EP3 DEVELOPMENT

Testing of components is in full swing

NEW E-115 MODEL ___ EP3 strong wind version is typhoon-ready

ENERCON STORAGE SYSTEM ___ Prototype phase launched for E-Storage 2300

MAJOR E-44 PROJECT ___ ENERCON supplies 40 x E-44 WECs for wind farm in Greece
Climate protection and species protection are two sides of the same coin!

Dear customers, business partners and employees, dear readers,

In Germany, the onshore wind energy sector and the energy transition are coming under pressure from several different directions. The expansion of wind energy converters is being thwarted by the huge challenges the tendering system poses, the massive increase in cost and competition pressure, stagnant grid expansion, and wide-ranging legal barriers in planning and environmental matters. Recent discussions have focussed primarily on the impact of the tendering system, so that we have momentarily lost sight of another problem: species conservation and the extent to which it stands in the way of the fight against climate change. At ENERCON alone, projects adding up to over 2,000 MW are currently being blocked as a result of legal matters relating to species conservation. This figure would no doubt be much higher if the entire sector was considered, and planned repowering projects taken into account.

These projects are urgently required for the implementation of the energy transition and to meet climate protection targets. This becomes even more true in light of the fact that failed renewables plans threaten to result in the shutdown of scores of wind farms, leading to a reduction in the overall renewable power generation capacity across the country. If this happened, Germany would end up drifting further and further away from its climate protection targets – with fatal consequences for biodiversity and the environment. Clinging onto the hope that the offshore sector will fix things would prove fatal for politics – see lack of grid expansion.

When considering the delays in the onshore wind sector, however, we get the impression that the arguments from conservationists, authorities and courts directed against onshore wind energy are those that are currently making people listen. And yet the accusation often made by so-called conservationists that wind energy represents the biggest threat of all to fauna and flora is nothing short of absurd. Climate protection and species protection are not opposites. Hindering the energy transition (even as a result of misguided species protection) is an indirect way of encouraging climate change and species extinction. All of the parties involved at the site should be aware of this during the project planning stage.

We need to find a constructive way of dealing with this issue. It goes without saying that justified species conservation concerns are to be taken into account. However, it is crucial that renewable energy expansion and the actual risk posed to the species in question are kept in proportion. Nobody benefits from a categorical rejection on the grounds of species conservation, or systematic complaints concerning onshore wind projects.

The Federal Government needs to establish the prerequisite for viable approval processes. It is not enough to declare lofty nationwide climate protection targets that cannot be achieved due to complicated approval procedures and ‘prevention regulations’ at municipal level. A fresh look at repowering is also necessary. We believe there is an urgent need to simplify approval-related specifications for repowering projects. That way, we can keep the traditional wind sites for generating energy with more efficient WEC technology, instead of watching them disappear without being replaced as a result of inexplicable reservations regarding species protection. Furthermore, the 2019 special tendering rounds are an absolute necessity for the onshore sector. Without them, disaster could strike for German onshore expansion in 2019/2020. Restrictions on onshore wind energy will increase as a result of the targets. That would be fatal for the energy transition and the employees in Germany.

Hans-Dieter Kettnig
Managing Director of ENERCON

10 26
Tests with double trailer technology for transporting rotor blades

Manoeuvring tight curves with rotor blades represents a great challenge. This job will not be getting easier any time soon – the larger rotor diameters of the new WEC types mean their components will be even longer. To make sure it is ready to take on the transport and logistics challenges that will come with the market launch of the new EP3 WEC types, ENERCON has extensively tested the double trailer technology for transporting rotor blades. This method means the rotor blade is no longer transported on one continuous trailer, but instead on two separate, steerable chassis joined together only by the fixed rotor blade. The advantage of this transport technology is that the truck and trailer can be manoeuvred together much more easily.

The tests were aimed at determining the load development, and were carried out in Aurich using a 50.5 metre long EP4 outer blade fitted with comprehensive measuring equipment. The centrifugal and torsional forces acting on the rotor blade during transportation were measured for a number of scenarios: when taking a bend, driving over bumpy stretches of road, making an emergency stop or carrying out an evasive manoeuvre. ENERCON’s rotor blade developers and logistics specialists are currently evaluating the results, which will be taken into account when working out transport concepts for the new EP3 rotor blades.
Hanover Fair success for ENERCON

ENERCON’s 2018 trade fair presence in Hanover started with a visit from two VIPs. German Chancellor Angela Merkel and Mexican President Enrique Peña Nieto stopped off at the ENERCON stand on their official opening tour. Mexico was the partner country of the trade fair this year. ENERCON Managing Directors Hans-Dieter Kettwig and Simon-Hermann Wobben welcomed the political delegation at the new E-Charger 600 for ultra-rapid and grid-friendly charging of e-vehicles.

“The Hanover Fair 2018 was a great success for ENERCON”, summarises Hans-Dieter Kettwig with satisfaction. “Our visitors were very interested in the products and solutions we presented from the onshore wind energy and integrated energy areas. We were also able to conduct lots of positive conversations with politicians and decision-makers. Of course, we were particularly pleased that the Chancellor and the Mexican President chose to pay us a visit on the very first day of the fair.”

Alongside Angela Merkel and the Mexican Head of State, ENERCON welcomed many other guests over the course of the week, including Márő Šátcové, EU Commissioner for the Energy Union; Stephan Weil, Minister President of Lower Saxony; Daniel Günther, Minister President of Schleswig-Holstein; Olaf Lies, Energy Minister of Lower Saxony; Bernd Althusmann, Minister of Economic Affairs for Lower Saxony; Winfried Hermann, Transport Minister of Baden-Württemberg; and political and economic delegations from Sweden, Japan, India, Argentina, Taiwan and the United Arab Emirates.

As the largest industrial trade fair in the world, the Hanover fair is one of the most important in ENERCON’s calendar. “It offers us, as an industrial company from the renewables sector, an ideal platform to meet customers, business partners, interested parties and representatives of industry, as well as politicians and decision-makers”, says Hans-Dieter Kettwig. The leading energy trade fair also provides the perfect setting to present innovative products and solutions for the challenges of the energy transition, and the set-up of the decentralised and networked energy system of the future based on renewables.

According to the organisers, 210,000 visitors (70,000 of whom came from abroad) attended the Hanover Fair this year to learn about new products and innovations from 5,800 exhibitors. Visitors also flocked to the ENERCON operator forum, organised to take place on the Friday by the German Wind Energy Association (BWEE). Around 100 participants discussed current issues with those in charge at ENERCON, and learnt about the ENERCON and Lagerwey product and technology innovations.

ENERCON expands activities in India

ENERCON is making further progress in re-entering the Indian wind energy market. The company now has a permanent presence in India, thanks to the founding of the new Indian company ‘ENERCON WindEnergy Pvt. Ltd.’ at the end of 2017 and the opening of an office in Bangalore, the capital of the state of Karnataka in southern India, in mid-May. Intensive talks are ongoing with potential customers and investors, centred on the supply of current ENERCON wind energy converters for projects in the South Asian country. “We are offering potentially interested parties the most state-of-the-art wind turbines from our current product portfolio, the E-138 EP3 and the E-126 EP3”, says Wolfgang Juilfs, Managing Director of the new Indian company. “In addition, we will be presenting wind energy converters from our partner brand Lagerwey more and more in the future, as they are also ideal for the very specific wind conditions in India.”

The wind sector, the Indian economy and politicians all welcome ENERCON’s return to the Indian market – a fact confirmed for ENERCON once again at meetings with senior Indian government representatives that took place at the beginning of May. An ENERCON delegation met with officials including the Indian Commerce and Industry Minister, Suresh Prabhu and the Chef Minister of Gujarat, Vijay Rupani for talks in Delhi and Ahmadabad. “The positive feedback we received and the repeated offers to provide full support reaffirmed for us that our decision to return to the Indian market was a good one. ENERCON continues to enjoy an excellent reputation in India with regard to quality, innovation and technology. There is a lot of interest in cooperations on a variety of subjects related to renewable energies”, reports Wolfgang Juilfs.

Cooperation agreements concerning maintenance and repair of ENERCON wind energy converters were already concluded with several independent service providers in India in the summer of last year, and work with the first suppliers for global demand began in the autumn. The next logical step in ENERCON’s India strategy therefore is the expansion of its sales activities there. India is playing an increasingly important role in ENERCON’s stronger international focus.
e.g.o.o. expands external heavy-duty transport business

ENERCON’s rail company e.g.o.o. is now also massively expanding its external activities in the transportation and handling of heavy and abnormally-sized loads. Several of these special transportation jobs have already been carried out for customers outside of the wind energy sector. One load was made up of transformers weighing over 200 tonnes; another comprised a 61 tonne special roller as used in steel mills.

“We are very pleased with the positive response external customers have shown to the service we provide”, says e.g.o.o. Managing Director Ursula Vogt. “We want to continue our growth in this business segment. Our expertise in handling and loading heavy and special-sized loads is one of e.g.o.o.’s unique selling points as a private rail operator. Our long history of transporting components for ENERCON means we have considerable experience in this field, from which external customers can benefit, too.”

e.g.o.o. also offers customers the advantage that planning and implementation of projects is all carried out by a single source. The scope of services includes supplying the set of cars, organising and carrying out transportation, ordering the necessary approvals and routes, and organising and coordinating loading and unloading processes. On top of this, the staff and the locomotive stay with the load and the accompanying car throughout the entire transportation process, which generally lasts several nights. Even if the trains have to be stabilized during the day, the staff and the locomotive are not removed at any time. This saves e.g.o.o. a lot of time and prevents losses brought about by friction due to frequent locomotive and staff changes.

Heavy-duty transport with e.g.o.o.: This transformer was transported for an external customer outside of the wind industry.

ENERCON for international transmission network operators

In March, ENERCON hosted a workshop for international transmission network operators on the subject of Inertia Emulation. The participants were given the chance to meet WR+SGE Integration experts, and discuss with them how wind energy converters can take over the job of the ready reserve for grid stabilisation. This issue is a hot topic in many grid regions at the moment.

Up until now, conventional power plants have generally been responsible for stabilising the grid during a change in frequency. They quickly make the kinetic energy stored in the rotor and generator available if the grid frequency drops. ENERCON wind energy converters are also able to quickly control frequency, at least to a certain extent: the kinetic energy stored in the rotor and generator is used to provide the grid with more power in the short term as would have been available based on the prevailing wind conditions. This function, developed by ENERCON, is referred to as Inertia Emulation.

In addition to expert presentations and discussions, the workshop itinerary also included a field visit at ENERCON’s test site in Fiebing and a tour of the factories manufacturing for ENERCON in Aurich. 21 transmission network operator employees from 13 countries took part in the event. The feedback received from the participants was positive without exception.

AURICH

Workshop for international transmission network operators

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LONGUEIL-SAINTE-MARIE

Training construction site in France officially inaugurated

At the beginning of May, ENERCON officially inaugurated its new training construction site in Longueil-Sainte-Marie, in the presence of French Labour Minister Muriel Pénicaud. The new training facility in the Hauts-de-France region will be used to train installation technicians from all over the world in the WEC technology of its 2 MW platform.

Original components from a 2 MW wind energy converter are provided in the training area for this purpose. Under the direction of experienced instructors, the course participants assemble these components and then dismantle them again at the end of the training course. ENERCON expects to welcome 350 training participants each year.

Minister Pénicaud expressed her appreciation of ENERCON’s commitment to the region, and France as a whole. With more than 1,700 installed wind energy converters, a total capacity of 3,500 MW (market share: 25 percent) and 800 members of staff in sales, project management, installation, service, supply and training, ENERCON is the leading employer in the wind energy sector in France.

“Minister Pénicaud expressed her appreciation of ENERCON’s commitment to the region, and France as a whole.”
ENERCON has high hopes for the new compact and cost-optimised EP3 platform WECs. The radically functional design of the E-126 EP3 for medium wind speed sites, the E-138 EP3 for low wind speed sites and the E-115 EP3 for strong wind sites (also see report p. 16) is ENERCON’s response to the growing price and competition pressure in onshore wind energy markets and a passport to new foreign markets where ENERCON will be competitive options for customers in established international markets. The compact and cost-optimised EP3 platform WECs. ENERCON has high hopes for the new compact and cost-optimised EP3 platform WECs. The radically functional design of the E-126 EP3 for medium wind speed sites, the E-138 EP3 for low wind speed sites and the E-115 EP3 for strong wind sites (also see report p. 16) is ENERCON’s response to the growing price and competition pressure in onshore wind energy markets and a passport to new foreign markets where ENERCON will be competitive options for customers in established international markets. This explains why ENERCON is so dedicated to driving the EP3 range forward. Practical testing of the main components found in the new WEC types is in full swing weeks before the installation of the first prototype, which is set to be completed in August. The first positive findings have been revealed from practical tests performed with a technology prototype at the Test Site Lelystad in the Netherlands and on a test station at WRD in Aurich. They should help to ensure the prototype stage is completed as quickly as possible.

The technology prototype based on the E-115 E2 was commissioned at the Test Site Lelystad back in April. The main purpose of this test machine is to validate the new EP3 rotor bearing unit – the newly developed main component that is decisive for the functional compact design. At the same time, development engineers are putting the compact bearing to the test at the WRD generator test station in Aurich. It is installed in an EP3 generator which is completing its testing programme at the test station. "During the first test runs our main focus was on the thermal characteristics of the new bearing", explains Frank Knoop, Nacelle Division Manager at ENERCON’s development company WRD. A noticeable build-up of heat would have signalled bearing problems. Special attention was also paid to the sealing during the tests. The design engineers are very pleased with the results: "We did not detect any abnormalities", reports Frank Knoop. The new bearing operates in practice as we expected." The generator bearing is removed and inspected in detail once generator testing is completed. Grease samples are then taken and analysed as part of the inspection.

The findings from the test machine are also an affirmation for the other development divisions. "Thanks to this system, we have already been able to gain extensive positive experience of the new EP3 concept in operation", summarises Sascha Exner, Project Manager for the E-126 EP3 at WRD. Since its commissioning, the system has been operated at nominal power several times. As well as monitoring the machine’s operation, WRD is also performing measurement campaigns on the test machine, including sound and load measurements. In addition, the machine enabled us to successfully test processes", says Sascha Exner. The most important finding in his eyes: “Our optimised production, transport and installation concepts deliver what they promise.”

The tests are necessary as the E-138 EP3 is fitted with new inverters and rectifiers that work with a higher level of voltage. Meanwhile, in the test centre next door, WRD is making arrangements for the E-126 EP3 rotor blade tests to start as soon as the test blade is delivered. The first EP3 blade set has already been completed by the prototype construction department of the rotor blade production facility in Magdeburg. It is destined for the E-126 EP3 prototype at the Kirch Mulsow site in Mecklenburg-Western Pomerania, where the tower construction is currently making good progress: "We are on schedule with the first EP3 prototype, and there is no reason to think that commissioning will not take place at the end of August as planned", says Sascha Exner. WRD has also hit a significant milestone in terms of certification. Testing of the E-126 EP3 design carried out by the German Technical Inspectorate TÜV Nord has been successfully completed and the inspector’s expert report has been obtained. While EP3 testing is underway, ENERCON is preparing the training courses for installation technicians getting ready to work on the new WEC types. The premises of the new training construction site currently being built in Emden are therefore also a hive of activity. The new training centre will be the central EP3 training facility for technicians from all over the world. So that the first training units can start in July as planned, the second EP3 machine ready for delivery will be sent here. Straight after completing their training, the technicians will begin with their first installation job: they will install and commission the first EP3 serial machines in Turkey before the year is up. //
ENERCON launches prototype phase for E-Storage 2300

COMMISSIONING OF THE PRE-SERIES VERSION OF THE INNOVATIVE INTERFACE TECHNOLOGY FOR CONNECTING BATTERY STORAGE SYSTEMS IS EXPECTED TO TAKE PLACE AT THE END OF Q3. WORK ON THE FIRST CUSTOMER PROJECTS WILL START FOLLOWING COMPLETION OF THE TEST RUNS.

ENERCON has the launched prototype phase for the E-Storage 2300. The first series production version of the innovative interface technology for connecting battery storage systems is currently under construction and is set to be commissioned in autumn, at the Fiebing wind farm in Brandenburg and the Húsahagi wind farm on the Faroe Islands.

Ralf Müller, head of the E-Storage development project at ENERCON’s research and development department company WRD. The first customer projects will be realised in France and the South of Germany once the test phase is over.

The E-Storage 2300 is a bidirectional power conversion system that enables energy to be fed into and out of battery storage systems quickly. It is the interface developed by ENERCON to connect battery storage systems to wind energy converters and to the grid. The system has a maximum active power of 2.3 MW and a nominal power of 2.0 MW, and is installed in a steel container measuring 40 ft. Its main components are medium-voltage switchgear, a transformer, AC-DC converters, DC-DC converters and a control cabinet. The transformer transforms the grid-side medium voltage to 400 volts and the inverters turn it into direct voltage. This direct voltage is adjusted to the voltage level of the battery by the DC-DC converters. ENERCON can also supply a superordinate controller that measures voltage and current at the network connection point in order to filter out power values and frequency.

“...The E-Storage is the series product that incorporates all our research and the knowledge we have gained from our storage pilot projects at the Feldheim Regional Regulating Power Station in Brandenburg and the Húsahagi wind farm on the Faroe Islands”, Ralf Müller tells us. ENERCON’s scope of development and supply comprises the E-Storage container and, where required, the superordinate controller. ENERCON designs the connected batteries to suit their intended purpose, and they are provided by external suppliers. The key components of the E-Storage come from:

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Interface technology for connecting storage systems:
ENERCON E-Storage 2300 - the picture shows the components of the pilot project Húsahagi being tested at the Fiebing test area in East Frisia.

ENERCON wind energy converters and have been adapted for the storage system, in particular the inverters. “The only new developments were the DC-DC converters, the control cabinet and the providing us with great synergistic benefits,” says Ralf Müller.

At this time, Ralf Müller envisages the E-Storage being used mainly to stabilise wind farm feed-in power and provide control reserve. It is conceivable, however, that other applications will be added to this list in future. These could include smoothing peak loads, implementing feed-in with optimised revenue, and offering infrastructure improvements in place of grid expansion measures. Use as part of the integrated energy concept or in a stand-alone grid is also feasible. ENERCON has high hopes for its new product. There is global demand for storage solutions and experts in the sector see significant potential for growth, according to Ralf Müller: ”The market for storage solutions is predicted to increase ten-fold in the next seven years. In the E-Storage 2300 we are providing our customers with high-performance technology.” //
Functional and typhoon-ready: ENERCON launches new E-115 concept

The introduction of the functional compact design for the EP3 platform means a whole new design for the E-115, too. The E-115 EP3 will be available with a nominal power of 3.0 to 4.0 MW and will be designed for wind class IA. In Japan it will even be suitable for the ’typhoon class’.

ENERCON will be launching an E-115 EP3 on the market at the end of 2019, based on the new EP3 platform. The new E-115 version will also feature the radically functional EP3 compact design seen in the EP3 WEC types already presented (E-126 EP3 for medium wind speed sites and E-138 EP3 for slow wind speed sites). Adopting the EP3 concept means the developers are able to implement the required cost reductions and improvements to the production, logistics and installation processes in a WEC with a smaller rotor, too.

As with the current E-115 E2, the rotor diameter will continue to measure 115 metres. However, the E-115 EP3 will be grouped one wind class higher as part of the new development as a WEC for strong wind sites, it will be created for wind class IA in the future. Its design will even be suitable for the ’typhoon class’ in Japan, and thus for 50-year gusts with wind forces of up to 90 m/s. It will have a certified service life of 25 years. The E-115 EP3 will be fitted with new one-piece rotor blades and will be available with a nominal power of 3.0, 3.5 and 4.0 MW — in dependence of the site conditions. In the development stage different tubular steel tower and hybrid tower versions with hub heights between 67 and 149 metres are being considered.

As well as standardising the EP3 product range so that it is based on the same shared technology, the new development brings with it another clear advantage. Costs are reduced significantly compared with the current E-115 E2, and this in turn gives ENERCON an edge in competitive markets.

In addition, the 3.0 MW version means ENERCON can also offer an exceptionally quiet E-115 EP3 for sites where noise is an issue. Work is already being undertaken on this project to coincide with the other EP3 developments. The prototype is expected to be installed in autumn 2019.


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ARC-SIRIL – Wind farm beaconing with protection for residents

One of the main criticisms to be voiced by residents living close to wind energy converters is that the nighttime marking flashes permanently. In order to promote greater acceptance, ENERCON has been working together with a partner to develop special lights: the beam angle is so flat that the light is barely noticeable on the ground.

The purpose of having nighttime marking on wind energy converters is to draw the attention of approaching aircraft pilots to the fact there is an obstacle. These collision warning lights are important for safety, but they have an unwanted side effect: local residents can also see them and are often irritated by having to put up with the permanently flashing red lamps in their direct field of vision. The ARC-SIRIL lights developed by ENERCON and its cooperation partner Lanthan promise relief: their red light is barely noticeable from the ground in the direct vicinity of the WEC.

The acronym ARC-SIRIL stands for Aviation Regulation Conformal-Surface Intensity Reduced Intelligent Light. On the outside, the design of the ARC-SIRIL lights is no different to that of the conventional WEC beaconing. The main difference is in the interior: due to the structure of ARC-SIRIL, the red light has a particularly flat beam angle. It is clearly visible for pilots in the air, but residents living in the vicinity of the wind turbine are no longer disturbed by the light on the ground.

Unlike radar-assisted needs-based nighttime marking (German: BNK), the ARC-SIRIL nighttime marking remains permanently activated at night. With the BNK version, the wind farm beaconing stays switched off completely during times when there is no flying activity, and is only activated when the radar locates aircraft on a collision course. ARC-SIRIL therefore cannot replace a BNK solution as ’needs-optimised control’ of nighttime marking. It simply offers an alternative for sites where BNK systems cannot be used due to frequencies not being available or the price of installation costs, for example. ENERCON and Lanthan have fitted the system in the first wind farms for testing.

Comparison of the beam angle by the example of the nacelle’s collision warning light.
Wildlife conservation and court rulings slow down climate protection

WILDLIFE CONSERVATION REQUIREMENTS ARE GETTING OUT OF HAND: ADMINISTRATIVE COURTS ARRIVE AT VERDICTS THAT ARE NOT ALWAYS EASY TO ACCEPT FROM A TECHNICAL POINT OF VIEW. IN MORE AND MORE CASES, THE RESULT IS THAT NEW AND REPOWERING ONSHORE WIND ENERGY PROJECTS DO NOT EVEN GET OFF THE GROUND, AS LONG AS THIS FATAL ALLIANCE EXISTS, THE FIGHT AGAINST CLIMATE CHANGE WILL FALL BY THE WAYSIDE.

Climate protection and the energy transition are being met with increasing resistance from a technical point of view. In many places conservationists are turning into bitter opponents of onshore wind energy projects. They are focussed on providing the best possible protection for nature in their local area, which they view as being unsuitable and under threat from mankind. They allege that wind energy poses a grave threat to flora and fauna and fight tooth and nail to step it, with more and more cases even being taken to court. Conservationists are forming a fatal alliance with ever more restrictive authorities, and administrative courts that, at times, reach verdicts no longer explicable from a technical point of view. This alliance is now posing a severe threat to the expansion of wind energy, and with it the transition and the necessary climate protection.

One important point is disregarded: the supposedly unspoiled nature that has to be conserved at all costs is, at the end of the day, a man-made landscape that is constantly changing. An image is created of a natural, untouched landscape that would be destroyed by the installation of wind energy converters. In one case from Saxony-Anhalt, Federal Immision Control Act approval was refused for the expansion of an existing wind farm in an area designated as suitable in the Magdeburg regional plan. The argumentation was that the general minimum 1,500 metre distance to a red kite nest was not complied with. The fact that the existing WECs already fell below this general distance stipulation, without any conflicts between the wind turbines and the red kites having been observed, was unfortunately irrelevant for the species conservation review carried out by the Bund für Umwelt. A common buzzard’s breeding place was enough for the court to prevent the construction of an approved wind farm in a fixed potential area in the municipality of Grünberg.

Whether environmental activists are really concerned about conserving wildlife in cases like this or are simply putting it forward as a convenient argument to prevent a wind energy project in their neighbourhood from going ahead is another question altogether. The indications of the resistance are, at any rate, critical: ENERCON projects in Germany on a scale of over 2,000 MW are currently being blocked as a result of matters relating to species conservation, and the regional planning that has failed due to its inability to resolve legal conflicts. This figure would be considerably higher if we were to take the sector as a whole. Several hundred MW of renewable power generation capacity which experts estimate will cease to exist due to wildlife conservation putting a stop to repowering approval are not taken into account here. Birds of prey in particular are often seen to settle down in existing wind farms due to the available food supply. However, within the scope of the repowering approval procedure, the site is assumed to have been free up until this point. The fact is ignored that often repowering can even reduce legal conflicts with the old wind farm relating to species conservation. Species conservation means projects even fall through in preferential zones where wind energy is seen to be privileged.” Jürgen Berlin, wind farm planner in the planning department at ENERCON Sales National, explains with regret.

Specialist lawyers concerned with wind energy are currently observing an escalating trend in which appeals are made against German Federal Immision Control Act approvals – even those already granted – on the basis of alleged irregularities during the environmental impact assessment (EIA). Environmental associations and citizen initiatives are at the forefront. ‘There is a regular flood of lawsuits coming from local nature and biodiversity conservation unions (NABU) and organisations across the entire country’, says Thomas Brügjes, company lawyer in ENERCON’s Legal Department. More and more private individuals are also claiming irregularities in the EIA or species conservation concerns. These people are benefitting from a development in administrative practice: ‘low-triggered’ by the recent European Court of Justice (ECJ) court ruling that also enables private individuals whose rights are not directly injured by a construction project to launch a legal challenge against approvals. ‘This development creates significant legal uncertainty as there is a serious risk that legal action will be taken even after approval has been granted. In many cases, appeal against the Federal Immision Control Act no longer offers investors the legal certainty that they urgently require in view of their huge investment sums’, explains Thomas Brügjes.

This legal uncertainty is reflected more and more in the German Federal Immision Control Act approval process. Wind farm planners are noticing that the authorities are becoming increasingly cautious and request made by a third party that there is a significantly increased risk of a protected species being killed. All it takes is a citizen initiative or self-professed bird experts to make a blanket assertion that a protected bird species is being spotted in the project area. This process automatically puts the investor in a predicament it is almost impossible to get out of. In effect, the investor must prove to the specialist authorities that this species of bird cannot be found here – a reverse onus that seems absurd.

Unfortunately, this procedure is supported by the courts of law. Thomas Brügjes has first-hand experience of this, and tells us about a wind energy project in Bavaria that was successfully prevented by a citizen initiative taking the type of action. After the project site had been extensively surveyed by experts for bird colonies

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relating to species conservation over a very long period, a local citizen initiative presented videos it had shot itself showing the presence of protected species. In the end, the project was declared inadmissible due to species conservation reasons. In this case, the local administrative court acted on the information given by the citizen initiative and rejected the surveys conducted by experts over many years. “If this becomes prevalent and the court goes along with the statements of third parties in any case, we have to ask ourselves whether there is any point to these surveys that often involve a lot of work and money”, Thomas Brunjes points out.

Arguments like this show that the conflict between wind energy and species conservation is often overstated on the population level. But sadly they are not significant for the Commission Control Act approval process or the legal proceedings, as Jürgen Berlin can report. Instead, the virtues of wind energy are ignored, along with existing impacts created by man. The shortcomings outlined result in an ever more intense conflict between the use of wind energy and the protection of species.

The impacts are far more wide-reaching than just the restriction of wind energy expansion and the impending failure of the energy transition. If legal conflicts relating to species conservation result in areas designated for wind energy in regional plans and municipal development plans not being realised, for example, it ultimately means a failure of the system of wind energy use management based on development planning that is anchored in the German Federal Building Code (BauGB). A proper development planning-related management system aims to assess all of the issues concerned, and above all the protection of the local population. According to these principles, wind energy is intended for the area defined as ‘outlying area’ in planning law, made clear by the privileged status of wind energy use in the ‘outlying area’ anchored in § 35 BauGB. However, if the outlying area cannot be used on the grounds of species conservation, planning has to take place in areas close to housing and industrial estates where there is less conflict with species protection. This leads to an absurd and unwelcome situation in which the protection of the residents is downgraded in comparison to wildlife.

Styling species protection and climate protection as rival interests is just as absurd. In the end, they both want the same thing: to preserve nature and the environment. Scientists all agree that climate change is one of the chief causes of global extinction. Climate protection – what the energy transition is all about – is thus also species protection. In the interests of global climate protection and species protection, we must therefore find a way to implement the national endeavours for an energy transition – including in the approval processes – through reasonable and careful consideration of all interests. The renewable energy expansion objective and the actual risk posed to the species affected by the project have to be kept in proportion. It would be helpful to provide the authorities with a set of guidelines to help them balance these interests efficiently during the approval procedure. On top of this, legal certainty must be assured for investors once more. This is only possible with reliable Commission Control Act approvals.

“We also get the impression that some approval authorities simply don’t know where to start with the increasingly complex material”, says Jürgen Berlin. Taking bat protection as an example, this results in requests being made for detailed surveying and mapping to be carried out that has little technical significance and no influence on the approval process, just so the authorities are protected. General shutdown times in connection with a monitoring system are defined later anyway in the Immission Control Act approval.

As part of the species conservation legal review it is crucially important to establish whether the project poses a significantly increased risk of killing for protected species. The possibility that bats and birds of prey in particular could collide with a wind turbine is indisputable. However, the sound judgement needed seems to be lost when reviewing the risk of killing. The review is generally carried out on an individual basis, meaning a significantly increased risk of killing is assumed if there is already a high risk of collision for one specimen of a protected species. Within the context of this review, it is irrelevant whether this changes the conservation status of the species concerned. Regrettably, the impact of wind energy use on a protected species in comparison with other potential sources of collision is not taken into account either. For example, in a recent article contributing to a more objective debate, the German Federation for the Environment and Nature Conservation (BUND) points out that wind turbines pose only a low risk for most species of bird. Many more birds from protected species are killed every year as a result of agricultural cultivation, loss of habitat, environmental toxins, road, rail and air traffic, and of course climate change.

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We need the energy transition to prevent climate change and extinction

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wb: How do you think the increasing conflict between climate protection and species protection can be settled?
Dr. Simone Peter: It is a mistake to set the two issues against each other. Instead, we need to think of them as two issues that belong together. Many species are already suffering as a result of the worsening climate crisis. The wind industry complies with the strict legal requirements for the protection of species; and on top of this it also takes measures to help minimise any damage to wildlife and the environment that may occur as a consequence, or to compensate for it altogether.

What can law makers do to help resolve the conflict?
Wind energy converters are no different to other construction projects in the way they interfere with nature and the countryside. Strict planning and approval laws apply – one of their specific aims being the protection of certain bat and bird species. Surveys of fauna are carried out for almost every project today. Many important questions regarding the impact of wind energy on birds and bats have been answered in the past years. Lawmakers should make use of this knowledge to draw up regulations that can satisfy the interests of both parties.

The Centre of Competence for Nature Protection and the Energy Transition (KNE) also works hard to reconcile the conflict. It provides objective and factual information on specialist issues and organises expert dialogues in order, for example, to create uniform quality criteria and standards. It also offers training for mediators, whose job is to provide assistance to the affected parties on site and help them conduct a constructive dialogue and find a suitable solution.

Repowering is prevented in many places because protected species have settled at the site. This shows that wind energy and nature are more than capable of peacefully co-existing. What are the prospects for these sites?
Co-repowering often works well on sites that have already been approved – and it’s exactly for that reason they are suitable for repowering projects or continued operation. Furthermore, repowering also provides the opportunity to ‘readjust’ sites that are less suitable. From the point of view of climate and energy policies, the wind turbines that will no longer fall under EEB remuneration after 2020 are too important for us to lose.

How can you convince critics of wind expansion that the energy transition and climate protection are the best way to ensure conservation of species?
The effects of climate change on flora and fauna are already visible at this stage. Global warming is responsible for steady rainfall, flooding, heat waves, periods of drought, tornados and shifting growing seasons and vegetation zones. One in six species is already at risk (status 2015). If the Earth continues to heat up at this rate, numerous species will be under threat of becoming extinct – in particular those unable to escape. We have to prevent this from happening, and we need the energy transition to do so. In Germany, Europe and the world over. //


Photo: Laurenz Otegina

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POLITICS
In order for a real reduction in emissions to be achieved, the CO₂ tax would also have to be introduced in the key neighbouring countries in Europe. The EEG reforms have had one unwelcome side effect. After coming under pressure from the federal state of North Rhine-Westphalia, the Union is now calling for renewed introduction of the state escape clause – a decision which makes no sense to us. It would enable the state government to turn the planned minimum 1,500-metre distance from buildings into a statutory regulation. If this clause is brought back to life, the whole country is at risk of being subject to high distance requirements right up to ‘10 H’ in many states – a rule specifying the distance from residential buildings must be at least ten times the WEC height. This would render the 2030 climate target virtually unattainable. The renewables sector is aware that a further amendment is already required as it is in order to stop the prevention strategies of environmental associations. We must persevere to ensure a positive attitude in relation to the use of onshore wind energy converters.

One very significant driver of the energy transition is, however, left completely unmentioned: carbon pricing. It was given no place in the coalition agreement, despite having been debated in discussions with French President Emmanuel Macron. Pricing CO₂ would only result in a marginal increase to the electricity price on the market, from 3.4 to 3.8 ct/kWh. This is good news for energy-intensive industry, which is especially competitive thanks to electricity prices having been low in Germany for a long time. In contrast, old or written-off power plants with high emissions would come under pressure. Not only are they causing surplus capacities in the German energy market, but they are also ensuring Germany’s CO₂ emissions are continuing to rise despite rapid expansion of renewables.

A CO₂ tax would raise the market value of renewable energy. “For those wind energy converters which will no longer receive funding after 2021 in particular, this is a great incentive for useful continued operation”, says Uwe Behrens, responsible for further operation concepts for WECs after funding has stopped at ENERCON’s subsidiary Quadra Energy.

In order for a real reduction in emissions to be achieved, the CO₂ tax would also have to be introduced in the key neighbouring countries in Europe. A solo effort by Germany would reduce emissions, but only a fraction of that which could be achieved with cross-border carbon pricing. Within Europe, Great Britain and the Benelux countries join France as possible candidates for a common CO₂ price. Switzerland and Sweden already have CO₂ levies.
Major E-44 project marks beginning of upturn for Greece

Greece has a multitude of wind class I locations, making it one of the wind energy markets in Europe to offer great potential. ENERCON has always stood by the country, even during the peak of its economic crisis. A major project involving 40 x E-44 WECs now marks a new chapter.

Greece is one of those European countries predisposed to generate power from renewable energy sources. There is an abundance of strong wind sites along the 4,000-km stretch of mainland coastline, on the Mediterranean islands and in the inland mountainous regions, offering excellent conditions for operating onshore wind energy converters. The difficult economic situation in recent years presented a challenging environment for investors, including in the field of renewable energies. While many companies made the decision to withdraw from the country completely, ENERCON never doubted the Greek market and continued its commitments there. The company is reaping the benefits – there are now signs of a revival, marked for ENERCON by the realisation of a major project involving 40 x E-44/900 kW WECs.

The Gropes-Kalogerovouni project is located in the Laconia region in the southeastern part of the Peloponnese. The site is perched on rocky terrain at an altitude of 900 metres above sea level. The wind turbines were installed on several ridges during the winter months.

The wind conditions are excellent and promise very good yields for the E-44 machines installed.

The comparatively small ENERCON WEC type plays an important part in Greece: more than 200 have been installed in the country to date. "More than a quarter of the E-44 wind energy converters installed in the world can be found in Greece", says Frank Hensel, Regional Manager for Greece and Cyprus at ENERCON Sales International. "The E-44 will also be significant in the future with relation to new island concepts involving energy storage systems. With its numerous inhabited islands boasting optimum wind conditions, Greece is able to set a perfect example for the energy supply of the future: fossil fuels are replaced by renewables. When combined with storage solutions, the proportion of renewables can be steadily increased while reducing energy costs at the same time. The E-44 is the ideal choice for such combination projects in remote locations, thanks to its strong wind design, steel towers and low hub heights."

Gropes-Kalogerovouni project with a total of 40 x E-44/900 kW WECs.

ENERCON in Greece

ENERCON installed its first project in Greece back in 1996. That made Greece one of the first foreign markets in which ENERCON installed wind turbines as part of its internationalisation strategy.

Today, the Greek ENERCON fleet comprises more than 500 wind energy converters. Due to the predominantly strong wind conditions and the difficulty in accessing many of the sites, most of the WECs installed were E-44 or EP2 platforms (E-70, E-82, E-92) machines. ENERCON currently has the second-largest market share in Greece and employs around 100 members of staff there.

Frank Hensel also envisages a positive future for ENERCON’s new cost-optimised EP3 platform in the recovering Greek wind energy market. "The new wind class I E-115 EP3 is especially appealing for Greece, as a country with lots of complex terrain and a great many strong wind locations. We couldn’t be better equipped to start new projects here. The other new E-126 EP3 and E-138 EP3 developments mean we are well-positioned in the other wind classes, too."

Greek banks are now making credit available to finance wind energy projects again, and the situation in the sector is rapidly improving. As a result, Greek developers can realise their projects before the remuneration system is changed to tendering at fixed feed-in tariffs. The recovering economy is also sure to rekindle interest in Greece among international developers, investors and financiers, Frank Hensel predicts. In addition to the excellent site conditions, the political framework conditions in Greece are also favourable. The country is committed to the energy transition and aims to cover 20 percent of its primary energy demand with renewable energies by 2020. According to the European industry association WindEurope, 2,651 MW of onshore wind energy capacity were installed in Greece at the end of 2017.

ENERCON is now profiting from its decision to remain in the country during the economic crisis. "Even during the difficult economic years, Greek developers kept pushing forward with projects. ENERCON was there to provide support at all times with its experienced team", reports Frank Hensel. "We have the development know-how to help with projects in Greece, and are able to bring international investors together with Greek project developers."

The new WEC portfolio with the cost-optimised EP3 WEC types represents a further advantage. In Hensel’s eyes, this portfolio provides ENERCON with a firm technological footing: "Economically attractive projects await us with the new tendering system, too. Our wind turbine types mean we are in the best possible position for these projects, and we can be optimistic about forging long-term partnerships for economically successful operation."

Another example of a wind energy project in the recovering Greek market is already in the pipeline at ENERCON. By the end of this year, the company wants to start with the installation of an 80 MW wind farm it has been developing over the past years.
Expansion of strong wind location signals

launch of market offensive

ENERCON IS SUPPLYING 9 X E-82 E4 TURBINES FOR THE ONSHORE PROJECT ‘DIADEMA II’ IN ARGENTINA. THE ARGENTINIAN MARKET IS PROMISING, AND WILL SOON BE HOME TO THE NEW 4 MW+ CLASS WEDS FROM ENERCON AND LAGERWEY, TOO.

Average wind speeds in Argentina are some of the highest worldwide. Strong wind conditions in accordance with wind class IEC 1 prevail in around a third of the country. This is a huge wind potential, and it seems like it has just been waiting to be tapped by the onshore wind industry. However, unfavourable political framework conditions have led to slow progress in recent years – just 228 MW of onshore power were installed up until 2018.

The reforms mean Argentina is now one of the most promising wind markets in the world. Forecasts predict market growth of around one gigawatt every year until 2025. ENERCON wants to secure its share in this positive development and is therefore intensifying its activities in Argentina at present. The company has already managed to score a success: ENERCON won the bid to supply 9 x E-82 E4 turbines to expand the Diadema wind farm in Patagonia, southern Argentina.

“The first ENERCON wind energy converters were installed in Patagonia back in 2001, meaning that we have more experience with the conditions there than our competitors do”, says Nikolaus Kraus, Country Manager for Argentina at ENERCON Sales International. At the Diadema site, close to the city of Comodoro Rivadavia, a mean wind speed of 12 metres per second at 50 metres prevails. ENERCON had already commissioned 7 x E-44 wind turbines here in August 2011. The excellent availability and a capacity factor of over 50 percent at the wind farm convinced the customer, Hychico, that the E-82 E4 designed for strong wind locations should be the favoured option in the planned wind park expansion, despite the fact the WEC type has a rotor diameter approximately 30 percent smaller than that of rival machines. Moreover, Hychico plans to install hundreds of MWs in the following years in Argentina, and according to Ricardo Aníbal Perez, Hychico’s Renewable Energy Manager, WECs from ENERCON and Lagerwey are a suitable option.

“At the moment we are seeing lots of risky decisions being made by investors who are choosing prototypes with large rotor diameters for sites in Patagonia”, reports Nikolaus Kraus. “With the significant restrictions on availability contained in the supply contracts of our competitors, the economic risk for the operators can increase exponentially in the long term. The wind turbine data may well appear promising at first glance, but a lot of the new WEC types only exist on paper and are not designed for such high wind speeds. That’s why, together with our customer, we opted for the E-82 E4 turbine with a 67 m tubular steel tower as a reliable WEC type for a strong wind site we have been very familiar with for over seven years now. We are very confident that the E-82 E4 will also enable us to meet our customer’s performance requirements over its 25-year service life.”

In Argentina, renewable generation capacities are put out to tender. The most recent RenovAR round of tendering resulted in long-term Power Purchase Agreements (PPAs) for a total capacity of 2,646 MW that has to be installed by 2020. In contrast to the GENREN renewables tender in 2019, which ended in just 81 MW of onshore wind power being put into effect, the first 653 MW from RenovAR are already in the installation phase and the majority of the PPA contracts have already been signed. According to Nikolaus Kraus, the World Bank guarantees for 20-year Power Purchase Agreements are the key to RenovAR’s success. They serve to encourage private investments in renewable energies.

“In the next rounds of tendering we expect projects to shift to regions with less extreme wind conditions”, says Nikolaus Kraus. “For this reason, for the RenovAR 3 round of tendering we will also be offering WECs with a larger rotor diameter based on our latest WEC generation. The wind turbines in the new EP3 and Lagerwey platform with large rotor diameters and high hub heights are ideal for many of the projects our key customers are currently preparing for the next round of tendering.”

The ‘Diadema II’ wind farm expansion therefore marks the launch of a market offensive in Argentina, where ENERCON would like to install more MW in the coming years, as in the rest of South America. “We are convinced that our gearless WEC concept constitutes the best solution for the Latin American markets”, reiterates Nikolaus Kraus. “These markets are characterised by very high wind speeds and low turbulence intensities. We have the products to suit these conditions: we currently have more than 190 wind turbines for around 2,000 MW installed in Latin America that boast an annual availability of more than 98 percent and a very high level of customer satisfaction.” These are ideal prerequisites for intensifying activities in the area, a plan that fits perfectly into ENERCON’s aim to increase focus on international markets.

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Nikolaus Kraus, Country Manager for Argentina at ENERCON Sales International

Wind Farm Diadema/Argentina with ENERCON E-44 turbines.

Photos: Hychico