projects at home and abroad. The main work consists of classic purchasing activities such as putting projects out to tender and negotiating what are mainly purchasing and maintenance contracts with technical departments. After all, the contracts must reflect the details of the project.

Who do you work most closely with in this regard?

L. M.: The implementation manager is our central point of contact who helps us with any questions to do with the project - whether it's a question of determining the scope of delivery, the matrix of responsibilities or the construction schedules. We also receive support from electrical planners, project managers, lawyers and many other colleagues in the company. At the end of the negotiations, our technical and legal advisors check the contracts again from the banks' perspective. In the implementation phase, we help the project departments with contractual problems, and remain in constant touch with the manufacturers in order to liaise on progress.

... but before that you must have to choose the right turbine in the purchasing department?

L. M.: Exactly. Besides the financial parameters, we lend support in selecting the right turbine that has to reflect the special demands of the project and also the specific conditions of each country. In the process we pay special attention to how individual turbine types and their configuration fit with the wind conditions, any structural limitations and legal restrictions due to emissions protection as well as any other climatic circumstances. The growing requirements with regard to grid compatibility are also playing an ever greater role.

How do the underlying conditions affect the purchase of turbines?

L. M.: It is important to follow movements in the markets to enable us to respond to changes quickly. Changes to underlying conditions such as tax programmes or in feed-in remuneration systems have a strong effect on demand and thereby on the availability of turbines whereby there are countries where this is of greater or lesser significance. The tender models which are slowly establishing themselves also play their part. The fear that remuneration systems will change drives the markets in the short term, but at the same time remuneration levels are falling with the result that the currently low rates of interest are becoming a stabilising factor. If interest rates start to rise, some projects may become tight.

How have wind turbines developed and what will the future bring - particularly in the home market?

L. M.: For a long time there were scarcely any turbines with a total height of over 150 metres. Then came higher towers and soon the first turbines for weak winds with significantly larger rotors which focussed on southern Germany. These dimensions are of course interesting in regions with stronger winds, too, and manufacturers are responding by designing the weak wind models differently or producing new models. Total heights of over 200 metres seem to be just a matter of time. The falling level of remuneration alone dictates that the price per kilowatt hour produced must fall further and the size of the turbine is a crucial factor in achieving this.

With regard to falling electricity prices, Germany seems to be experiencing all phases at the same time. At the moment we are studying the quarterly degression rates in the remuneration for wind power in 2016 which will probably be quite strong, and the tendering model still being developed for 2017 and beyond. For us in purchasing, this means that the major run on manufacturers' capacities in 2015 will spill over into the first quarters of 2016. We now have to focus much more precisely and much earlier on the relevant quarter in order finally to prepare for a completely different system in 2017/2018 - so the work is still exciting.

France: Many projects under construction at the same time



Starting with two colleagues who undertook pioneering work in 2002, roughly ten years later wpd had realised 58.5 megawatts (MW) in France. By the end of 2014, this figure had more than doubled. In the process, the teams put to bed the hitherto largest French project for wpd: the ten turbines of the Nordex N-90 type have a total rated power output of 25 MW in the Beaumont wind farm. Here in the northern French département of Aisne, the company undertook the construction work itself as it had for the first time in 2013/2014 in Binas and Roisel. „Itself“ in the sense of a local wpd construction SAS which as the general contractor also takes on all the roadways and electrical work. With these projects, the job of implementation manager responsible for realising the project was created and a construction team set up in France.

The spring of 2014 saw a real implementation wave of wpd projects and since then in the second largest „wpd country“ - measured by the number of locations - there are more projects under construction at the same time than ever before. Employees have so far only ever seen this situation in the domestic market of Germany.

After Beaumont followed the commissioning of the next project in the shape of the 11.5 MW wind farm of Vallée Madame in July 2015 - also in the Picardie region. It is located in the département of Somme. Turbine manufacturer Enercon produced the towers for this farm in the neighbouring département of Oise. At the time when this issue of wpd Inside went to press, the last of the five Enercon E-92 turbines had already been installed in the Bois-de-Cholletz wind farm also situated in the département of Oise. Three further wind farms are currently under construction in the shape of MLHCP, Obi and Blanc Mont.

The teams responsible for these projects grew in size significantly last year to enable them to master these challenges. There are now two electrical and two construction engineers working in France and two implementation managers in Bietigheim-Bissingen. The finance department in Bremen and the wpd windmanager team in France have also grown.

In nearly every project, construction had to start on a particular day as otherwise the building permit would have expired. It was therefore often a question of being spot on which represented a major challenge to award the construction work in good time, to commission the manufacturer at the last second and of course to secure the appropriate finance.

Installation in full swing

This was also successfully achieved for the MLHCP project named after the municipalities of Melleran, Lorigné, Hanc and La Chapelle-Pouilloux. The extremely difficult soil conditions there required extensive work on the foundations. The technical solution was to use concrete posts up to 20 metres in length as well as a special technique known as jet grouting, in other words high-pressure injections in order to create a cement-soil matrix in the ground. With regard to the type of turbine, the Enercon E-101 has been used for the first time for a French wpd project. The team from Limoges responsible for the first time is delighted that by the time this issue went to press, installation of the seven turbines was in full swing and the wind farm will shortly be supplying environmentally friendly electricity - and their colleagues are equally delighted.

The Beaumont wind farm is the largest French project for wpd so far.

All 80 turbines in operation



Butendiek

Number of turbines: 80

Type: Siemens SWT 3.6-120

Rated output: 288 MW

Location: North Sea

Commissioning: 2015

The 80th and therefore final turbine was erected by the middle of June.



The Butendiek offshore project has been completed and can be termed a success: under construction since March 2014, the first wind turbines were producing electricity by February 2015. A little later, half the turbines had been erected, and at the beginning of August all 80 turbines were on the grid. The wind farm supplies around 370,000 households with renewable energy. A detailed report will follow in the next issue of wpd Inside.

Nordergründe

Number of turbines: 18

Type: Senvion 6.2M126

Rated output: 111 MW

Location: North Sea

Implementation: 2016

Nordergründe offshore wind farm: Finance secured

The finance agreements for the Nordergründe offshore wind power project were signed in Frankfurt am Main on June 2, 2015. This means that it is all systems go for the implementation of the „nearshore“ wind farm consisting of 18 Senvion turbines which are located within the 12 sea mile zone of the German North Sea. Work on erecting the turbines will commence in March 2016 and will be completed by the end of the year (see report on page 6).

Collaboration project



Badow

Number of turbines: 11

Type: Enercon E-82

Rated output: 25.30 MW

Location:
Mecklenburg-Vorpommern

Commissioned: 2014

In the borough of Schildetal in the north-west of Mecklenburg, we have erected eleven turbines for our own operation in collaboration with our partner, naturwind, and an additional two for a local collaboration partner. The wind farm has been connected to the transformer substation specially built by wpd in Gadebusch around twelve kilometres distant. A further wind turbine will be installed in this wind farm by 2016 at the latest.



Inexpensive mains connection

Archaeological finds from the Bronze Age and an unexpected bridge closure on the transport route posed particular challenges for our construction department in the Naundorf project which were quickly solved however. Thanks to our knowledgeable electrical department we were also able to achieve an inexpensive mains connection to the local grid. With the two turbines of the 3 MW class, we are now literally flying the flag in this windy part of northern Saxony: the wpd logo can be clearly seen on the two bright nacelles.

Naundorf

Number of turbines: 2

Type:
Vestas V-112

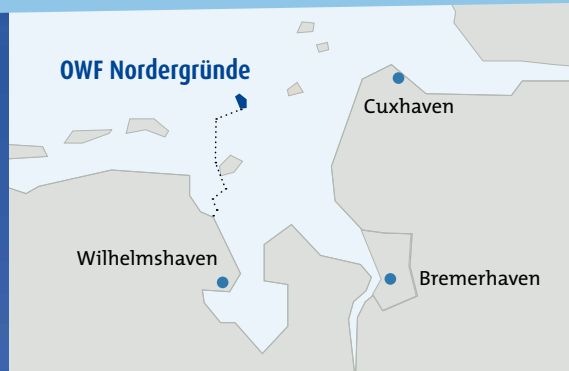
Rated power: 6 MW

Location:
Saxony

Commissioned: 2015



The market of the future – „Nearshore“



The Nordergründe „nearshore“ project situated 15 kilometres east of Wangerooge is to become the next offshore project realised by wpd. After the project was taken over by wpd in 2013, an important milestone in the project’s many years of incubation has been reached with the signing of finance contracts with KfW IPEX-Bank and the European Investment Bank on June 2, 2015.

wpd has succeeded in winning exclusively companies from the north-western region of Germany to implement the Nordergründe offshore wind farm in the shape of Senvion (turbines), Ambau (monopile foundations), Norddeutsche Seekabelwerke (internal cabling on the farm), BVT (transformer substation) and Bilfinger Marine & Offshore Systems (transport and installation). This set-up offers major advantages both for wpd in supporting development and supervising production (manufacturing locations in Bremerhaven, Cuxhaven and Nordenham) and for the coordination of offshore installation and commissioning work. Added to this, there are synergy effects from the joint use of port space by those working on the project which will lead to cost savings.

The role of operational management will be taken by Deutsche Windtechnik Offshore and Consulting (DWTOC) while turbine servicing will remain the responsibility of Senvion.

Installation of the Nordergründe offshore wind farm will start in March 2016 and is to be completed by the end of 2016 while commissioning work is scheduled to finish in the first quarter of 2017. While the engi-

neering work and the project certification associated with it is already in full swing, production of the major components is just starting.

Transmission network operator, Tennet, is due to connect up the wind farm in April 2016 ensuring that mains connection will be in place when implementation of the project commences.

Nearshore leads to adaptations in design and operating concepts

After Baltic 1 and Butendiek, Nordergründe is already the third offshore wind project for which wpd has been involved in the implementation. The number of turbines (18 compared with 80 at Butendiek) and the distance from the coast (approx. 18 sea miles as against 28 for Butendiek) show that this is a so-called „nearshore project“ and therefore a different market segment to the large offshore projects far from the coast. For wpd, nearshore is an important market of the future after Baltic 1, the Nordergründe project which is now ready for implementation and the upcoming Danish nearshore tenders. Short distances to the coast, shallow water depths and low wave loads lead to adaptations in design and operating concepts in this market which reduce costs and ensure high availability of the turbines. Nearshore will therefore play an important role in the future mix of energy forms.

Planning improvements in turbine operation

In the first and second parts of our series on „Optimum management“, we identified that in principle it is possible to make financial corrections to a limited extent in the operation of a wind farm through good business and operational management. The opportunities for optimisations are in fact limited, however, if the farm is already well managed. Revenue increases of two to three percent and outlay reductions of up to five percent represent achievable figures. This means that any significant misjudgement of the location with regard to its earnings position and the wind potential or with respect to the turbine technology installed, cannot be compensated. Going beyond the actual areas of business and operational management, there are further areas which although to some extent difficult are also highly fascinating and which relate in some cases directly to the location and location planning or directly to the turbine technology in existence at the location.

The quality of the location usually represents a constant and is defined in particular by the wind potential. It is not possible to optimise or change this retrospectively. However, in this connection, the risk of third party turbines being constructed in an around the wind farm already at the planning and implementation stage is one of the most significant questions when it comes to assessing a location. Depending on the wind farm configuration, main wind direction and size of the turbines, any additional turbines may have differing effects. For the existing wind farm it is problematical if the additional shadowing effects from the turbines erected later were previously unknown and cannot be compensated. There are some wind farms which have lost 20 percent of their yield as a result.

We have developed an early warning system for the stock of currently 1,700 turbines managed by ourselves, and this system is now bearing fruit. Firstly local land-owners as well as our own people with local responsibility, the farm attendants, are made aware of the need and motivated to report any new planning procedures.

Furthermore, official announcements and news from administrative officials as well as changes in regional planning are recorded by project development and communicated using wpd windmanager. It is usually possible to influence third-party planning if it is detected at an early stage.

On the other hand, there may be a chance to optimise the location ourselves by adding turbines within the wind farm. That is why we regularly examine our wind fields for any opportunities to condense or expand them. Expansions to wind farms, in particular, currently often represent opportunities when land is newly designated. If these opportunities exist, we try to exploit them with the operators as an expansion of the existing wind farm.

The ultimate form of optimising a location is repowering. The location and the type of turbine define the profitability in all crucial areas. The former is a given, the latter can be completely replaced retrospectively as part of a repowering process, as far as this is technically and financially possible, and re-selected to suit the location. wpd wind manager has succeeded in collaboration with investors and limited partners in turning critical locations into very good and profitable projects by means of greater nacelle heights and more modern turbines.

The addition of new turbines to join older ones is no rarity.

Photo: BWE (Jens Meier)



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