



360°

**Tendering
procedure**
Poland

**N131/3300
light-wind turbine**
News

**A boost in
South America**

30 years of Nordex

An interview with the firm's founder and the CEO



8 30 years of Nordex

Anniversary

This year Nordex turns 30. From its beginnings in Denmark to today the company has established a strong position in an international competitive setting. Although I wasn't present during its childhood and teenage years, since I started at Nordex in 2010 our output has doubled. We are successful with our highly efficient products and intensive customer support.

Success always starts with people. So I would like to take the occasion of this "big" birthday to say thank you: to our customers, suppliers and business partners as well as to banks and investors, but especially to our staff. Together with you, the company has experienced much since its foundation in 1985 – and achieved even more.

The best should never be behind us but always in front of us. This being the case, I would like to see this positive trend at Nordex continue. And we're doing a lot to bring this about. We will continue to grow but want to always maintain our flexibility and close contact with our customers. But we also want to celebrate 30 years of Nordex together with you. Because parties should be celebrated whenever the occasion arises.

Yours, 

Lars Bondo Krogsgaard,
CEO Nordex SE

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an anniversary roadshow

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Langenhorner Chaussee 600,
22419 Hamburg, Germany
Phone: +49 (0)40 300 30 1000
E-mail: info@nordex-online.com

Project manager and legally responsible under
German press law: Sandra Jaekel

Authors of this issue: Silke Brandes (SBR),
Sandra Jaekel (SJA), Susanne Schumann (SSC),
Irmela Tölke (ITO)

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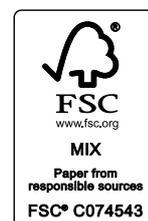
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Nacelle production: optimised, dependable, secure

Nordex is picking up speed. In the wake of the good order situation this year the manufacturer is producing some 750 turbines, around a third more than in 2014. This ambitious plan constitutes a challenge for the production plant – and offers an opportunity to show what it can do. “We have reacted to the high order intake with appropriate measures and are well positioned to cope with it,” says Christoph Seyfarth, Head of Nacelle & Towers. “Ensuring and further improving quality has the highest priority even when we are working to full capacity.”

Well on schedule thanks to two-shift system

In order to meet the increased demand the nacelle factory has been working almost continuously on a two-shift system since the beginning of 2015. Whereas last year the factory only made use of the additional late shift in phases, this year it has become everyday practice and is to remain so for the long term. “The two shifts are now standard and firmly integrated in all processes,” says production engineer Christoph Politz. “This step considerably increases output.” In order to cope with the two-shift system around 100 more staff are currently being used on the nacelle factory production lines compared to 2014.

This 24-hour use of capacity means that time management is becoming increasingly important. “We took a look at the entire production process and made the work content of individual stations leaner and more efficient,” says Christoph Politz. “This has enabled us to reduce the effective working time per cycle of three hours by a quarter of an hour.” In order to create synergistic benefits material handling has

now been assigned to Production instead of to Supply Chain Management. This cuts the number of interfaces and saves valuable time.

Close cooperation with business partners

As in every production process, for things to run smoothly in the nacelle plant it is extremely important to coordinate all the steps on which production depends. “Logistics, in other words the receipt and delivery of materials and products, is precisely timed,” says Christoph Politz. “This is something that suppliers must also be aware of. Lack of punctuality or poor product quality are simply not acceptable with such a tight timetable.” For this reason the department responsible for quality assurance introduced a system of regular intensive communication with suppliers. In addition to the annual Suppliers’ Days, it has trained Nordex’s partners in several audits and informed them of its requirements in terms of material quality and delivery times. In this context it also set up a claims management system, which offers suppliers clear guidelines on the requirements they



have to meet. "Our partners are very cooperative," says Christoph Seyfarth. "We have always proactively involved them and in this way made them aware of how important a role they play in our production."

The measures introduced in the area of materials and logistics are already showing their effect. In spite of the increase in output, this year there have been even fewer production line stoppages than before. Furthermore, since July the factory has increased its weekly output by one turbine: 19 turbines now leave the production line instead of 18. Apart from the number of nacelles, their size has also increased. The width of the Delta Generation turbines is in excess of 3.5 metres, which means that they are usually subject to considerable restrictions when it comes to transport. "Originally we were only allowed to transport the large components at night with a police escort," says Christoph Politz. "But we did not have sufficient capacity to store them for long." Nordex has therefore made a special arrangement with the Rostock authorities. According to this, since the beginning of 2015 the manufacturer has also been permitted to transport the nacelles for the Delta Generation turbines at daytime with the exception of specific periods of high traffic density and escorted by only two police vehicles. "Following the increase in production of the Delta it was essential to reach this agreement. Basically we are highly satisfied with our cooperation with the city of Rostock – and in this case too we worked together hand in hand once again," says Rainer Oppermann, Head of Industrial Engineering.

Secure for today, ready for tomorrow

In order to keep the risk of accidents as low as possible, the HSE department has also been involved in optimising the plant. A structured route concept with speed signs and one-way regulations minimises the dangers during transport within the factory. Furthermore, when heavy loads are being moved by crane, unnecessary risks are avoided by temporarily blocking the routes used.

The optimisation programme has meant that nacelle production has been brought in line with order receipts. "An increase in volume always creates challenges for a production plant. In our case the



situation was complicated further by the ramp-up of the Delta Generation," says Marko Ladehoff, Head of Quality Nacelle & Towers. "But thanks to improved processes and the experienced team the quality of all our products, including their punctual delivery, has been ensured." The plant is equipped for the present – and prepared for the future. Because with 750 turbines produced a year its capacity has not yet been exhausted. [Text: SSC](#)



In 2015 the Rostock plant produced around one third more turbines than in the previous year.

Calendar

Second half of 2015

**HUSUM Wind,
Husum, Germany**
15–18 September 2015

**RenewableUK,
Liverpool, UK**
6–8 October 2015

**Interim consolidated report
3rd quarter 2015
Analysts' telephone conference**
12 November 2015

**EWEA 2015 Annual Event,
Paris, France**
17–20 November 2015

Surveys identify customer requirements

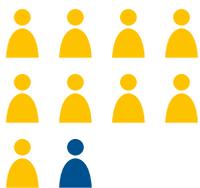
Focusing on customers means creating added value and catering for specific needs – this is one of Nordex’s central endeavours. But in a heterogeneous group of business partners these needs may differ widely. So what exactly do individual customers want? Surveys on customer satisfaction conducted twice a year aim to identify needs and wishes.

Sales survey

For the third year in succession Global Sales has now contacted its customers and 1,650 contacts in 41 markets and asked them about their experience with Nordex turbine sales. Karsten Brüggemann, Head of Global Sales: “I would like to thank all those who took part in our sales survey. The fact that you took the time to give us such frank feedback on our services and performance will help us serve you even better in the future.”

Frequently recommended to others and good quality

“I am particularly pleased that so many customers would recommend us to others as this is an important indicator of satisfaction.” More than 90 percent of respondents would recommend Nordex to others.



Good, but could be better:
nine out of ten customers
would recommend Nordex
to others.

Sales customers are satisfied with the quality of Nordex technology. For instance, one customer named the following as the most important reasons for buying Nordex turbines: “Good technology, suits light-wind sites.” Another survey participant states: “Reputation, and wind turbines that represent the state of the art in achieving the most out of a given site.”

Offers were also deemed to be good quality. More than 70 percent of respondents said that Nordex offers contain all the important information. More than 80 percent also said that they were written in a clear and understandable way.

Shortcomings in customer communication

Conversely, participants had some critical comments to make on general communication. They pointed out that although in most cases the offers were submitted on time, for some customers it took too long to receive replies to their questions from the responsible member of sales staff.

Karsten Brüggemann takes this very seriously: “Last year Nordex grew by a considerable amount and unfortunately we were a little understaffed in some markets. But we have already reacted to this criticism and significantly enlarged our sales team. Our aim is to be fast, competent and close to our customers.” This measure is particularly important as more than 80 percent of respondents say that they mainly obtain information from sales staff. Nordex is enlarging especially the extended sales team consisting of sales engineers, Service Sales, PM Tender Management and lawyers in order to have an even broader base to draw on. In addition to this, a strategic project is intended to improve communication at Nordex. Karsten Brüggemann explains: “This project looks at all the processes, from drawing up the offer to commissioning the completed turbines, with a view to making sure that we supply what we promise – in line with the principle: ‘Big enough to deliver, small enough to care’.”



☒ Service survey

Around 65 percent of the customers contacted participated in the survey – an increase of 15 percentage points on last year.

The willingness of customers to recommend Nordex to others also increased, a factor to which Nordex attaches particular importance. Bo Mørup, Head of Global Service, comments: “The feedback given by respondents makes a valuable contribution to continuously improving our service. In particular the changes compared to the previous year show us where our work is bearing fruit and where the measures we have taken are not yet having the desired effect.”

Best ratings for service quality and HSE

The categories with the best rating in this year’s service survey are quality and HSE. Bo Mørup comments: “For us it is particularly important that we have been given a good assessment in these areas as this reflects our internal objectives. HSE plays a key role at Nordex and we work continuously on raising standards.”



Every year Nordex conducts a survey on the satisfaction of customers with the performance of Service and on satisfaction with the company’s sales performance. The manufacturer makes use of these results to draw up measures for the continuous improvement of quality in these two areas.

Together with the company’s focus on the quality of its service, this is part of what this year too customers regarded as the strength of Nordex Service. A reply from one customer illustrates this well: “After years of struggling, the last few years of Nordex Service have been up to expectation. Availability is high and the work done is of high quality.”

Room for improvement in the areas of modernisation and communication

The survey shows that there is room for improvement in the areas of modernisation and after-sales products. For instance, only a minority of customers found that Nordex presented the costs and benefits of modernisation offers in such a way that they formed a good basis for making a decision. “This is an important tip for us. We have a wide range of efficient modernisation measures available and are continuously expanding it together with our Engineering division. We will now work more intensively on the transparency and communication of these offers,” comments Bo Mørup. In addition to this, the company intends to widen the range of after-sales products to increase yield. For example, at the moment Nordex is testing the effect of retrofitted vortex generators.

The communication category came off worse compared to last year. One respondent describes the situation: “The strengths compared to independent providers lie in the detailed knowledge of turbines, which these are unable to offer. There is certainly room for improvement when it comes to order processing and communication with the customer.” Furthermore, significant differences were noted in the individual national subsidiaries. Bo Mørup: “These outliers show that we are certainly able to perform well in these categories. But they also show very clearly in which national subsidiaries we have some catching up to do.” With this in mind, in the coming years Nordex will be redesigning the internal IT system and communication processes in order to standardise documentation and provide all customers with simpler and faster access to data.

Bo Mørup is especially pleased that the evaluation by the particularly demanding Premium contract customers has improved significantly this year. He states, however: “For us it is important that all customers are satisfied as only in this way can we build up and maintain long-term, successful partnerships.” **Text: SJA**



30 years of Nordex Evolution in wind energy

From its beginnings in Denmark 30 years ago until today Nordex has achieved a good position in a competitive international market. One man played a central role in this development and another is preparing the way for the years to come. Nordex 360° interviews Nordex founder Carsten Pedersen and CEO Lars Bondo Krogsgaard on the company today and in the past.





Photos: Sabrina Rynas

You Mr Pedersen are the founder of Nordex and a Dane. And now another Dane, you Mr Krogsgaard, stand at the head of the company. Tell us – do Danes have the wind in their blood?

Carsten Pedersen: It is a little strange that a Dane is once again at the head of Nordex. Perhaps the Danes really do have the wind in their blood. After all we live in a very windy country surrounded by water – and this has made Denmark one of the pioneers of the modern wind industry. But I would maintain that today the Germans have the wind coursing through their veins every bit as much as we have.

Lars Bondo Krogsgaard: I agree. Actually this development was a matter of chance: the use of wind energy was encouraged and sponsored in Denmark at an early stage. In the aftermath of the energy crises the country wanted to become independent of energy supplies from outside and looked for solutions to meet its energy requirements. This was visionary and represented the first step towards further developing renewable forms of energy – today this has proved to be good fortune for Denmark and for the rest of the world.

Mr Pedersen, when you founded Nordex in 1985 together with your brother and your father, the commercial use of wind energy to generate electricity was still at a very early stage. Why did you go precisely for wind energy – are you an idealist?

Actually the only people who planned wind turbines in the eighties were hippies. As a matter of conviction, the ecology movement called for an end to risk-prone technologies and the development of renewable forms of energy. With us it was partly idealism: since the oil crisis in 1973 we had been fascinated by



alternative energy forms. We wanted to produce as much electricity as possible in an environment-friendly way, i. e. without the use of fossil fuels. At the same time we were convinced that this was also a good business idea. At this time we had already produced steel towers for Bonus. So we were already active in the wind energy business. Then finally, in 1982, we installed the first turbine – a 65-kilowatt machine, which by the way is still running after 30 years.

Do you think that your objective of producing as much electricity from wind as possible has been achieved today in terms of energy policy and, more specifically, in terms of the Nordex product portfolio?

Oh, our vision has been outstripped many times! In those days our 250-kilowatt turbine was the largest wind energy system in the world. When we installed it, we were asked how things were likely to develop and we forecasted 600 to 700-kilowatt turbines for the next five years. When they appeared much faster than this, we dreamed of 1-megawatt machines. Thirty years ago we didn't even dream of today's capacity of around 4 megawatts.

As today, in the past technical developments played a key role. Mr Krogsgaard, apart from that what do you think are Nordex's strengths? What do we do particularly well?

Technology is one of the major success factors in our business and our technology is right. We supply quality. If you don't have good turbines, you won't get any orders no matter how nice you are.

Turbine dimensions have grown over the years. While in 1987 the N27/250 was the largest series wind turbine in the world, those in the current Delta Generation with their rated output of up to 3.3 megawatts are 13 times more powerful.





In addition to this, as a company Nordex is flexible and driven by entrepreneurial thinking. We deal mainly with small and mid-size customers for whom we provide intensive support whether in terms of optimising projects or helping with finance and marketing. Our customers ask for this advice and we are able to give it to them – so this is a good fit.

You have been at Nordex since 2010 and have just taken over the helm as CEO. What course have you plotted for the company?

We are sticking with our strategic targets: we want to grow significantly and we shall be entering new markets. However, it is very important for us to always keep in close contact with our customers and to maintain the flexibility that I have just named as one of our strengths. On top of this, we have set ourselves the target of reducing energy production costs by up to 15 percent. This will increase the profitability of our customers' projects and will be a crucial factor for our competitiveness.

Will your new position change anything for you personally?

I have been on board for five years now, so I'm not entering virgin territory here. We have worked together successfully as a team of three on the Management Board for a long time now, so I feel quite at ease in the position of CEO.

The company and staff mean a lot to me. There are some really good people working here whom I meet on construction sites all over the world and who

provide me with feedback. It is important for me to keep this closeness and to always be approachable also as the CEO.

Mr Pedersen, you have pulled back from active participation in the business. To what extent are you still involved in the company?

I take an active interest in the development of Nordex and the wind energy sector as the wind and renewable energy are still issues that are very close to my heart. My dream is that one day in the near future the whole world will be supplied with energy from wind and other renewable sources. In addition to this, my brother and I run Welcon, a company producing tubular steel towers, and supply most of the European wind turbine manufacturers – including Nordex.

You mention the development of renewables. Let's just play an idea through: how important will wind energy be 30 years from now, in 2045? Where will Nordex be then?

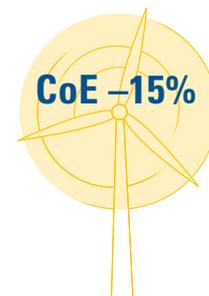
Thirty years ago we could not imagine the situation today and now it is every bit as difficult to answer the question. I believe that in a few years' time with electricity from onshore turbines we will already be able to undercut that produced using fossil fuels in the price per kilowatt hour so significantly that even the critical politicians will realise that they simply have to include wind energy in their country's power supply system. In the case of offshore turbines I think we can expect this to be the case in the next ten years. Then there will be no limit for wind energy and turbines will be installed worldwide in numbers that we can't even dream of today.

I am convinced that Nordex will also be a major player on the market in 2045. We have always been at the forefront when it comes to developing new turbines and technologies. In my view the focus then will still be on the central issue of reducing the price of electricity produced per kilowatt hour.

Mr Krogsgaard, where do you see the future challenges for the company and how does Nordex plan to master these?

Since I started at Nordex in 2010 the volume of our output has doubled – so we have a strong position in the market. In Germany too our market share has grown significantly. We will continue to grow in order to ensure a good competitive position. A key task in the coming months and years will be shaping this growth as efficiently as possible. Furthermore, we have to continuously put new products on the market and further improve existing products in order to obtain the optimal value added for our customers. As I have already said, technology is an important success factor in our business. And for me personally it's about settling completely into my new role. ● Text: SJA

Nordex main targets:



company increase technology

30 years of Nordex, 30 years of partnership

The company says thank you with an anniversary roadshow

Parties should be celebrated whenever the occasion arises. So Nordex is taking the occasion of its “round” birthday to invite customers and business partners to an anniversary party. Because together with them the company has experienced much since its foundation in 1985 – and achieved even more. For these 30 years of partnership Nordex says: thank you!

Nordex celebrates with its customers and in their vicinity

In the 30 years of the company’s history one thing in particular has characterised Nordex: close proximity to its customers. In order to ensure that this

The Nordex anniversary roadshow:



closeness is also one of the main features of the anniversary celebrations, instead of holding one central party with international guests the company is taking a roadshow through the individual markets. “So our customers don’t have to come to us – we go to them and celebrate together there,” says Nordex CEO Lars Bondo Krogsgaard. “This means that we can also keep each individual party to a reasonable size – after all, we would like to talk to every guest.”

First successful parties already held

The biggest parties were held in the company’s home market: at the beginning of July Nordex first held a symposium with some 300 participants, which was followed by a relaxed evening in the port of Hamburg. Jörg Hempel, Managing Director Nordex Germany: “Personally I found both events simply sensational! You could really see that the hosts enjoy their work and are proud of their company, so I hope we were able to make our guests’ stay entertaining.” Christian Schnibbe, Head of Communication WPD AG, confirms this: “The Nordex team organised an exciting and varied programme and the great atmosphere with many familiar guests made the evening an unforgettable experience. Congratulations on a great party and on your birthday!”

The national subsidiaries in the USA, Ireland and Italy have also already held their customer parties. And these were as varied as the countries where they were held: Nordex USA received its guests stylishly with classical guitar music in the open air in Orlando. Nordex Ireland celebrated elegantly in a bar. “Our event with more than 50 guests in Dublin was a huge success,” says a pleased Gary Crowley, Sales Manager Nordex Energy Ireland. Nordex Italy invited its guests to an Italian dinner on a *terrazza* with a view over Rome. “The evening offered a good opportunity to intensify contact with our customers;” comments Francesco Paolo Liuzzi, Managing Director Nordex Italy. More events will be held in the course of the anniversary year (see illustration). ● Text: SJA

Ireland	USA	Germany	Italy	Poland
29 April	20 May	3 July	10 July	3 September

30 YEARS EVOLUTION OF WIND POWER.



Nordex thanks its customers, business partners and friends with an anniversary roadshow. Written in large letters by the manufacturer via 3D video projection onto the event location in the port of Hamburg. (above)



Happy Birthday, Nordex! Dan McDevitt, President Nordex USA, cuts the birthday cake in Orlando.



"Wind" performance over the roofs of Rome

Photo: Maurizio Riccardi



On the occasion of the company's anniversary Nordex has published the brochure "30 years of Nordex: The evolution of wind energy".



Finland	UK	Turkey	Pakistan	South Africa	Sweden	France	Uruguay	Chile
30 September	6 October	13 October	29 October	2 November	4 November	17 November	1 December	3 December

N131/3300: high energy yields at German light-wind locations

Around two and a half years ago Nordex launched its current Delta turbine Generation – with a new turbine for each wind class. Now the manufacturer is adding a powerful light-wind turbine to its product portfolio especially for the German market. Transferring existing applications for approval to this turbine means higher energy yields for projects already planned.



Photo: Tim Siebert

A quiet power pack

The N131/3300 is a light-wind specialist: with its large rotor and a nominal output 10 percent higher than the N131/3000 it produces a much higher annual yield. An increase of between 4 and 6 percent is possible, depending on the wind conditions prevailing at the site. With the N131/3300 Nordex has thus taken the next logical step towards the target it has set itself of reducing the electricity production costs of its turbines.

In spite of the increased output, the turbine's noise level remains stable. The guaranteed noise level of both the N131/3300 and the N131/3000 is a low 104.5 dB(A) – and that even during yield-optimised operation without using acoustic aids. This makes these two machines currently the quietest in the 3-megawatt class.

Tailor-made for the German light-wind locations

Nordex designed the N131/3300 especially for the German market. "After the experience gained operating our Delta Generation turbines, with this machine we have moved closer to the technical limits. We removed the loads not needed for light-wind locations in Germany, which enabled us to increase output," says Product Manager Nils Lehming. "Internationally the N131/3000 is currently the right turbine for light-wind regions as most sites put greater strain on the machines due to the wind conditions and the climate." The N131/3300 will only be available on high towers.

Transfer of existing applications for approval possible

The type test for the N131/3300 at a hub height of 134 metres is scheduled for the end of 2015 and for a hub height of 164 metres by mid-2016. As of mid-2016 the turbine is to be built in series at a lower height with the higher version following towards the end of the year. This means that the N131/3300 can already be included in applications for approval in 2016.

In Germany the EEG 3.0 tendering system will be used to regulate remuneration as of 2017 (see page 17). All turbines approved in accordance with the Federal Pollution Control Act (BImSchG) by the end of 2016 have to be installed by the end of 2018 and will then receive feed-in remuneration in accordance with EEG 2014. It is particularly easy to transfer approval of the N131/3000 to the more powerful N131/3300 because of the platform construction method used and the identical guaranteed noise level.

N131/3000: noise level confirmed in the field

The internationally available light-wind N131/3000 turbine is currently being measured in the field. The first results of noise measurement have confirmed the projected levels: at 103.1 dB (A) the turbine even falls below the maximum guaranteed sound power level of 104.5 dB (A). This makes the turbine especially interesting for sites where the approval procedure stipulates stricter noise level requirements. At the moment the power curve is being checked. The results are due to be available at the end of 2015. The International Type Certificate is expected to be issued mid-2016.

Order receipts are picking up: "We have contracts for 36 N131/3000 turbines, i. e. for a total of 108 megawatts (as at July)," reports Head of Global Sales Karsten Brüggemann. At the beginning of the year the *Windpower Monthly* trade journal had named the N131/3000 the 2014 Turbine of the Year in the category of 3 megawatts and more. For the Delta Generation platform overall there are more than 800 megawatts for 20 projects in ten countries in the order books.

● Text: SJA



Creating acceptance

In spite of the fact that many people approve of extending the use of wind energy, there are increasing objections to the building of new wind farms. At the same time there is an increasing awareness on the part of project developers, manufacturers, associations and politicians that they have to take people's concerns and fears seriously by educating the public and providing the relevant information.

The extent of the problem becomes particularly clear precisely in developed regions where space is in short supply. The more densely populated the region is and the more competing industries are interested in land space, the more lengthy and complex does the process up to obtaining building permission become. In Germany the problem is not entirely new, but in other countries, where the industrial use of wind is only just beginning to grow significantly, the trend is now a similar one. Motives for opposition are many and various and they are not always rational. They range from fair distribution of burdens and benefits and property values, touristic interests through participation during the planning process down to concerns relating to health and well-being. Günter Steininger, Head of Repowering & Projects at Nordex, comments: "Still more analysis is required, above all with regard to noises, the visually intrusive impact and long-term effects. The more dependable and empirical the knowledge of the effects of wind power is, the better and more credible will be the success of early information and communication with local residents."

Spokespersons heat up the mood while pursuing aims they are reluctant to state clearly. Projects are then put on ice while resolution is waited for. The uncertainty with regard to planning can act as a barrier to investment. Günter Steininger: "All we can do



is engage in dialogue at an early stage, above all with the silent 'don't-knows', in order to encourage a positive attitude and ensure that people see the opinions of the activists in the right light."

Co-determination is welcome – but in good time, please

Planning a wind farm is not a clandestine operation done at night, but a due process that follows fixed rules. The opinion of local residents in the communities is expressly requested at public hearings. After all, there may always be legitimate interests that argue against a wind farm.

There are a number of initiatives aimed at a more rational level of debates that have frequently been very heated and emotional. These range from the BWE Acceptance Initiative through the



national Renewable Energies Day down to concrete suggestions by individual prime ministers. Günter Steininger: "Not every proposal is always reasonable or even realistic. But the fact is that creativity is called for and that mutual understanding is helpful."

BWE Acceptance Initiative

Together with its state and regional associations, the Bundesverband WindEnergie e.V. (BWE) has launched a national Acceptance Initiative for 2015/2016 in order to prepare the ground for the German general elections in 2017. The aim of the campaign is to explain wind energy from an objective, scientific standpoint and in this way to increase acceptance of this often criticised source of energy among all the relevant target groups – from politicians through the media down to the people in the regions – over the long term and without prejudice. Nordex supports this initiative. Ralf Peters, Head of Corporate Communications, says why: "This process has to be moderated as it's all about giving a voice to the 'don't-knows' instead of being put on the defensive by the opponents of wind energy."

Despite all the opposition: thousands also take to the streets to demonstrate in favour of renewable energies, as in front of the Chancellery in Berlin (see left picture). [Text: SBR](#)

Upbeat about the tendering system

Germany will be complying with the EU regulation as of 2017 by changing from tariffs fixed by the government to a tendering system. The market will then regulate prices by means of auctions.

The volume to be auctioned will be around up to 4,000 megawatts a year. Of this, a good 2,500 megawatts are accounted for by new projects while the remainder relates to repowering. Even compared to the record year of 2014 this is a relatively large amount. This volume is expected to be auctioned in four rounds a year. In order not to put Germany's leading role at risk, up to 100 megawatts per annum will probably be reserved for prototypes without involving auctions.

The EEG 3.0 is aimed at realistic projects. Tony Adam, a public affairs manager at Nordex: "Projects are not only to be realisable within two years, but actually realised. The prerequisites for this are created by prequalifications in the form of building permits (BlmSchG) and financial guarantees." Expansion across Germany is a firm part of planning. In this context light-wind locations in the south are not to be disadvantaged compared to the north. "In spite of current uncertainties we expect the government to organise the transition to the new system without any unnecessary irritations. The expansion of wind energy onshore will continue on a stable basis in the future," says Tony Adam.

Contrary to original plans, the white paper on the planned design of the tendering system for renewable energies (EEG 3.0) was not yet available at the time of going to press. "Nevertheless, because of the intensive debate between the Ministry of Economics and the wind industry we can already name some of the key points likely to emerge," says Tony Adam. "The ministry expressly wishes to take the interests of the sector into account. After all, the onshore wind market is the backbone of the energy turnaround." [Text: SBR](#)

The strongest bidder wins

Poland leads the way to the future: as of 2016 a tendering procedure regulating the entire renewables market is to become legally effective there for all wind energy projects. With this new law on renewables Poland is following the EU target across Europe with the aim of reducing the prices for green energy. The government's objective is to increase the share of renewables to 15 percent within the next five years.

Photos: Jan Oelker



Efficient turbines, low electricity price, good chances of success

According to the new arrangement, a round of auctions for a certain quota of electricity is to be held every year. In each case the size of the quota is stipulated by a ministerial order. Electricity producers then bid for the average amount they wish to produce and sell in a rolling accounting period of three years at the price at which they will sell the electricity on the market. The bidders with the lowest prices are then awarded a contract for this amount until the entire quota has been distributed. Those whose bids are too high go away empty-handed.

“For us as manufacturers the message is clear: we have to equip our turbines in such a way that they achieve the LCOE, the lowest levelised cost of energy,” says Patrick Lefebvre, Managing Director EMEA East. “Competitive pressure on the market will increase with the new system and the manufacturers with the most efficient turbines will profit from this. So we take a very positive view of this change – ‘the fittest will survive.’” Nordex is known for its powerful turbines in Poland, a country with many light-wind locations. In the N131/3000 the company offers one of the turbines with the largest rotor sweep operating on the Polish market.

Profit and challenge

If a bidder is awarded the contract, he is automatically guaranteed the target price bid. This means that the project with which he produces the electricity is

subsidised for the amount of the difference between the market price and the bid price. As a rule, this subsidy is good for 15 years, which enables operators to plan in a very reliable manner.

In the new tendering system collaboration with the customers fundamentally becomes even more important. In order to participate in the tenders a project must already be well advanced in terms of planning and realisation (see Requirement for participation). This entails a relatively large amount of preparatory work as well as outlay while there is always the risk that ultimately the project may not be realised.

In addition to this, if a bidder is awarded the contract and supplies less than 85 percent of the stated quantity of electricity, he has to pay a penalty. This rule is intended to ensure that Poland actually obtains the planned total amount of electricity from renewable sources using the tendering procedure. On the other hand, the regulations prescribe only reimbursement up to 115 percent of the amount of electricity while any amount in excess of this can only obtain proceeds from the market. So it is important that bidders calculate a bidding volume within the corridor of between 85 and 115 percent. “We provide our partners with detailed support in pricing projects for the new auction system,” says Norbert Werle, Head of Sales EMEA East. “For instance, at the moment Nordex is simulating all the projects in the market in order to be able to supply each customer with an individual product that enables him to submit the optimal bid.”





Photos: **Lukasz Szczepanski**

Nordex Poland presented the new tendering system to around 120 business partners in a seminar.



“For us as manufacturers the message is clear: we have to design our turbines in such a way that they achieve the lowest levelised cost of energy.”

Patrick Lefebvre, Managing Director EMEA East

The guests were able to try out the procedure at the subsequent model auction.



The winners in the model auction celebrate.

Well prepared for the coming year

In May Nordex Poland already anticipated the coming year: at a customer event with around 120 guests the national subsidiary introduced the new system to the business partners and profoundly observed its most important aspects. In workshops experts from according units of the company explained the innovations to the participants and responded to individual questions. Finally the organisers held a model auction, which simulated future challenges and served as a practical test to the procedure. “After the day, our guests were well prepared for our model auction,” says Norbert Werle. “Anyway, in the end there were losers and winners as in real life. Especially the latter are now looking forward to the coming year with confidence – although everybody has certainly learned from that day.”

The law, which has been in effect since 4 May 2015, is to become reality with the first round of tenders in the first half of 2016. Nordex is doubly prepared for this: its technologically high-quality turbines, which have proved a success in Poland’s interior in the past thanks to their extreme efficiency and low sound

power level, give customers a good chance of submitting a successful bid for a contract. Its market expertise and experience also make the company an expert partner and advisor for calculating bids for the bidding rounds. **Text: SSC**

Requirement for participation

In order to avoid the failure of projects awarded wind farms with new turbines are only admitted to the tendering process if they have already reached an advanced state of realisation. Here are the five most important points:

- **Extract from the land-use plan or preliminary building permit**
- **Grid connection contract or documentation of the issuance of grid connection conditions**
- **Legally binding building permit**
- **Sectoral plan and timetable for implementing the project**
- **Initial guarantee amounting to 30 PLN (EUR 7.50) per kilowatt of planned installed capacity**



In demand as a project developer: together with the H2air Group, Nordex recently developed the 75-megawatt Seine-Rive-Nord wind farm on a turnkey basis and connected it to the grid.

Well equipped for the French energy turnaround

France has some ambitious targets: by 2025 François Hollande wants to reduce the share of nuclear energy from almost 80 percent to a maximum of 50 percent. As the French president does not wish to put the climate targets at risk, at the same time he is planning to cut the use of fossil fuels by 30 percent and extend the renewables sector. Their share is to increase from almost 4 to 23 percent by 2020 and to 32 percent by 2030. The development of renewables is to focus above all on the interior of France – and Nordex is already noticing this.



The N117/2400 celebrated its French premiere in the Lazenay wind farm.

Successful première

Once again the national subsidiary Nordex France has recorded increasing order receipts. The new orders include projects of varying sizes – from small projects with fewer than five turbines to large wind farms with well in excess of ten. One particular turbine driving this development was the light-wind N117/2400, which is ideally suited to the French market. In June the manufacturer inaugurated the first turbines of this type to be installed in France, marking the start of a series. “Our more recent orders show one thing clearly: our new products, especially the N117/2400, have been accepted by the French market,” says Transaction Manager Tiffany Duvert.

The N117/2400 celebrated its French premiere in Lazenay wind farm, which is situated at the heart of France and belongs to VSB énergies nouvelles, a project developer. Here Nordex installed seven of its light-wind turbines from the Gamma Generation. With wind speeds of around 6 metres per second Lazenay is a typical French IECs site where the turbine can fully exploit its strength. Apart from on the south coast near Marseille and Montpellier, the country is largely characterised by mild wind conditions. So the turbines must be designed accordingly in order to achieve good yields in such conditions, as is the case with the N117/2400.

Project development in demand

The geographical and political conditions and the challenges they create make the French market a special one. For Nordex this means both work to be

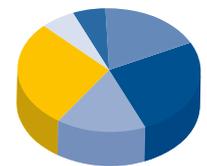
done and opportunities to be taken. “Here in France we are also much in demand as project developers,” says Tiffany Duvert. “Our partners know that we have many years of experience and expertise gained in France and international markets. We set up the first wind farm in this country as long ago as 1998 and we have been operating internationally for 30 years. Our customers want to benefit from this.”

Nordex project development offers an attractive option precisely for financial investors or smaller companies that wish to broaden their base by including wind energy in their portfolio. In contrast to clean-sell projects like Lazenay, where the manufacturer simply delivers and waits, with project development the company is responsible for the entire creation of the wind farm, from planning down to installation. “It makes no difference whether our customers want to install our turbines in their wind farms or want to develop a wind farm together with us – we are flexible and structured with this in mind,” says Tiffany Duvert.

Good prerequisites for further progress

Apart from their efficiency, the low noise levels of the N117/2400 constitute another convincing argument for buying this turbine. Precisely on the French market the low operating noise level is a key advantage of the turbine as wind energy is also facing problems of acceptance in France (see page 16). At any rate, the Development department of Nordex France already has plenty projects in the pipeline. But first of all it’s the government’s turn to act. **Text: SSC**

Nordex is market leader



NORDEX	28%
VESTAS	26%
ENERCON	18%
SENVION	16%
SIEMENS	6%
GE WIND	6%

With some 146 megawatts of installed capacity Nordex is the front runner in France (1st half 2015).

Source: France Énergie Éolienne

A boost in South America



Photos: Benito Berger

South America is becoming an increasingly attractive market for Nordex. This is why since 2012 the company has been managing its business activities in Uruguay through its own subsidiary and opened its first official office in Montevideo at the end of 2014. A subsidiary has also been set up in Chile and since 2013 there has been an office in Santiago de Chile. And now a look at the individual countries.

In Uruguay Nordex is currently installing 59 turbines from the N117/2400 series for the state energy supplier UTE (Usinas y Trasmisiones eléctrica). With a total of 142 megawatts, the Pampa project in the centre of the country will be the biggest wind farm in Uruguay to date and once completed it will supply some 180,000 households with local green electricity. The wind farm is due to go on grid at year's end. "We are very pleased to be executing this follow-up order for UTE on a turnkey basis and are looking forward to further collaboration over the long term," says

Marcos Cardaci, Head of Sales Nordex South America. The two companies have signed a Premium Service Agreement covering a period of at least ten years.

Good market position

To date Nordex has installed three wind farms in Uruguay, with a total of 69 turbines and an output of almost 170 megawatts, or has them under contract. Once Pampa has been completed Nordex will have installed 309 megawatts of capacity there. "In the past four years we have built up a powerful network in Uruguay," explains Dan McDevitt, Managing Director Americas. "Our good relations with both customers and suppliers, but also with the authorities and construction and logistics companies are key factors contributing to our success in this young market."

Since entering the Uruguayan market Nordex has steadily enlarged its service team. "The modular structure of our specialist technicians and services is a response to the challenges of a growing market and the high standards expected by our customers. Nordex Service is recognised for quality locally," says Walter Consul, Service Manager Nordex Energy Uruguay.

For work on the current project Nordex is obtaining services and products from local suppliers, for instance in the area of foundation building and tower parts. "We also benefit from the



fact that we are able to offer our customers high-quality turn-key products, including support in connection with international finance solutions. Not all our local competitors can do this," Dan McDevitt adds.

Marcos Cardaci: "We intend to grow further in the medium term as we anticipate good potential for our business in Uruguay because this country has made a clear commitment to extend the use of renewable energies. This year already 30 percent of electricity here is to be generated by wind energy."

The team in Uruguay is growing

At the moment Nordex employs more than 30 staff in the departments in Uruguay. Four of these employees work mainly in the new office in Montevideo while there are four project managers and eight service staff at the wind farms. Given the number of new projects, the service team is to be enlarged. "In the future too, we shall continue to meet the new requirements with a solid and effective structure that our customers in the region can depend on," says Country Manager Vincent Riedweg.

Major potential in Chile

The Nordex workforce is also growing in Chile. After the first activities started in the area of project development in 2013, the



next year saw the arrival of colleagues from Sales. At the moment there are six employees working locally. Country Manager Christian Essiger: "In Chile wind speeds of between 6 and 7.5 metres a second predominate, which makes the region interesting as a market for our N117/2400, N131/3000 and possibly also for the N117/3000. Chile also has an increasing demand for energy at a relatively high electricity price level and the underlying conditions are stable. So the market has great potential for us."

Nordex is currently working on its first project developed in-house. This wind farm consists of 14 N117/2400 turbines and is to be sold on a turnkey basis. Christian Essiger: "We expect construction work to start at the end of 2015 or the beginning of 2016. Then we will build up a construction site team locally and take on service staff to maintain the turbines after installation." [Text: ITO](#)

South Africa – plenty of hope at the Cape

The most advanced economy in Africa is attractive terrain for the use of wind energy. Since 2011 the South African government has so far awarded projects in four out of five planned rounds of tenders totalling around 3,200 megawatts. Nordex has been able to position itself locally for the long term: to date the company has been awarded contracts for four wind farms with a total of 425.4 megawatts – most recently at the end of May for the Gibson Bay project with altogether 111 megawatts.



First large projects successfully handed over

Nordex was able to obtain orders for two large projects in the very first round of tenders: the 100-megawatt Dorper wind farm with 40 N100/2500 turbines and the 80-megawatt Kouga project with 32 N90/2500s. Both wind farms have now been completed and handed over to the customers on a turnkey basis. The Dorper wind farm was connected to the grid in April this year, followed by the Kouga project in June. Nordex is still responsible for servicing both wind farms.

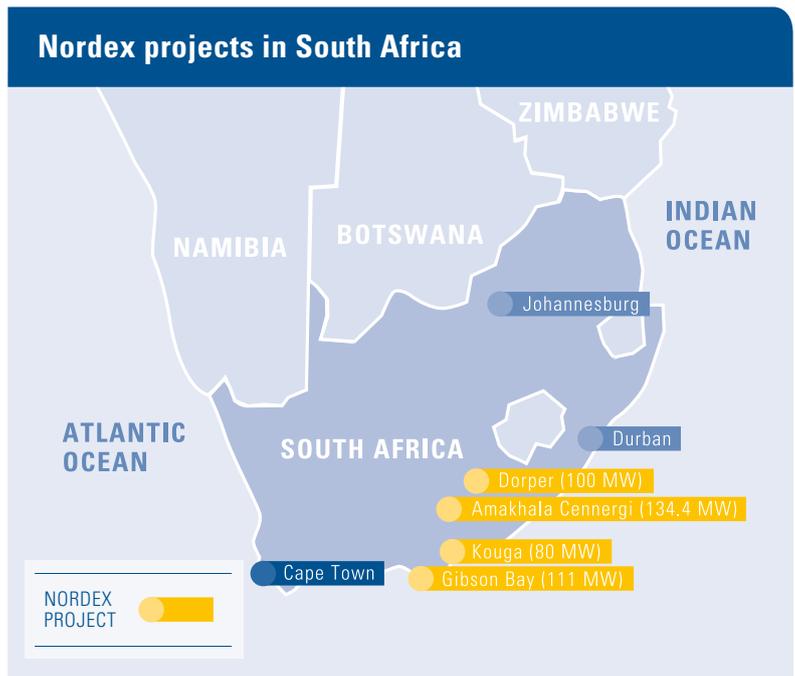
"We are very proud of what we have achieved to date," says Anne Henschel, Managing Director of the Nordex subsidiary Nordex Energy South Africa (Pty) Ltd. The projects are often very large compared to those implemented in Europe and often located in remote regions. As a further factor, we have to import the components from up to three different continents and sometimes install them under extreme climatic conditions. In spite of this we installed, connected and commissioned the Dorper and Kouga wind farms on schedule. By doing this we showed that we are a dependable manufacturer and on top of this a competent partner for implementing turnkey wind farm projects."

Two more projects under construction

Nordex is currently setting up the 134.4-megawatt Amakhala Cennergi project, also on a turnkey basis, with 56 N117/2400 turbines. Following the laying of the foundation stone in August 2014, the manufacturer started installing the turbines at the end of May this year. In March Nordex obtained an order for a fourth turnkey project with 37 N117/3000 turbines for an Italian power supplier: the Gibson Bay wind farm with a total of 111 megawatts will be set up in the south of the country, near the coast. "Road construction work already started in April and is making good progress," explains Matthias Breu, Head of Project Management. "However, there are some special challenges to be overcome here. As the area is very sandy we have to additionally secure around half of the foundations with piling." Gibson Bay is the first project in South Africa to use Delta Generation turbines.

Fourth round of tenders not yet completed

So far Nordex has not received any orders in the fourth round of tenders in which a total of 1,300 megawatts are up for auction. Due to the shortage of energy in the country, however, the South African government has organised a further round of auctions for a total of 800 megawatts. Anne Henschel explains: "We put in another bid for this tender and it is realistic to assume that Nordex will again be included among the potential candidates for implementing the projects. We will know more at the end of the year."



Source: www.nersa.org.za



These ladies manage the Nordex Education Trust: (at front, from left) Dr Sindiswa Stofile, Anne Henschel and Thembi Chagonda; (at rear, from left) Nomzamo Landingwe Mcoso, Toni Beukes and Nosisi Sokutu

Local commitment is important

The Cape region is a boom market for Nordex, but engagement in social politics is necessary. Founding a national subsidiary means that Nordex is obliged to meet the requirements of the Black Economic Empowerment (BEE) programme, which aims to balance the socio-economic disparity between the white and black sections of the population. Parallel to this, via the Nordex Education Trust the company is making it easier for people who are disadvantaged for cultural-historic or health-related reasons to take advantage of basic and advanced training opportunities. Anne Henschel continues: "Last year we sponsored ten different projects to the tune of altogether EUR 85,000. Among other things, we support the Bridge programme, which prepares children from very poor backgrounds for the requirements of a university in the Western Cape by awarding five scholarships, together with the Stellenbosch University, for students of natural sciences from disadvantaged sections of the population." ● Text: ITO



Green gems for the Emerald Isle

Lush, green meadows with a craggy coastline – all these are synonymous with our image of Ireland. And there's one more thing to add: strong winds! This makes Ireland an attractive location for Nordex where it has operated since 2002.

A record project

This year Nordex is building its largest project in Ireland, the Meenadreen extension. The company will be installing 38 N90/2500 turbines with a total capacity of 95 megawatts in the north-west of Ireland for the independent power plant operator Energia Renewables. Subsequently Nordex will be responsible for maintenance and service for a period of 15 years.

“Nordex is very proud to be selected by Energia for the Meenadreen project. Energia is one of Ireland’s leading utilities with a strong track record of delivering renewable and green energy to the Irish Market. Once complete, Meenadreen Extension will be one of the biggest wind farms ever constructed in Ireland,” says Richard Furniss, Country Manager UK & Ireland. Energia Renewables currently produces a quarter of Ireland’s wind generation. The Meenadreen project marks the second order between Energia Renewables and Nordex following the Thornog wind farm, which was delivered in 2014.

Technical challenges

A specialised team of wind and site engineers carried out a detailed analysis of the site in order to be able to assess the impact of the surroundings on the turbines in Meenadreen. “The topography of the site is extremely complex with forestry throughout,” explains Sebastian Streitz, Senior Analyst wind and site. In the north the land backs onto the Bluestack Mountains, rising to more than 600 metres, while in the south-west it slopes down to the Donegal coast. “The technical assessment by our team was absolutely critical to the Nordex success in Meenadreen. This involved close collaboration with our customer in an effort to fully optimise the site and maximise energy yield,” says Gary Crowley, Sales Manager, Nordex Energy Ireland.

Nordex also provided Financing assistance for the Meenadreen project. Together with the customer and Norddeutsche Landesbank as the financing partner, the Nordex Financial unit drew up concepts that take account of the interests of all parties involved. One part of the financing structure is the pro rata hedging

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“The technical assessment by our wind and site team was absolutely critical to the Nordex success in Meenadreen.”

Gary Crowley, Sales Manager Nordex Energy Ireland

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Last year the national subsidiary Nordex Energy Ireland installed the largest wind farm in the country so far: Knockacummer, with a capacity of 87.5 megawatts – Meenadreen will be even bigger than this.

of long-term funding in the form of export credit guarantee of the Federal Republic of Germany provided by Euler Hermes Deutschland GmbH.

Meenadreen benefits from a strong westerly Atlantic wind. The N90/2500 wind turbine is especially designed for these wind conditions. Once commissioned, these turbines will generate 255 gigawatt hours of electricity, providing electricity to around 70,000 households.

A key role on the Irish wind market

“We are very pleased to contract with Nordex for 38 turbines for our flagship Meenadreen Extension wind farm project,” said Peter Baillie, Managing Director Renewables, Energia. “This is a significant step for Energia Renewables in its development of 300 megawatts in the medium term and towards realising Ireland’s ambitious renewable targets.”

Ireland currently has two gigawatts of wind energy capacity installed and the Irish government has targeted to double this figure by 2020. Ireland is now seen by *International Investors* as one of the most attractive markets in the EU with its excellent wind conditions and stable feed-in tariff (REFIT). Having installed a capacity of 500 megawatts, Nordex has a market share of 25 percent in Ireland and is one of the leading manufacturers. With the Meenadreen Extension project, the company will be responsible for one of the showcase projects on the Irish market. This will help Ireland grow its reputation further as the green Emerald Isle! ● Text: SSC

Technical Lexicon

Part 5: **The nacelle**

In the “Technical Lexicon” section Nordex 360° explains the central components of wind turbine generators. The nacelle is what makes a turbine’s appearance unique.

It may be angular or rounded, long or short – it’s the nacelle that shows best which manufacturer made a wind turbine generator (WTG). But, unlike in the automobile industry, the appearance of a turbine is not a major reason for deciding to buy a particular one. A WTG represents an investment in capital goods and here it’s the performance and dependability of the technology that are the prime considerations.

Design depends on function

It’s technology that to a large degree determines what a nacelle looks like. For example, the nacelle in the Delta Generation turbine is much longer and wider than that of Gamma Generation. This is because stronger forces act on the components of these more powerful machines – and this is why the dimensions are larger. For instance, the Delta drive train is 20 per cent longer than that of Gamma turbines.



For the interior design of the nacelle, the layout, safety plays a key role: there are clearly defined standards in terms of room for movement, working space and escape routes. The platform for service work is particularly large in Delta Generation turbines in order to ensure that all systems are easily accessible for the service staff. In addition, this class of turbine offers wider escape and rescue routes.

Ultimately, each supplier has his own philosophy when it comes to assembly. For example, Nordex assembles the entire nacelle housing in the factory. This saves later reworking on site and means that the quality is guaranteed.

Focus on profitability

Manufacturers design their nacelles on the basis of such factors as technology, logistics and assembly in such a way that the visuals comply with those of their product line. On top of this, as little material as possible is to be used. Nordex uses glass-reinforced plastic (GRP) for the housings. GRP is highly resistant, which means that at the moment it is the most economical material available. However, Nordex is already looking into possibilities for changing over to recyclable materials. The nacelle housing also helps reduce noise levels. If the customer so wishes, Nordex also uses sound-absorbing foam.

Who's responsible for what

When Nordex develops a turbine, the Turbine System Integration department creates drafts for the product and graphic design as well as the layout in collaboration with the Service and PM departments together with the specialist sections in the Engineering division. The decision on this is then taken by the chief engineer, the product manager and the management group in charge of the development project concerned. ● Text: SBR

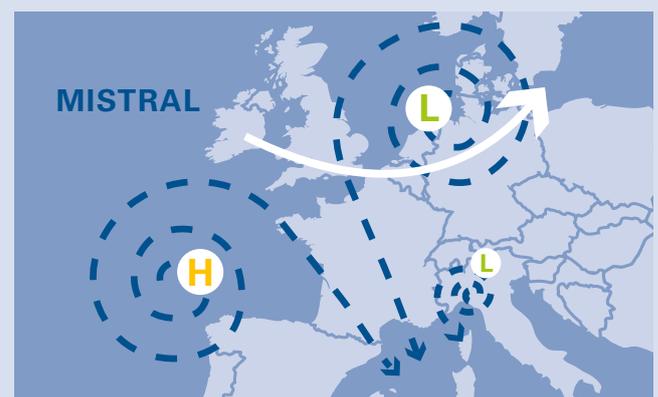
The world's winds, Part 2: The mistral

After the etesians in the last issue, in second article in the series we look at the mistral – a temperamental Mediterranean wind.

Fos-sur-Mer in the industrial port of Marseille, Provence, on the Mediterranean coast – with the Rhône estuary a little to the east. The mistral storms its way through this valley several times a year as a downwind from the north-west to the Mediterranean. The *maestrale* (ruler), as locals call it, is just one huge steamroller of gusts that goes on for days. It blows with primeval force against the backdrop of a cloudless, deep blue sky and a clear view, during nights full of bright stars while temperatures drop dramatically. The *vent du fada*, the wind that drives you crazy, reaches peak speeds of 135 kilometres per hour, is very dry and takes the moisture out of the soil, increasing the risk of forest fires in Provence. The trees are permanently bent in the direction they are forced into by the wind. But the mistral also has its good sides: after the wet weeks of autumn it has often saved whole vintages in the vineyards from mould and pests. In the summer it brings some welcome coolness and it cleans and purifies Provence and the industrialised, densely populated Rhône valley.

The mistral never comes unannounced. A high-pressure front approaches from the Bay of Biscay, while a low settles over the Gulf of Genoa. This weather constellation means that the pressure has to be balanced between the north and the south. The sunset is tinted pink and is accompanied by cirrus clouds. The mistral arrives on the next day.

The Nordex Fos-sur-Mer wind farm, with four N80/2500 turbines, has been here since 2006. Unlike the trees in the region they do not bow to the force of the wind. Nicolas Vrécourt, Nordex France, comments: "The wind really did cause some problems in the years following installation. The severe turbulence meant that the turbines shut down and caused damage to the mechanical components. Today we have the mistral under control: the turbines have almost 100 percent availability."





30 YEARS EVOLUTION
OF WIND POWER.

THANK YOU.

Nordex is celebrating a “big” birthday. For 30 years now, we have been growing in line with the needs of our business partners – **for the best solutions are created together.**

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