INTERNATIONAL LAUNCH OF EP4 SERIES CONTINUES

FIRST E-141 EP4 IN FINLAND

International launch of EP4 series continues

TEST STATION PREMIERE  ENERCON E-115 E2 as test object in research project

REPOWERING EXAMPLE  Groundbreaking wind farm renewal in East Frisia

WIND ENERGY FROM DIKE  ENERCON supplies 8 x E-126 EP4 for „Bouwdokken” wind farm/Netherlands
New government must work to quickly resolve energy policy mistakes

Dear customers, business partners and employees, dear readers,

The results of the first rounds of tendering in Germany mean the wind energy sector is facing enormous challenges. They reveal a situation that we had feared. Good intentions are often in bad results! Following a dog race in the wind sector with record expansion of over 4,000 MW in the past years, we have now had a rude awakening. The prospect of a significant decline in wind energy expansion in our important home market in the coming years is very real. This is a matter of great concern for us. It needs to be amended and the tendering volume needs to be significantly raised in 2018. Otherwise the German wind industry and its suppliers are facing an uncertain future.

Politicians must act quickly and take countermeasures to prevent the energy transition from being thwarted and stop a disaster in terms of reaching climate protection targets. Together with the associations, we urge the new government to generally only allow approved projects in the tendering process for onshore wind energy. In addition, the expansion volume must be doubled or rather the volume cap abolished.

The politicians in charge need to understand that the problems have to be tackled quickly, in order to create reliable conditions for our industry and the energy transition once more. We are counting on the sense of responsibility of the elected politicians, and that they will have the foresight to recognise that they must act quickly to ensure our future-oriented industry can continue to exist and, with our help, that the restructuring of the energy system does not lose momentum.

In view of the huge challenges we are up against, ENERCON will not slacken its efforts and will continue to fight for successful implementation of the energy transition. We hope that you, like us, have not allowed the turbulent year to dampen your spirits, and that we will continue to accomplish projects together in the future and do our part for a renewable energy system based on onshore wind energy. Please read the articles in this issue of windblatt which show that this year we have once again realised a host of exciting and innovative projects with your help. We thank you for this.

We would like to take this opportunity to wish you and your families peace, quiet and good health this Christmas time, and a happy, healthy and successful new year with plenty of wind!

Hans-Dieter Kettwig
Managing Director of ENERCON
When protected birds of prey are nesting close by, it often represents an exclusion criterion for installing a wind energy converter. In such cases, the approval authorities generally do not regard species conservation and wind energy as being compatible. However, critics often question this strict refusal practice, as birds of prey are very much able to recognise wind energy converters as obstructions and avoid collisions.

One example from Gütersloh (North Rhine-Westphalia) shows that birds of prey species under protection also colonise and successfully raise their young in the direct vicinity of operating turbines: The owner of an E-70 WEC mounted nesting boxes for falcons on the tower. After kestrels had repeatedly managed to brood there in recent years, peregrines nested there this year. The protected birds of prey successfully raised three falconets in the wind farm – much to the delight of the owner and conservationists in the region. The predators were not disturbed in the slightest by the turbine rotors.
ENERCON opens branch in Taiwan

ENERCON is now also represented with a regional branch in Taiwan. In the presence of around 120 guests and business partners, the new office was officially opened at the end of October in Taipei. In the future, the branch will serve as a central base from which ENERCON will manage all of its activities in the Asia-Pacific installation region. Ten members of staff from Sales, Project & Logistics Management, Purchasing and Service are employed in Taipei to begin with. This number is set to grow to as many as 30 in the coming years.

ENERCON has been active in Taiwan since 2001 and has installed more than 217 wind energy converters there to date, with a total capacity of over 440 megawatts. This figure means ENERCON has a market share of almost 70 percent. ENERCON has been present in Asia since 1999. The first ENERCON WECs were installed in Japan at that time.

Presentation of ENERCON EP3 innovations at trade fairs a success

ENERCON’s product innovations in the 3 megawatt class were met with positive feedback from customers at the leading trade fairs for wind energy where they were presented. The E-126 EP3 for medium and the E-138 EP3 for low wind speed sites were a central subject at the Brazil Windpower in Rio de Janeiro at the end of August, the Husum Wind at the beginning of September in Schleswig-Holstein and the WindEurope at the end of November in Amsterdam, Nuremberg. “The new EP3 machines were very well received by our customers – nationally and internationally”, reports ENERCON Sales Director Stefan Lütkemeyer. “Several customers indicated to us at the trade fairs that they would be entering the next round of tendering with EP3 turbines. This is confirmation for us that we are on the right track with the new developments.”

At the Brazil Windpower wind trade fair, the largest in Latin America, ENERCON presented the new EP3 turbines to the public for the first time. Customers were able to gain a first impression from a presentation film. At the most important German trade fair a few weeks later in Husum, an EP3 exhibition in a scale of 1:12 was presented alongside the film. ENERCON used the same set-up at the WindEurope in Amsterdam.

As well as the new EP3 machines, the latest developments surrounding the new tendering system in Germany were a defining topic at the ENERCON stand in Husum. The stand attracted many visitors across the entire week, and Sales and Management were very satisfied with the turnout. The Human Resources department also reported a positive presence at the Windcareer job fair. With around 100 participants, the ENERCON operator forum, which took place in Husum, too, also generated a lot of interest. According to the organisers, around 700 exhibitors from 25 countries and around 20,000 visitors attended Husum this year. Next year the international specialist trade fair WindEnergy will be held in Hamburg from 25 to 28 September.

First ENERCON Supplier Day in India attracts a great deal of interest

ENERCON is extremely pleased with the result of its first Supplier Day in India. The German market leader invited more than 70 selected companies from various sectors to Mumbai at the beginning of November to discuss the possibility of working together in the future. The discussions focused on topics such as cooperations for the delivery of raw materials and components, and the provision of services for maintenance and repair of wind energy converters.

“Over the two days we conducted intensive and fruitful conversations. Many of these will be continued in the form of negotiations over concrete business partnerships”, says Heiko Juritz, Head of Purchasing and service are employed in sales, Project & Logistics Management, the Asia-Pacific installation region. Ten members of staff from Sales, Project & Logistics Management, Purchasing and Service are employed in India. “Our return is welcomed. ENERCON still boasts a great reputation in India”, says Juritz. “It follows that many Indian companies are keen to work together with us.”

With its return to India, ENERCON is building on its many years of history in the country. In 1994, ENERCON entered the Indian market as one of the first wind turbine manufacturers with local production facilities. ENERCON (India) Ltd (EIL) developed successfully until 2007. Back then, the German majority shareholder was pushed out of the company by a joint venture partner and ENERCON lost its former subsidiary. This was later renamed to Wind World India Ltd (WWIL). In the period that followed, legal disputes prevented ENERCON from undertaking activities in India. A decisive court verdict means these disputes are now cleared up and a new start is possible for ENERCON in India under new conditions. Over 8,700 wind energy converters with ENERCON technology are currently in operation in India.
**Discussions about cooperation with top suppliers**

The future of ENERCON’s cooperation with its suppliers in light of the tougher framework conditions for onshore wind energy converters, identifying potential for improvement with the often long-standing suppliers is a concern of both Global Procurement and the ENERCON Management. Due to rising cost and competition pressures, the main objective is to identify and make use of potential for saving costs. In order to overcome these challenges together, ENERCON will continue to look to long-term supplier relationships and aims to intensify them further.

In its presentations, ENERCON Management provided an overview of the current market situation and the tightened framework conditions. In this context, ENERCON Sales Management presented the international sales markets with their regional special features. Afterwards, Global Procurement Management addressed the new demands on ENERCON’s top suppliers in detail. The Purchasing Department also presented five suppliers with the ENERCON Supplier Award 2017. The winning companies were able to impress with exceptional performance in the categories Purchasing, Development, Production, Quality or Site Works.

**First e.g.o.o. project cargo rail transport to France**

ENERCON’s rail company e.g.o.o. has conveyed project cargo across the border to France for the first time. Several groups of rail cars loaded with spinner caps and blade pipe extensions for ENERCON wind energy converters travelled from Germany to Le Boulou in the south of France. The components are intended for the Fenouillaldes wind farm, where ENERCON is currently installing 11 x E-82 WECs.

“The transports to Le Boulou represent further examples of our increased involvement in project logistics”, says e.g.o.o. Prokurist Christian Stawermann, e.g.o.o. is currently further expanding the international transportation of excess loads and dimensions for construction projects, and would like to offer other shipping agents in addition to ENERCON – an environmentally-friendly and reliable alternative to the roads. Preparations for further rail transports of project cargo for ENERCON construction sites in France are already underway.

According to Christian Stawermann, the transport orders to Le Boulou were the first transports of WEC components with excess loads and dimensions to be delivered directly by rail in France at all. Also noteworthy was the fact that e.g.o.o. organised the entire transport chain up to delivery to the wind farm construction site by truck, including storage of the components at the Le Boulou terminal.

**ENERCON sets up more Training Centers**

ENERCON is setting up several new Training Centers in order to train installation teams, service staff and customers on how to use its WEC technology. A construction site for teaching the installation of EP2 platform WECs is currently being built in Longueil-Sainte-Marie, France. At the same time, a similar facility for the installation of EP4 WECs is being planned for Emden, Lower Saxony. ENERCON is also setting up a Training Center in Lichtenau, North Rhine-Westphalia to provide training courses to customers. In addition, a training facility focusing on employee training has already begun operation in Le Meux, France.

The training courses on the special construction sites aim to familiarise the installation teams with the processes and activities typical for an ENERCON construction site in a realistic environment. This is intended to result in a general optimisation of the installation of ENERCON wind energy converters. In the Training Centers, employees and customers are given theoretical training and practical training on how to operate WECs and on the topics of safety, maintenance and service.

ENERCON will be represented with two training venues in the French region of Hauts-de-France: From 2018, international installation teams will receive training in Longueil-Sainte-Marie on how to work with 2 MW platform WEC components. ENERCON expects to welcome 350 international training participants here each year. This will result in the need for up to 5,000 overnight stays in the area, which in turn will greatly benefit the hospitality industry. In cooperation with the municipality and the Technologiezentrum Lichtenau (T2L), ENERCON will be realising a brand-new building complete with offices, break and training rooms and a training workshop. As a temporary solution, ENERCON has decided to rent office and conference space at the T2L as well as a training workshop until completion of the building next year. This means the customer training courses can start at short notice this year.

The new training area for the EP4 platform is planned for the west bank of the inland harbour in Emden, and will comprise various learning stations with original components, including a complete EP4 machine house. The stations will be used to train participants in the installation and cabling of the WEC as well as stacking, prestressing and grouting of concrete segments. In the training units, installation technicians from ENERCON and external companies will be given the chance to install and remove training components. ENERCON will employ 13 trainers in Emden on a permanent basis. Following an initial start-up phase, around 50 training courses are set to take place every year, with more than 500 participants.

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The Training Center in Lichtenau will become the main hub for customer training courses. Following an initial start-up phase, ENERCON expects to welcome around 1,200 training participants here each year. This will result in the need for up to 5,000 overnight stays in the area, which in turn will greatly benefit the hospitality industry. In cooperation with the municipality and the Technologiezentrum Lichtenau (T2L), ENERCON will be realising a brand-new building complete with offices, break and training rooms and a training workshop. As a temporary solution, ENERCON has decided to rent office and conference space at the T2L as well as a training workshop until completion of the building next year. This means the customer training courses can start at short notice this year.

The new training facilities are modelled on the ENERCON Training Center in Gotha, Thuringia. Here, a training construction site is already in place where practical training is conducted using EP3 platform components.
First E-141 EP4 outside of Germany up and running

ENERCON has installed an E-141 EP4 at a hub height of 135 metres for the wind energy project "Korpiranta" in Finland. This is the first E-141 EP4 turbine to have been built abroad, and is both the largest and most powerful onshore wind energy converter in Scandinavia to date.
NERCON is continuing the launch of its new EP4 WEC type on the international market. Following the realisation of the first foreign projects with the E-126 EP4 designed for wind class Ia [IEC] (see report p. 24, for example), the first E-141 EP4 certified for class IIA outside of Germany has now been commissioned. As part of the Finnish wind energy project “Korpiranta” ENERCON installed an E-141 EP4/4.2 MW WEC on a hybrid tower at 135 metre hub height. "This machine is the biggest onshore turbine ever built in Scandinavia," says Marko Salmela, Sales Manager for Finland at ENERCON Sales International, with a hint of pride.

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The "Korpiranta" site is close to the city of Lapua in the Southern Ostrobothnia region of western Finland. As is the norm for many areas of the country, the sparsely populated area is characterised by huge expanses of forest, countless lakes and seemingly untouched nature and wilderness. "The project name is therefore symbolic," says Marko Salmela. "Korpiranta in Finnish would translate to wilderness coast."

The wind conditions correspond to wind class IIIA and are therefore by all means suitable for ENERCON’s E-141 EP4, which still achieves high yields at slightly lower wind speeds. According to the
energy yield estimation, the WEC will generate more than 15 million kilowatt-hours per year at this inland site.

Due to the sub-zero temperatures prevailing in the winter months and abundant snowfalls, the E-141 EP4 was supplied with ENERCON’s rotor blade heating system. “This configuration means downtime as a result of icing can be considerably reduced,” says Marko Salmela. “In view of the climatic conditions in Finland, this is a significant advantage.”

The customer and operator is the company Kyyttö Energy OY, founded by two land owners from the region. “The project initiators were won over by our gearless technology and impressed by the E-141 EP4,” Marko Salmela explains why the E-141 EP4 was chosen. “ENERCON delivers the most reliable WEC technology. The E-141 EP4 performs well even at sites with low wind speeds and also has a low sound power level,” adds Pertti Ulvinen, Managing Director of Kyyttö Energy OY. “The 30-year design service life offered by the E-141 EP4 was also a huge factor in our economic feasibility analysis. Simply put, it is the best product to meet our requirements.” ENERCON was thus able to hold its own against competitors also active in the region.

While the planning and approval phase took some time — preparations for the “Korpiranta” project began back in 2013 — there was a very tight schedule for installation and commissioning. The contract was signed with ENERCON in the spring. In order for the turbine to be able to receive the complete feed-in tariff, guaranteed for 12 years, it needed to be connected to the grid before November 1. “In 2018, Finland will also introduce a tendering system to establish feed-in tariffs for renewable energy. The first round will be held in latter half of 2018,” says Pentti Itkonen, Sales Manager for Finland. Thanks to the close cooperation between the various ENERCON teams, the customer and external service providers, it was possible to keep to the tight schedule with no delays. The WEC was commissioned at the end of October as planned.

ENERCON has had a presence in Finland since 1997. Today it operates a sales office in Helsinki and a service station in the port city of Hamina. The first ENERCON wind energy converter, an E-40/500 kW, was installed back then on the Åland islands. Today, ENERCON’s Finnish fleet comprises around 30 wind energy converters, mainly located in the south of the country. To date around 700 turbines have been installed in Finland in total.

The significance of wind energy is still relatively low in Finland. Wind energy had just a 3.6 percent share of power generation at the end of 2016. The energy sector is currently characterised by large share of nuclear, hydro and biomass as well as reliance on imported fossil fuels. However, the Finnish government would like to considerably expand the use of renewables, in order to reduce Finland’s dependency on foreign fossil fuels imports, often from the bordering Russia, as well as nuclear power. The share of renewable energies in power generation is intended to increase from 30 to 38 percent by 2020.

The plans for the tendering system include awarding 2 terawatt-hours from renewable energies to tenderers with the lowest bid. “The onshore wind energy branch is in a good position to be able to keep up in this race,” says Pentti Itkonen. Due to its bordering the Baltic Sea and its long coastline and vast number of lakes, Finland has a multitude of windy sites. The potential for wind energy is estimated at a total capacity of approximately 10 gigawatts. The objective for ENERCON is therefore clear, says Pentti Itkonen: “We want to secure our share of the expansion volume in Finland. We will intensify our activities to achieve this.”
Compact bearing for new EP3 WECs

ENERCON HAS DEVELOPED A COMPACT BEARING FOR THE NEW WECs IN THE EP3 PLATFORM. IT IS A PREREQUISITE FOR THE COMPACT DESIGN OF THE NEW WIND ENERGY CONVERTERS AND HELPS TO SIMPLIFY PRODUCTION, TRANSPORT AND INSTALLATION PROCESSES.

F or the new WEC types in the EP3 platform, the E-126 EP3 and E-138 EP3, ENERCON is pursuing the concept of creating machines which are compact, efficient and cost-optimised throughout. A totally new compact bearing design is a prerequisite for the compact structure. In place of the bearing used up to now, which is integrated in the hub and located on a fixed axle pin, the new bearing is separated from the hub and moves, in the form of a short bearing bushing, to the generator level. Firstly, this allows for a more compact hub and creates space inside for fixtures – the pitch short bearing, to the generator level. Secondly, this allows for the compact structure: in place of the bearing used up to now, a totally new compact bearing design is a prerequisite for the compact design of the new wind energy converters and helps to simplify production, transport and installation processes.

The new bearing bushing is composed of an external and an internal part. There are two tapered roller bearings in between. The external part of the bearing bushing is installed on the generator rotor in the factory. During WEC installation, the internal part is bolted to the generator stator, which in turn is installed on the WEC main carrier.

The compact rotor bearing unit enables the generator rotor and stator to be pre-assembled in the factory for adjustment purposes. Both the hub and the generator rotor together with bearing are delivered to the installation site as operational components.

For this purpose, the E-115 EP3 had to be fitted with an adapter and connected to the drive on the test station. Powerful E-motors act as a wind substitute to set the hub in motion. "Our WEC ran optimally connected to the drive on the test station", says Schellschmidt. The tests mainly investigated the electrotechnical properties, as the test station in Bremerhaven has not been on the test station before", says Schellschmidt. The tests mainly investigated the electrotechnical properties, as would usually be done in the field using installed prototypes.

Test station premiere for E-115 E2 nacelle

ENERCON IS TAKING PART IN A RESEARCH PROJECT INVESTIGATION THE FEASIBILITY OF CARRYING OUT CERTIFICATION TESTS ON TEST STATIONS. FOR THE FIRST TIME, AN ENTIRE E-115 E2 NACELLE INCLUDING GRID FEED TECHNOLOGY WAS PROVIDED FOR TESTING AT THE FRAUNHOFER-INSTITUTE FOR WIND ENERGY AND ENERGY SYSTEM TECHNOLOGY IN BREMERHAVEN.

The series of testing and measurements required for the certification of new wind energy converter types is usually performed in the free field on installed prototypes. Depending on the wind conditions at the prototype site, taking measurements can often prove time-consuming. ENERCON is therefore taking part in a research project with the Fraunhofer-Institute for Wind Energy and Energy System Technology (IWE), the Center for Wind Power Drives at the RWTH Aachen and several certification and measurement institutes investigating the feasibility of carrying out certification tests on test stations. "It would greatly facilitate our work as a manufacturer if we were able to perform certification tests on test stations under controlled conditions", says Martin Schellschmidt, Head of the Validation of System Properties & Grid Integration Department at ENERCON’s research and development company WRO. "It would make the certification process significantly quicker and easier.”

The joint research project is intended above all to establish the preconditions which make certification tests on the test station possible, and the requirements a test station has to meet. The researchers aim to find answers to questions such as how well the established test methods reflect reality and whether the results can be evaluated – or whether perhaps adjustments need to be made to the test set-up to obtain valid results. "The experiments are therefore also used as a means to validate and further develop the test methods", says Schellschmidt.

ENERCON provided the complete nacelle of an E-115 E2 together with an E-module to be used for the first experiments in the IWEs test station in Bremerhaven. "That was a first. A complete machine house has not been on the test station before", says Schellschmidt. The tests mainly investigated the electrotechnical properties, as would usually be done in the field using installed prototypes.
The speculation continues...

“ARTIFICIAL” COMMUNITY-OWNED ENERGY PROJECTS SWEEP THE BOARD IN THE THIRD ROUND OF TENDERING IN GERMANY WITH DUMPING BIDS. THIS IS PAYBACK FOR THE FACT THAT THE GRAND COALITION WAS NOT PREPARED TO CHANGE THE LAW TO ENSURE THAT ONLY CONSTRUCTION-READY PROJECTS WITH APPROVALS WOULD BE PERMITTED TO PARTICIPATE STARTING FROM THIS ROUND.

At the very latest after the second round of tendering, a situation became evident which is now continuing with unabated intensity. The widespread misuse of the community-owned energy segment means that even legitimate market participants now find themselves forced to submit dumping bids with unapproved projects, which cannot be realised with any turbines currently available on the German market. Bid values between 2.2 and 3.82 ct/kWh will not allow for project implementation with new WEC generations for several years at least. Such speculative bidders would also have to rely on an increase in market electricity prices, which, although predicted by many analysts, is by no means guaranteed.

"Smaller project planners and those who are less strong financially will not be able to secure any funding under these framework conditions", explains ENERCON Managing Director Hans-Dieter Kettwig. "The wind industry and its suppliers are under an enormous amount of pressure. There is a real threat that it will not be possible to plan any wind expansion for two years after 2019, and this in the country which has been the biggest wind market in Europe for many years."

The exact situation that the Federal Government had hoped to avoid with the two-year transitional period from the EEG to the tendering system is now a reality: Manufacturers cannot place their capacities in other markets for two years in the short term, and there is a risk of a massive slump in the wind industry in Germany. Speculators are inflicting serious damage on the sector with their unrealistically low bids, by driving out legitimate bidders with projects ready for construction in order to satisfy their short-term interest. This represents a huge blow for climate protection so soon after the Bonn Climate Change Conference, as old, dirty coal-fired power stations urgently need to be replaced with clean renewable energy.

In addition, it is absolutely necessary that a special tendering round is held before the end of 2018. This would give the huge numbers of approved projects on the market the chance of a successful bid. The numerous companies in the wind sector could then quickly become active again and secure their futures. This is a threat particularly critical for smaller companies when almost the entire tendering volume for 2017 is crippled. Germany wants to modernise itself and lead the way with innovations and digitalisation. If this is the case, it needs to finally commit to the expansion of renewable energies, too. //
Discussion over European framework for wind energy

ALONGSIDE CONTROVERSIAL POINTS, THE EU COMMISSION’S "WINTER PACKAGE" ALSO CONTAINS PROMISING APPROACHES TO ISSUES SUCH AS DIRECT POWER SUPPLY TO INDUSTRY AND STORAGE OF RENEWABLE ENERGIES. IT WAS THE SUBJECT OF INTENSIVE DISCUSSION AT THE WINDEUROPE CONFERENCE AND EXHIBITION IN AMSTERDAM.

Demanding programme for ENERCON Managing Director Hans-Dieter Kettwig at the WindEurope conference and exhibition at the end of November in Amsterdam: As ambassador of the important industry summit, he took part in discussions on the EU Commission’s winter package with other industry representatives, association officials, politicians and journalists. The package includes regulations concerning renewable energies and the market design, which are currently being negotiated by the EU institutions and are set to come into effect from 2021.

As already reported, the package contains many controversial regulations ranging from the objective for the expansion of renewable energies by 2030 and its implementation to the structure of funding systems and a new market design. However, it also includes positive approaches, especially in the area of market design, which can play a part in ensuring the energy system becomes more flexible and in developing new marketing models for green energy.

A particularly interesting area for Europe at the moment is the supply of industry with green energy via Power Purchase Agreements (PPAs). ENERCON, too, considers PPAs to be an attractive way to open up new green energy sales channels for the wind energy sector and to systematically advance the energy transition. Cooperations bring the producers of low-priced and clean renewable energy and major industrial consumers together directly. Long-term price hedging is a must in the PPA, as this gives the operator or owner planning security. Without price hedging new wind energy projects would not be viable for investors.

The sector is still new to such cooperations and must first develop the modalities for a collaboration. Politicians are also called upon to ensure a suitable framework. The first positive indications can be seen in the winter package. But many countries are still sceptical as to how compatible the PPA model is with the existing electricity market. A lot also depends on the anticipation of the market development. In principle, PPAs are attractive tools in uncertain times. However, they cannot replace visible expansion paths and stable political framework conditions. And they certainly cannot provide a universal remedy for the replacement of the feed-in priority or the necessary statutory framework conditions alongside the tariffs in country-specific feed-in tariff laws for renewable energies.

For several years now, ENERCON has been concentrating on the topic of marketing and trade of wind energy, and has already built up extensive expertise in this area. One example for this is the direct supply of the exclusive ENERCON supplier Gusszentrum Ostfriesland (GZO) with an ENERCON E-101 turbine within the framework of a PPA. ENERCON’s subsidiary Quadra Energy GmbH completely manages the energy amounts and takes care of the necessary energy logistics. “These experiences mean we are in a position to offer support and services to our customers and interested energy consumers from industry, and play an active part in shaping the next phase of the energy transition”, says Quadra Energy Managing Director Uwe Behrens.

A second topic of particular interest is energy storage, which is required to compensate grid feed fluctuations in the renewable energy system, and provide the system with a high level of flexibility at the same time. The combination of onshore wind and storage systems will play a key role in this. ENERCON has developed a universal interface to connect storage solutions to the grid and to wind farms, and also solutions for the integrated energy concept such as power-to-gas, or rapid charging stations for e-vehicles.

Interface technology in the field of battery storage systems can be seen in the Feldheim Regional Regulating Power Station (RRKw) in Brandenburg, for instance, where it has been in operation for over two years. Another pilot project with the ENERCON customer SEV is underway on a wind farm in the Faroe Islands. ENERCON is also in the trial phase when it comes to rapid charging of e-vehicles. The E-Charger 600 will be launched on the market as early as the beginning of 2018.

The winter package sends mixed signals where the framework conditions for storage solutions and e-mobility are concerned. For the first time, storage solutions are labelled as an important building block and an attempt is made to come up with a uniform definition. However, administrative obstacles such as double grid charges and uncertainties regarding requirements for grid connections and system services are only addressed in part. E-mobility is also presented in detail for the first time as an important element of the energy transition in Europe. Nevertheless, there are still forces present in the ongoing negotiations that want to prevent this trend from advancing and water down the legislative proposal.

On the basis of its experience at the WindEurope conference and exhibition, ENERCON Management concludes that, on the whole, the winter package negotiations will keep us in further suspense. However, in addition to the many points of criticism, ENERCON also identifies positive aspects for advancing innovations and further developing products and services for its customers. //
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AS PART OF A REPOWERING PROJECT AT THE TIMMELER KAMPEN WIND FARM IN EAST FRISIA, ENERCON DISMANTLED ELEVEN E-66/1.5 MW TURBINES AND REPLACED THEM WITH FIVE MODERN E-115/3.0 MW TURBINES. THIS PROJECT IS REGARDED AS GROUNDBREAKING FOR REPOWERING PROJECTS, AND THIS APPLIES TO THE DISMANTLING PROCESS, TOO.

When ENERCON built the Timmeler Kampen wind farm in East Frisia back in 1998, the wind energy converters installed were some of the most modern that the market had to offer at the time. The E-66 had just been recently unveiled, and with its nominal power of 1.5 MW and its rotor diameter of 66 metres it was one of the most highly performing turbines in the world. It was with this series that ENERCON joined the megawatt class, and laid the foundations for the E-70, E-82, E-92 and E-103 EP2 turbines which still enjoy success today. Back then the customer (Haus der Windenergie Verwaltungs GmbH) had a total of eleven energy converters installed for the community-owned wind farm in the municipality of Großefehn.

These WECS formed the heart of the wind farm, which was later expanded in several construction phases. They operated without a hitch for almost 20 years and generated countless millions of kilometre-hours of clean wind energy. ENERCON has now replaced the eleven E-66 WECS with five modern E-115 WECS as part of a repowering project for the customer. The feed-in tariff defined by the Renewable Energy Sources Act would have expired for these first turbines in 2018”, explains Johann de Welt, Managing Director of the operating company. “That’s why we decided to go ahead with repowering. The operators [more than 160 citizens of Großefehn], the landowners and the municipality are all pleased that we will be able to carry on the success of the past 20 years with more modern and more efficient WECS technology.”

According to ENERCON’s Project & Logistics Management (PLM) first analysis which alternative dismantling methods might come into question, and evaluated them using diverse criteria. “Safety, time and cost were the main aspects to consider”, says General Project Manager Vera Grünefeld from PlM.

“General Project Manager Vera Grünefeld is pleased with the end result: “The timeconsuming preparations were worth it in the end. Our repowering project therefore clearly shows the benefits which come with renewing a site.”

When repowering, the old turbines had to be removed from the wind farm. This was a complex task for ENERCON. The old turbines were poured on site. This method of construction makes dismantling much more complicated, as the turbines cannot be taken apart segment by segment. Experts from ENERCON’s Project & Logistics Management (PLM) first analysed which alternative dismantling methods might come into question, and evaluated them using diverse criteria. “Safety, time and cost were the main aspects to consider”, says General Project Manager Vera Grünefeld from PlM.

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Harvesting wind at the flood barrier dike

ENERCON SUPPLIES 8 X E-126 EP4 FOR THE “BOUWDOKKEN” WIND FARM IN THE NETHERLANDS; THE WECs ARE ERECTED ON THE DIKES OF BOUWDOKKEN CLOSE TO THE NEELTJE JANS ISLAND THAT BELONGS TO THE EASTERN SCHELDT FLOOD CONTROL BARRIER.

Originally, Neeltje Jans Island in the Dutch province of Zeeland served but a single purpose. It was created by dredging sand in the Eastern Scheldt estuary between Noord-Beveland and Schouwen-Duiveland as a basis for building the Eastern Scheldt flood control barrier. In the early 1980s, this artificial island served as coordination centre for construction work on the impressive flood control system of dikes and barriers. In addition to an information centre and a recreational park, the island now accommodates a wind farm that has been connected to the grid only recently and is exemplary for other onshore wind energy projects in the Netherlands. ENERCON supplies the WEC technology for the “Bouwdokken” project – 8 x E-126 EP4/4.2 MW.

7 turbines are already installed, one further will follow later next year. Customer E-Connection had the EP4 machines erected on steel towers with a hub height of 99 metres on the dike of the island’s former industrial harbour. This wind class I site has excellent wind conditions. The WECs are situated directly on the waterfront and receive an undisturbed air flow from a strong north-westerly wind blowing steadily from the North Sea. The energy yield estimation shows 127 gigawatt hours per year for the 33.6 MW wind farm.

“Bouwdokken is an ideal wind energy site,” says Bram van Noort, Country Manager for the Netherlands at ENERCON Sales International. “There are several reasons for this: We virtually have offshore wind conditions at an onshore site. The location is part of the former Delta Works on an island with no residential buildings close by. Lastly, installing the WECs on the dike means making efficient use of real estate that is scarce in the Netherlands.” For this reason, the province of Zeeland preferably declares industrial estates and infrastructural premises to be designated wind power zones.

Bram van Noort therefore views the “Bouwdokken” wind farm as a ground breaker for further expansion of onshore wind energy in the Netherlands. “As a coastal country, the Netherlands are predestined for harvesting wind at the dike. The top sites on the dike offer an immense yield potential for green energy,” van Noort says. “ENERCON is the ideal partner for these special projects. The E-126 EP4 has been designed for wind class IA sites, so we can provide WEC technology that is ideally suited for projects on dikes. Plus, we have many years of experience setting up complex projects that involve particular challenges.”

With the “Bouwdokken” project, this meant restrictions on installation work due to breeding seasons and, above all, limited space at the installation site. To optimise the processes, ENERCON therefore set up a pre-assembly area on designated areas where WEC components could be temporarily stored and prepared for installation after delivery. The partially assembled components were then transported to the installation sites using special self-propelled vehicles. At times, up to 70 employees were working on-site at the same time.

Planning and installation took place in close cooperation with Rijkswaterstaat, an authority responsible for coastal defence and flood control that is subordinated to the Dutch Ministry of Infrastructure and the Environment. Not least, the island position required special grid connection solutions. To be on the safe side, the grid connection was large-dimensional right from the start so that it will be able to accommodate further wind energy converters in the event of an expansion of the wind farm. At any rate, Bram van Noort is confident that “Bouwdokken” will be followed by further projects. “ENERCON is ready to implement more projects on dikes together with its customers and to continue driving the energy transition in the Netherlands.” //
The concept of renewable municipal projects is becoming increasingly popular in Canada. In 2015, several municipalities joined forces to collaborate on the Ellershouse wind farm in the province of Nova Scotia. Under the name of the Alternative Resource Energy Authority (AREA), this partnership between the Towns of Antigonish, Berwick and Mahone Bay, owns the wind farm, located in Ellershouse (approximately 60 kilometers northwest of Halifax, the province’s capital) originally consisted of four ENERCON E-92/2.35 MW turbines. The project was developed by Minas Energy, under contract with AREA, and is also being supported by Bullfrog Power, through its purchase of the renewable energy attributes on behalf of local residential and business customers.

Given the success of this municipal project, AREA decided to extend the wind farm by an additional three ENERCON E-92/2.35 MW. These new turbines have since been connected to the grid, and the second phase of the wind farm expansion was officially inaugurated this Summer.

Ellershouse was the first wind farm in the province of Nova Scotia to have been financed and installed independently from both Nova Scotia Power, the leading provincial utility company in the province, as well as from any provincial or federal incentive program. At the opening ceremony, AREA explained that other municipalities in Canada should consider implementing models similar to this project to generate new sources of revenue and economic development. The Ellershouse owners are convinced that renewable energy projects should be under local ownership, specifically municipalities. The chosen model benefits the residents of five different municipalities and contributes to the stabilization of energy costs. With this new expansion, the Ellershouse wind farm has a total installed capacity of 16.45 MW, sufficient energy yield to power 4,900 households in Nova Scotia with renewable energy. This capacity will be increasing even further, as ENERCON has already started the installation of the third phase of this project, which will add an additional three E-92/2.35 MW to the Ellershouse wind farm by the end of the year, bringing the total to ten ENERCON turbines.

“AREA recognizes the superior attention that ENERCON devoted to ensuring that our Ellershouse project adhered to a risk-intolerant municipal ownership profile,” says Laurie Boucher, Mayor of Antigonish and AREA Chair. “That’s the big win here, because this is a large project for three small towns in Nova Scotia. Our towns are now making a significant contribution in the green energy transition. We are proud of that accomplishment and continue to build from this successful foundation.”