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...details in page 20

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Editör / Editor



Mesut Kul

Yayınıdan



Hello,

Countries continue to strengthen their presence in clean energy for various reasons. Wind, one of the two shining stars of renewable energy, is becoming a major global energy source. In 2023, global wind energy achieved a record 117 GW of new capacity installation, representing a 50% increase compared to the previous year. As for us, we surpassed 1 TW of installed capacity during this period, drawing on our 40 years of industrial experience. With offshore wind increasing its global installed capacity to 75.2 GW, this growth in the sector is expected to reach 143 GW of capacity in 2024. Leading organizations in the wind energy sector anticipate that offshore wind capacity will exceed 400 GW within the next 10 years.

According to WindEurope data, Turkey, which possesses the 5th largest wind industry in Europe and is also recognized as one of Europe's most reliable supply partners in the sector, has increased its installed wind energy capacity to 12,900 MW as of July 2024. Turkey plans to reach a total wind capacity of 29.6 GW by 2035, including 5 GW offshore and 24.6 GW onshore, supporting these goals with strategic political initiatives. As Turkey prepares to take concrete steps to address the challenges related to permitting processes, which are common in almost all countries during the transition from project development to investment, the country aims to accelerate wind investments by reducing these permitting processes to 12 to 18 months through the Super Permit Law.

The wind energy sector, emerging as the golden key to addressing the climate crisis and reducing dependence on fossil fuels, is changing power dynamics and increasing its political significance day by day. The sector, which presents various risks and collaboration opportunities within the supply chain, will gather in Germany from September 24-27 for one of the most important events in wind energy.

We look forward to seeing you at WindEnergy Hamburg, where we, as Wind Energy Magazine, will be present.

Künye / Publisher

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MATURE CAPITAL

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Türkiye'nin Sadece Rüzgar Enerjisi Alanına Odaklanan İlk ve Tek Birleşme- Satınalma Danışmanlık Firması
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For Wind Project Transactions:

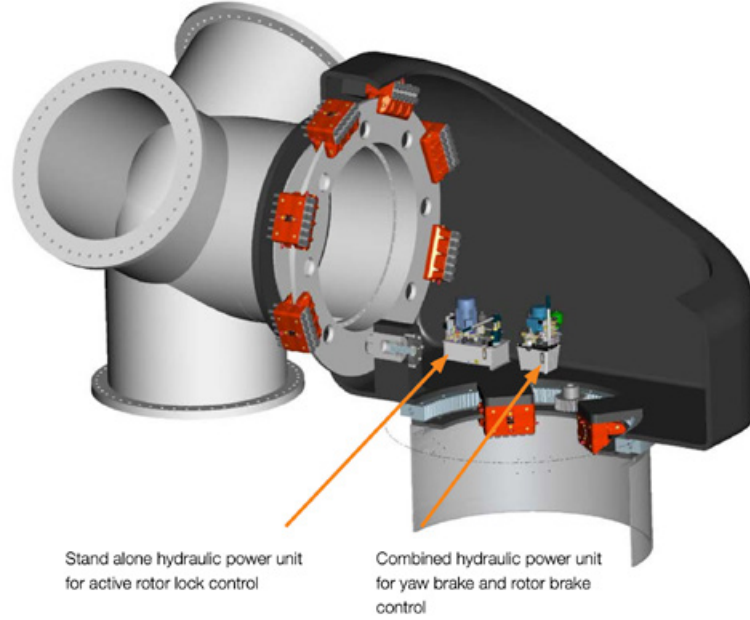
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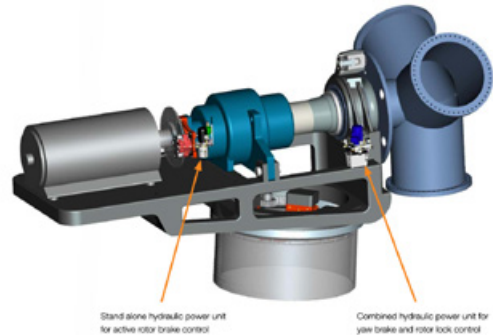


Intelligent Braking Solutions for the Wind Turbine Market



R2 Enerji/R2 Mühendislik, the exclusive distributor of global brands like Svendborg Brakes and Stromag in Türkiye, provides comprehensive service and spare parts support for braking systems, backed by its team of specialized experts.

Svendborg Brakes, a leading and innovative company in the supply of hydraulic yaw and rotor brake configurations, as well as yaw brake and yaw disc service materials, is brought to the Turkish market by R2 Mühendislik. Part of the Regal Rexnord group, Svendborg Brakes has been designing and manufacturing motion control products for over 40 years, supplying more than 200,000 wind turbines globally. Svendborg Brakes' products and original parts undergo rigorous testing procedures, ensuring reliability and performance. The company also offers comprehensive global services in reinforcement, refurbishment, and high-tower disc repair. Given the significant costs associated with removing damaged discs for repair, interventions are now carried out directly on the turbine, using solutions pre-determined by Svendborg engineers. This meticulous work, which requires customized approaches for each turbine type, also involves the use of patented Svendborg Brakes equipment such as the 'Disc Resurfacing Tool' and the 'Groove Tool.' Svendborg Brakes also offers remote online training



support, enabling customers to perform disc repairs themselves if requested. The brand's main product lines include brakes, hydraulic units, pads, rotor locks, brake discs, and service equipment.

Stromag, another brand within the Regal Rexnord group and offered to the Turkish market by R2 Mühendislik, provides not only brakes, hydraulic units, and pads but also supplies "Rotary Gear Limit Switches" These switches, designed specifically to mechanically stop the movement of turbines, can be coupled with encoders and potentiometers upon request.



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R2 Mühendislik is the official distributor of
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- » Brake Pads
- » Rotor Locks
- » Limit Switches
- » Motor Brakes
- » Service Tools
- » Disc Cleaning Products
- » Clutches
- » Couplings





Powering the Future: LEITWIND's Customizable Wind Turbines



Photo:

LTW90 1,500 kW,
Lüleburgaz, Türkiye
©Klaus Rockenbauer

LEITWIND, the only Italian manufacturer of megawatt-class wind turbines (ranging from 250 kW to 3,000 kW), stands out in the market for its ability to customize products, always aiming to find the most efficient and reliable solutions for its customers. This customer-focused approach has led to the erection of over 400 wind turbines worldwide, including 10 installations in Turkey

This success is driven by continuous investments in R&D and the support of LEITWIND's parent company, High Technology Industries (HTI) Group—a global leader in the winter sports sector with brands like LEITNER, POMA, DEMACLENKO, and PRINOTH. The Group's high standards of quality and reliability are recognized worldwide, with a global presence that includes 21 production sites, 108 branches, and 138 sales and service centers.

There are many factors that have made LEITWIND so competitive in the Turkish market: state-of-the-art technology, the offer of a complete all-inclusive package that includes, in addition to the standard supply of wind turbines, also the support during the authorization and construction procedures and the strong local presence: in fact, after LEITNER TURKEY, which opened in May 2012 to follow the ropeway industry, the subsidiary LEITWIND TURKEY opened its doors in Bursa.

With more than 20 years of expertise in megawatt-class wind turbines, LEITWIND differentiates itself from competitors through its “medium-sized” product portfolio (250 kW-3,000 kW), offering advantages such as easier transport, installation, and long-term management. Additionally, LEITWIND turbines are designed with a modular concept, allowing for adaptation to both customer needs and specific site requirements.

LEITWIND remains committed to continuous product optimization, with the LTW90 wind turbine (500-2,000 kW) standing as a prime example and the flagship model in LEITWIND's portfolio. Boasting a large rotor surface, the LTW90 excels in energy production, even in low-wind areas, making it an ideal choice for single-installation projects. In 2023, the first LTW90 with a capacity of 1,500 kW was successfully installed in Lüleburgaz (Kırklareli). Looking ahead, a 2,000 kW LTW90 installation is planned for 2025, underscoring the global significance and competitive edge of the LTW90 model in the global wind energy market.



LTW90 500 kW - 2.000 kW



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PATENTED TECHNOLOGY
TAILORED TO CLASS IIIA+ SITES

Installation
unlocked even in
difficult-to-access
sites.

Excellent performance
makes this model ideal
for single-turbine projects.

leitwind.com





Advanced Manufacturing Capabilities at Kaleliler: Pioneering the Future of Fastener Production

At Kaleliler, our state-of-the-art production facility is at the forefront of fastener manufacturing, specializing in the production of bolts, stud bolts, anchor bolts, nuts, and custom fasteners. Utilizing both hot forging and cold forming techniques, we work with a diverse range of steel and materials to meet the stringent demands of various industries. Our in-house heat treatment capabilities further ensure the durability and performance of our products.

Our production process is fully integrated, encompassing in-house electro-galvanizing and hot-dip galvanizing facilities. Additionally, we offer Geomet and Zn-Nickel coating solutions through our network of approved suppliers, providing comprehensive surface treatment options that meet the highest industry standards.

The hot forging process at Kaleliler is a key differentiator, particularly in the production of large-scale bolts and specialized fasteners. This method allows us to deliver superior strength and reliability, catering to the needs of critical applications. In our precision machining section, we produce custom components tailored to the unique requirements of diverse sectors.

Kaleliler's production facility is equipped with an extensive range of advanced machinery and equipment, enabling us to achieve rapid and high-quality production. Our capabilities include an automatic cutting unit, hot forging unit, machining unit, thread rolling unit, heat treatment unit, surface treatment unit, and a fully equipped quality control laboratory.

Our product range is extensive, featuring KLR-marked bolts and screws with diameters ranging from M12 to M72 and lengths up to 900 mm, threaded rods and studs from M8 to M220, nuts from M20 to M72, anchor bolts, and custom-bent items like U-Bolts and J-Bolts. Alongside our production capabilities, we maintain a comprehensive inventory of stock items to meet immediate needs across all fastener types.

Recent investments at Kaleliler have significantly enhanced our production capacity and quality standards. Notably, the commissioning of our fully automated hot-dip gal-



vanizing facility, with a daily capacity of 40 tons, represents a major leap forward. This facility is fully managed by robotic systems, ensuring precision and consistency across all processes. The integration of environmentally friendly ultrasonic and mechanical surface treatment methods also minimizes the risk of hydrogen embrittlement, a critical concern in high-strength fasteners.

Further strengthening our capabilities, a new hot forging line has been commissioned, doubling our production capacity in this area. Equipped with an automatic feeding system and advanced robotics, this line ensures stable and controlled forging processes, enhancing both efficiency and product quality. Our commitment to digitalization is reflected in the integration of an automation system with our existing ERP infrastructure, facilitating more accurate data analysis and driving overall productivity.

In line with our continuous improvement philosophy, Kaleliler has also invested in cutting-edge quality control technologies, including a torque testing device capable of testing bolts up to M72—a first in our industry. These advancements reinforce our position as a trusted supplier, particularly in the steel construction and wind energy sectors, where reliability and precision are paramount.

Kaleliler remains dedicated to innovation and excellence, setting new benchmarks in fastener production through our comprehensive and technologically advanced manufacturing processes.



High Quality Fasteners

Kaleliler Fasteners: Serving the Wind Energy Sector with High-Strength Fasteners.

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AEMOT Electric Motors & Generators: Innovative Approaches in the Wind Energy Sector



Since its inception, AEMOT Electric Motors & Generators has been at the forefront of motor and generator manufacturing, achieving numerous milestones. The company plays a pioneering role in the wind energy sector, focusing on three main areas:

1. Production of Pitch and Yaw Motors
2. Manufacturing of Wind Generators
3. Maintenance, Repair, and Retrofit of Wind Generators

Turkey holds a significant position in wind energy exports, contributing greatly to employment and income, while also positioning itself as an alternative production hub to the Far East for Europe. While Europe remains home to some of the world's largest turbine manufacturers, production within Europe is becoming increasingly challenging. Traditionally, Turkey was viewed as an alternative for labor-intensive heavy work. However, the country is now emerging as a key player in technology production as well. One such advancement is the production of Pitch and Yaw motors.

To elaborate further, particularly in the context of YEKA (Renewable Energy Resource Area) projects, the mandatory local content requirement has driven turbine manufacturers to collaborate with local producers. In this regard, a design initiative was launched in partnership with Nordex. The primary goal was not just to produce a motor for wind turbines but to develop a motor that could also be utilized in other industrial applications. Another crucial objective was the commercialization of the product. A product pro-

duced solely for Turkey is not sustainable; it must also capture a share of the global market. The product, which is now in mass production, encompasses all these advantages and aims to secure a position in the global market.

In generator production, AEMOT has been manufacturing the stators and rotors of wind generators for a global generator manufacturer since 2018. During this period, more than 400 components have been produced. Following a collaboration with ASELSAN, ASELSAN completed the design of a 4.3 MW, 1000 rpm generator entirely domestically, and AEMOT carried out the production. The generator successfully passed all tests and received approval. It is important to note that this was not merely an assembly process; it was full-scale local production, where the entire process, from raw material input to finished product output, was completed within AEMOT.

Finally, as turbines in Turkey and worldwide age, the need for generator maintenance and repair is increasing. AEMOT Service, a division of AEMOT Electric Motors, has extended its mass production capabilities to maintenance and repair processes, refurbishing older generators in our factory. Additionally, our company, which exports services, has successfully carried out on-site maintenance and repair of generators in many European countries.

Prepared by: Sami AKDOĞAN - General Manager at AEMOT ELECTRIC MOTORS and GENERATORS A.S.

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Our experience



POWER: 11,5kW
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FREQUENCY: 133 Hz

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Katwind Enerji: Pioneering Wind Energy Solutions with Expertise and Innovation

For the last 13 years, Katwind Enerji (www.katwind.com) has been at the forefront of the wind energy sector, specializing in composite repair services for wind turbine blades and steel structures. Our commitment to excellence and sustainable energy solutions has been a driving force in our growth and global impact.

Comprehensive Project Management Expertise

Beyond repair services, Katwind Enerji excels in project and site management within the wind energy sector. Our skilled teams have been instrumental in realizing over 2000 MW of wind energy projects nationally and internationally. Recently, despite placing second in a turnkey wind turbine procurement tender, we have been chosen by the winning company to manage site operations, affirming our site management expertise.

Strategic Growth and Market Expansion

Our service division aims to generate profit, expand into new markets, and reduce environmental pollution from fossil fuels. Operating with 10 teams, our workforce increases to 40 technicians during peak seasons. While facing competition from both local and global firms, we leverage our niche expertise and strategic investments.

We have invested in man-basket cranes and high-access platforms to support growth, enhancing our capabilities for high-altitude projects. Partnering with a crane firm, we transferred equipment rights and secured long-term access to their fleet, ensuring we remain competitive.

Preparing for International Markets

As we expand, we are getting our teams ready for international operations. We have made substantial progress in negotiations with a German company, to provide services in Germany's wind energy sector. We are enhancing our personnel's language skills and ensuring they meet EU qualifications, aiming to have at least two teams operational in Germany by next year.



Innovation Through Robotics and Technology

Katwind Enerji leads the way in robotic R&D initiatives, developing robots for autonomous blade and tower cleaning. We are also exploring autonomous equipment for turbine tower maintenance with ongoing R&D efforts.

We invested in a cloud-based software solution to improve operational efficiency, enabling our employees to log detailed task information from mobile devices and generating valuable data for our operations.

Resilience and Global Reach

Katwind Energy has provided project management and maintenance services across several countries, including Germany, Jordan, Croatia, Pakistan, Japan, Morocco, and Ukraine. Despite the ongoing conflict, we maintain our presence in Ukraine, securing agreements with two major turbine manufacturers and negotiating further contracts with the country's largest wind energy investment company. Additionally, we are exploring opportunities in Uzbekistan to expand our global presence.

Expertise in Material Supply

Katwind Enerji has developed significant know-how in wind blade repair materials. Through our partnership with Rasswind (<https://www.rasswind.com/en/-products-k>), we meet material requests through a specialized web portal. Recently, we fulfilled three requests from Pakistan and Chile and received one from Morocco while actively pursuing new business prospects..

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Transforming Renewable Energy Management with Senkron Energy



As Senkron Energy, we tackle the critical challenges of the modern energy sector, including operational inefficiencies, complexities in managing diverse renewable portfolios, rising costs due to unplanned downtimes, long lead time for equipment supply after downtime, uncertainties in hybrid power plants with storage, and increasing cybersecurity attacks. With our headquarters in Amsterdam, we're dedicated to driving global energy transformation through innovative digital solutions. Our mission is centered on empowering sustainable energy technologies with data intelligence and industry expertise. Our innovative approach allows our clients to harness AI-driven insights to optimize investment, operation, maintenance, and monetization of their investment contributing to a sustainable future.

We offer a comprehensive products and services tailored to address the diverse challenges of the energy sector. Our solutions are meticulously developed to enhance operational efficiency, improve decision-making processes, and fortify the cybersecurity of critical infrastructure.

One of our flagship offerings is the OnePact which is a Renewable Energy Management Suite (REMS), a cutting-edge platform designed to optimize the performance and management of renewable energy assets. REMS integrates advanced data analytics, predictive maintenance, and real-time monitoring to ensure maximum efficiency and reliability of renewable energy portfolios. By leveraging AI and machine learning, OnePact provides actionable insights that help in minimizing downtime, extending equipment

lifespan, and optimizing energy production. This solution not only enhances operational efficiency but also supports strategic decision-making, enabling our clients to achieve their sustainability goals more effectively.

Integrating storage into wind and solar power plants can be challenging, especially when defining the optimum storage capacity for hybrid systems. To address this, we have a simulation model that determines the ideal capacity for grid-level storage investments ensuring maximum efficiency and return on investment.

To address the growing threat of cybersecurity attacks, we offer a robust Cyberpact OT/ICS SOC (Security Operations Center) solution tailored for the energy sector. Our OT/ICS SOC solution delivers real-time monitoring, threat detection, and comprehensive threat intelligence designed specifically for Operational Technology (OT) and Industrial Control Systems (ICS). We ensure the protection of critical infrastructure and the secure operation of energy assets. This proactive approach enhances the resilience of our clients' operations and safeguards their investments in an increasingly digital and interconnected world.

In the realm of cybersecurity, we provide a comprehensive security framework that protects the physical and digital components of critical infrastructure from advanced cyberattacks, ensuring seamless operations and regulatory compliance. As Senkron Energy, we empower your energy operations with advanced technology, paving the way for a more sustainable and secure future.



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**What vulnerabilities
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could cyber
attackers target?**



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With its innovative wind solutions, TUİZ Wind reshapes the future

TUİZ Wind, which was founded in 2021 in order to provide services for installation, maintenance and service projects, which are essential parts of the wind energy industry, provides innovative wind solutions and reshapes the future of the industry with the experience of its founders and employees in the energy industry for many years. With its experience in many installation, maintenance and service projects in different locations around the world, TUİZ has made a considerable contribution to the industry and keeps a close eye on new technologies to ensure a higher standard of service that is open to development and to contribute to the advancement of the industry. The company aims to become a pioneer in the global energy industry by reshaping the wind energy future, and to this end, it offers solutions with cutting-edge technology and engineering. With customer satisfaction and trust at the core of its solutions, the references of TUİZ include industry-leading organizations like Borusan Logistics, Enercon, SOWI, Vestas, Sarılar Group, General Electric, Kalyon, Nordex, Siemens Gamesa, Goldwind, Senvion and LEITWIND.

Specialist TUİZ solutions

Installation: TUİZ, which provides installation services with a dedicated team with more than 15 years of experience in Enercon, Vestas, Siemens, GE and Nordex wind turbines, carries out the installation of all types and models of wind turbines and undertakes project management from scratch.

Service maintenance: In order to identify damages or problems in the early stages and reduce the time for repair and downtime to a bare minimum, it is necessary to conduct repeated inspections and maintenance of all components of a wind turbine. In this area, TUİZ provides a premium level of service and carries out all the maintenance in line with the manufacturer's maintenance guidelines.

Network connection service: TUİZ, ensures that all operations such as in-turbine cable connections, cable installation, panel connections, transformer connections, and other operations are conducted securely and in a high-quality manner with its specialized team of technical experts.



Main Component Replacement: The turbines' key parts such as the generator, gearbox, rotor blade, powertrain, yaw/pitch system, transformer, and top tower parts must be upgraded during their lifetime. TUİZ's highly experienced upgrade team quickly and efficiently performs this demanding task.

Technical support: During the project duration of the wind farm, the company provides support to its customers through its supervisors.

Disposal: The specialized TUİZ technical team also provides solutions for the recycling of the blades.

Port and site operations: TUİZ conducts loading/unloading activities on project sites, production plants and port plants in a safe manner with the sling and pointer training certificates of the technical crew.

Turbine supervision: The inspection of turbines is performed through unplanned interim checks, observations before and after maintenance, and reports are shared with clients.

Service elevator installation: The specialized TUİZ technical team also offers installation services for service elevators and conducts annual inspections.

TUIZ WIND ENERGY SERVICE

We are shaping the future
with innovative wind solutions...



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MAIN COMPONENT EXCHANGE
TECHNICAL SUPPORT
DISPOSAL
PORT AND SITE OPERATIONS
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SERVICE LIFT INSTALLATION



Tuiz Wind Energy Service

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Yılınak: Powering the Future with Reliable Wind Energy Transportation



As a pioneer in heavy transport and project logistics, Yılınak has played a crucial role in advancing the global shift toward renewable energy. With our deep-rooted passion for engineering excellence and extensive experience in transporting wind turbines and related components, we understand logistics's critical role in the success of wind energy projects.

At Yılınak, we take pride in our expertise in delivering complex and oversized cargo to even the most challenging locations and destinations. Our specialized fleet of trucks, equipped with cutting-edge technology, ensures precise and careful handling of every transport. Our dedicated engineering teams continuously develop innovative solutions to navigate demanding routes, ensuring timely and flawless delivery of every component.

Our commitment to excellence is reflected in every project we undertake. We partner with our clients to tailor customized logistics solutions that meet their specific needs, seamlessly integrating our services into their operations. From the initial planning to final delivery, Yılınak provides a comprehensive approach that minimizes risks and maximizes efficiency. Our engineering passion drives us to continuously refine our methods, ensuring we stay at the forefront of the industry.



As we look to the future, Yılınak remains committed to advancing the wind energy sector by providing reliable transportation solutions that drive progress. Our contribution to the global pursuit of sustainable energy is not merely a service but a responsibility and a passion we wholeheartedly embrace.

Our journey with wind energy transportation is a testament to our dedication to innovation, precision, and sustainability.



GÜÇ & ENERJİ

RÜZGAR TÜRBİNLERİNDEN HİDROELEKTRİK VEYA GÜNEŞ ENERJİLİ ELEKTRİK SANTRALLERİNE, SABİT VE PORTATİF SABİT ÇÖZÜMLERİMİZİN GÜÇ VE ENERJİ SEKTÖRLERİNDEKİ KULLANIMLARINI KEŞFEDİN.



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Werover Expands Windrover Technology to Offshore Wind Turbines



Werover is thrilled to announce the expansion of our Windrover technology to offshore wind turbines. Launched earlier this year, Windrover has rapidly established itself as a key player in the industry, with over 250 systems deployed across onshore turbines in Türkiye and Europe. This AI-powered technology provides real-time monitoring of wind turbine blades, boasting a 92% accuracy rate in detecting critical damages such as lightning strikes, delamination, and cracks. This high precision has led to significant reductions in downtime and enhanced reliability of turbines for our partners.

Windrover is an AI-powered technology designed specifically to monitor wind turbine blades in real-time. The system features a plug-and-play installation process that eliminates the need for turbine shutdowns during setup, thereby saving valuable time and minimizing operational disruptions. Powered by solar panels, Windrover combines sustainability with efficiency.

At the core of Windrover is advanced AI technology. Unlike static threshold-based systems that rely on static thresholds, our AI dynamically adapts to various conditions,

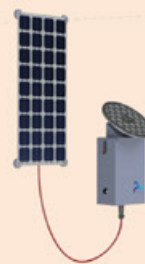
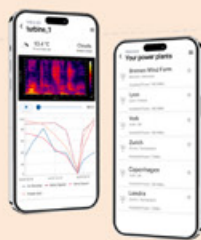
minimizing false positives and negatives. It accurately distinguishes between environmental noise and actual damage, preventing the unnecessary removal of important data. Windrover's AI continuously learns and evolves. It adapts to different weather conditions, ensuring precise and reliable monitoring of offshore wind turbines.

This approach ensures that Windrover provides precise and reliable monitoring of on/offshore wind turbines. By integrating Windrover into your operations, you can enhance maintenance strategies, significantly reduce unnecessary downtimes, and increase turbine reliability. Our advanced AI technology not only adapts to varying conditions but also provides real-time insights that ensure your maintenance practices are efficient and effective. Explore how Windrover can transform your wind turbine maintenance, elevate your operations, and position you for success in the ever-evolving renewable energy sector.

werover



CONTINUOUS WIND TURBINE BLADE HEALTH MONITORING



- 24/7 Blade Health Monitoring with Real-Time Insights

- AI-Powered Damage Detection

- No Downtime with Plug and Play Design

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Email Address
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Our Website
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SoyutWind: Powering Tomorrow from Today The Wind Turbine Manufacturer of Türkiye

In the heart of Türkiye, a revolution is spinning. Since 2000, SoyutWind, born from the legacy of Çolak Holding, has harnessed the invisible and unleashed the incredible.

We're not just building turbines; we're engineering the future.



At our factory in Ankara-TÜRKİYE, spanning 135,000 square meters with 15,000 square meters of indoor space, we work diligently every day alongside our skilled engineers and manufacturing team, knowing that we are shaping the future.

Our mission is to make renewable energy sources more accessible and effective, guided by our commitment to sustainable total quality management.

We continuously develop and rigorously test our wind turbine technologies to meet, exceeding the highest industry standards. Our international certifications reflect our unwavering commitment to sustainability and quality.

Our products, ranging from grid-connected wind turbines to residential battery-powered wind turbines and the Soyut WindMill agricultural water pump, are all developed with an unwavering commitment to innovation.

With our 50 years of industrial heritage, 25 years of wind turbine manufacturing experience, robust financial foundation, skilled and experienced team, an extensive domestic and international service network, and exceptional production and engineering capabilities, we proudly lead the way with groundbreaking achievements.

We face the future with confidence.

- Pioneers of direct drive wind turbines up to 1 MW - a first in Türkiye and the region
- Turbine capacity reaching up to 2.5 MW
- 50 years of industrial mastery

- 25 years of relentless wind energy innovation

Our sprawling 135,000-square-meter facility isn't just a factory. It's where dreams take flight.

SoyutWind stands as Türkiye's premier local wind turbine manufacturer, holding the distinction of being the country's first and only. Our international certifications attest to our world-class standards, while our expansive network spans nations, empowering communities. Our arsenal of innovation includes:

1. Grid-connected titans of power
2. Residential turbines bringing freedom to homes
3. Soyut WindMill - revolutionizing agriculture, one pump at a time

But our true power? It's not in our machines; it's in our people.

A team is driven not by the wind but by passion. By vision. By the unyielding belief that we can change the world, one turbine at a time.

With every rotation, we're not just generating electricity. We're powering dreams. Energizing economies. Breathing life into a sustainable future.

From the hills of Anatolia to the far corners of the globe, SoyutWind isn't just riding the winds of change; we're creating them.



The Wind Turbine Manufacturer of Türkiye 15.000 sqm Wind Turbine Factory in Ankara



www.soyutwind.com

- ▶ **Pioneers of direct drive wind turbines up to 1 MW - *a first in Türkiye and the region***
- ▶ **Turbine capacities reaching up to 2.5 MW**
- ▶ **50 years of industrial mastery**
- ▶ **25 years of relentless wind energy innovation**



**Turning Wind into Wonder
Powering Tomorrow from Today**



We empower industries to contribute to a better and sustainable future



We are a machinery company that connects technology and engineering through comprehensive machinery and software solutions for metal forming and fabrication. Our innovative products and services, backed by our global dealer network, provide exceptional value that helps our customers succeed and empowers industries to contribute to a better and sustainable future.

Since 1962, the world's leading brands have trusted us for the last six decades. Today, our machines are preferred in the factories of Mitsubishi, Mercedes, Harley Davidson, Rolls Royce and NASA.

From North America to Asia, Europe to Australia, and every corner in between, our machinery solutions are powering industries in more than 120 countries worldwide. Our global reach spans every continent with an extensive product portfolio that includes metal forming, structural steel and plate processing, machine tools and welding automation solutions.

Around the world, our customers face obstacles that make their business competitive and each year we provide a wide range of solutions to meet these challenges. Doing so, some of the most challenging structures in the world have relied on AKYAPAK® machines for their construction. From the Dubai

Eye in Dubai to the Ataturk Airport in Istanbul, the Turkmenbashi Port Project to the Baku Olympic Stadium, our contribution to the world of engineering is a source of pride.

With four subsidiaries: Akyapak USA, Akyapak Russia, Akyapak UK and branch offices and service points in Ireland, Germany, India and Nigeria, our unparalleled proximity to you, enables us to better understand, anticipate and react with agility to support your business.





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Berdan Civata: The Global Partner for Wind Energy Projects



As a provider of critical fasteners for over 3,000 wind energy projects worldwide, Berdan Civata produces high-strength anchor cages, tower assembly bolts, and blade studs, among other essential components, from the foundation to the blades. We continue to be an approved supplier in global markets for 7 of the world's top 10 wind turbine manufacturers.

Founded in 1980 by Mechanical Engineers Hasan and Yunus Şemsi in a 150 m² workshop in Tarsus, Mersin, Berdan has grown significantly over the years. In 2000, we moved to our first factory, spanning 5,000 m² in the Mersin-Tarsus Organized Industrial Zone, with a team of 25, including two engineers. Today, we operate in facilities covering a total of 48,000 m², with 28,000 m² dedicated to indoor production. Our team now includes over 60 engineers and approximately 400 employees, and we remain a trusted partner for high-strength and critical fasteners.

Our capabilities include machining, rolling, threading, heat treatment, and various surface treatment processes such as patented hot-dip galvanizing, electro-galvanizing, zinc flake, and Teflon coatings. These treatments are conducted in our state-of-the-art surface treatment facilities and products are rigorously tested in our industry-leading, accredited test laboratory before being delivered to our clients.

Our products have been integral to some of the world's most notable infrastructure projects. We supplied the 10-meter-long, 700 kg anchors that support the towers of Europe's second-longest suspension bridge, Osmangazi, and the world's longest suspension bridge, the 1915 Çanakkale Bridge. For the Anamur-Cyprus Peace Water Project, we

provided B7/2H grade bolts with a 100-year corrosion resistance for the 80 km pipeline running 250 meters underwater. Additionally, we supplied over 800 tons of fasteners for the Kuwait International Airport project and all fasteners for the 93,000-seat Lusail Stadium, the venue for 10 matches, including the final, of the 2022 FIFA World Cup in Qatar.

Our journey into the wind energy sector began in 2008 when we participated in the Wind Energy Fair in Husum, Germany, as the only Turkish company. This marked the beginning of our collaboration with global wind energy giants. Today, we have supplied fasteners for over 3,000 wind turbine projects globally. Our clients include renowned names like GE from the USA, Nordex and Enercon from Germany, Vestas from Denmark, Siemens from Spain, and Goldwind from China. We have also provided fasteners for the Konya-Karapınar project, Europe's largest solar power plant, with a capacity of approximately 1,550 MW.

In addition to supporting green energy, we harness natural resources to meet our own energy needs, sourcing 53% of our requirements from our 2.5 MW rooftop solar power plants. We aim to increase this to 90% in the future.



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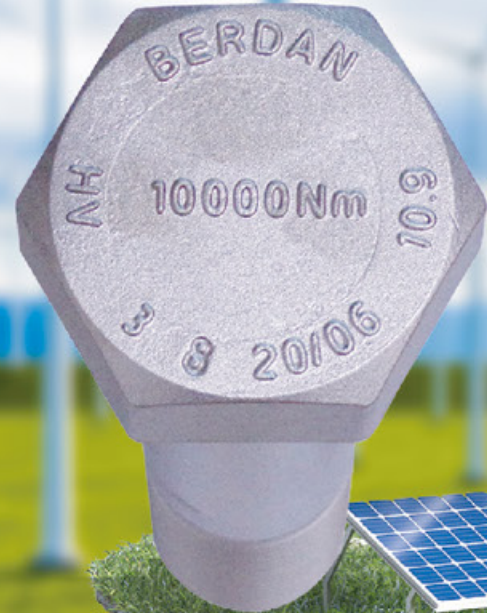
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Mature Capital celebrates its 2nd Anniversary!



This September, we celebrate 2nd years of Mature Capital – two complete successful years during which we accomplished projects acquisitions and consultancy projects with our hard work, dedication and determination for reliability and most importantly with our customers and partners.

Since its foundation in 2022, Mature Capital has given Merger & Acquisition Advisory services and various consultancy services in wind for Turkish and international customers.

‘Through our reliability and network, we have been able to quality and to-do-point tailor made consultancy services for our customers, added value to their investments and improved their decision making process within a very short period of time after the establishment in 2022. And that is a success story that we can be proud of!’, says Mature Capital Founder & Managing Director Habib Babacan.

The track record of References of Mature Capital for the first two years:

- **Completion of The Sale of 25 MW Operational Wind Farm in Türkiye.**

Carrying out all communication between buyer and seller, and management of negotiations between parties, technical due diligence of wind farm, and support on post-acquisition activities.

- **Commercial and Technical Assistance in Wind Farm Acquisitions in Europe and US.**

Giving support to Business Development teams of Turkish and international customers; to review turbine supply and service agreements, identify and interpret risks in these agreements, to review and examine energy production reports and verify the energy yield from 3rd resources, to summarize technical aspects, difficulties, and potential problems of wind farms.

- **Financial Model Building for a Green Field Manufacturing Plant in the field of Renewable Energy Component Production.**



Preparation of financial model for a green field manufacturing plant with a 60 million USD investment budget in Türkiye. Together with investors technical team, we prepared capacity, machinery, human resource plans of investment. Investment teaser of this investment is also prepared to be shared with banks.

- **Various other Consultancy Services in Wind; 10 different investors, 13 different projects completed.**

After going through establishment years, Mature Capital has full speed to expand its business with new investors from international markets. 'We have completed initial working setup and ecosystem of partners and are prepared carefully for the new businesses. We are ready to drive the expansion of business, and to play an active part in entrance of international investors in Turkish wind market.', says Habib Babacan.

We thank our investors and solution partners for the trust placed in us, for the constructive cooperation and for their courage to make

make it possible for us to obtain market place in Merger & Acquisition Advisory services in Turkish Wind Market.

About Habib Babacan

Habib Babacan has 20 years of work experience in wind business in Türkiye, and held various C level, executive and managerial positions in Nordex Group, and Turcas Petrol (investor), and extensive network at every level in Turkish wind business. He founded Mature Capital in September in 2022 based in İstanbul. The company's main focus is Merger & Acquisition Advisory services in Wind Energy in Türkiye.

Some Highlights About Turkish Wind Market

Turkish Wind Market has 13 GW of operational installed capacity with 300 different projects with around 200 different investor groups.

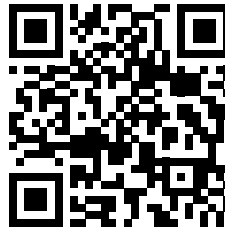
Turkish Wind Market has 26 GW of new project pipeline with 475 different projects, both green field and capacity expansions.

Fragmented market from number of investors perspective.

Opportunistic market for growth with new projects. For inquiries please contact with us.



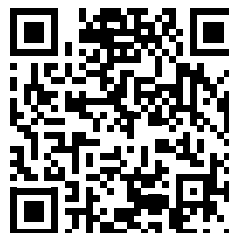
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Borusan EnBW Enerji: Harnessing Renewable Energy in the Modern Age of Power



With an installed capacity fully dedicated to renewable energy sources, Borusan EnBW Enerji stands among Türkiye's leading wind power generation companies, contributing significantly to global sustainability. The company boasts a 730 MW installed capacity across its 13 renewable energy power plants and holds a total portfolio of 1.352 MW. Annually, Borusan EnBW Enerji's renewable facilities mitigate approximately 1,3 million tons of carbon emissions.

Borusan EnBW Enerji operates with expert teams that provide substantial value through high-level project management and engineering proficiency, ensuring efficient plant operation and maintenance with maximum availability. Their portfolio allows clients to secure green electricity facilitated by I-REC Green Energy and Gold Standard Carbon Certificates. The company maintains a competitive edge through continual enhancements in current business models and innovation in new business models coupled with digital transformation.

Strategically, Borusan EnBW Enerji plans to expand its electric vehicle (EV) charging station network. By forming partnerships, the company aspires to establish an extensive high-speed EV charging grid in various locations such as gas stations, highways, shopping centres, and industrial zones.

Borusan EnBW Enerji seamlessly integrates its processes—from project development and investment to operations—with environmental and social harmony, directly aiding planetary sustainability. The company meticulously manages the environmental and social impacts of its activities. The sustainability strategy of Borusan EnBW Enerji focuses on climate, human capital, and innovation. The company aims to implement circular economy projects targeting zero waste and support biodiversity initiatives for species conservation under the climate focus area. Furthermore, Borusan EnBW Enerji actively engages in sustainability efforts through volunteer-led initiatives addressing biodiversity loss and deforestation. In the human capital focus area, the company executes community development projects and promote diversity, equality, and inclusivity, especially enhancing women's employment in renewable energy roles. Within innovation, Borusan EnBW Enerji continually explores new business models to drive industry advancements.

#Next Generation Energy

As Borusan EnBW Enerji we generate clean energy with our renewable energy power plants in harmony with nature and society with a vision to make our world more sustainable today and tomorrow.



Türkiye is the leader of the global wind industry, one of the most important investment addresses



Türkiye, which has great potential in all disciplines of renewable energy resources with its geographical location, tectonic structure and climate, is becoming the address for investments on a global scale with the "National Energy Action Plan" announced by the public authority to the whole world in 2023.

Türkiye, which has exceeded the installed power level of 12 thousand MW in wind energy as of July 2024, ranks 12th in the world and 5th in Europe with this success. With more than 4 thousand wind turbines in 280 power plants built with more than 100 local and foreign investors, wind alone meets 11 percent of Turkey's electricity needs.

While we care about this important success of Türkiye, which aims to commission at least 1500 MW of wind energy installed power every year until 2035, we know that we are far below our country's potential.

According to the National Energy Action Plan, Türkiye's wind energy installed power will increase to 29 thousand 600 MW in 2035. Among this installed capacity, our offshore wind energy installed power will be only 5 thousand MW.

This goal tells us:

We will do approximately 3 times more in the next 12 years than we did in the last 26 years.

In other words, we have a lot of work to do in the wind energy sector, we have a long way to go and we won't have a minute to waste.

In offshore wind energy, where we are at zero point today, our potential installed power, announced by the World Bank and whose measurement has been completed, is at the level of 75 thousand MW.

Our installed capacity target is one 15th of our potential.

In light of all this data, we, as the Energy Industrialists and Business Association (EN-SIA), are working to ensure that our country has a say in the wind industry.

As ENSIA, which attaches importance to companies based in Turkey having a say and decisions at every stage of the value chain created by the industry, we are participating in WindEnergy Hamburg, one of the most important global meeting points of wind energy, to introduce the potential of our coun-



*Chairman of the
Board of ENSiA*
Alper Kalaycı

try and to create value for our members as a cluster. For this reason, we have very high expectations from WindEnergy Hamburg, with our companies producing in the main and sub-industries of the industry.

ENSiA, which has the vision of "transforming Turkey into an international center producing equipment, technology and projects in the field of clean energy", adopts creating accurate information and awareness about the clean energy sector as its main goal.

Our Association employs more than 60 thousand members; As of today, it is a non-governmental organization capable of managing two European Union-funded projects and one Ur-Ge (Supporting the Development of International Competitiveness) project at the same time...

Likewise; We share the problems, expectations and suggestions that closely concern our sector with our public and decision makers through our press; We record our constructive and restorative suggestions in the corporate memory of our sector.

In this regard, we need to underline that we are among the most active civil society organizations in the Turkish energy sector.

We are going to implement projects that will create more value for our industry and our members, together, with common sense, and by taking reason and science as our guide.

With these thoughts, we say hi to "WindEnergy Hamburg".





Kompotek as your business partner in wind energy sector



Kompotek Composites Engineering started its operations in 2017 at Torbalı/İzmir to manufacture various composite parts out of resin and fiber cloth. In 2021, Kompotek moved to a 3500 sqm modernized facility in Organized Industrial Zone located at Menderes/İzmir in accordance with growth plans and corporate targets.

Kompotek, having started activities by manufacturing composite products, continued production of silicone inlay components with the advantage of mold expertise and became one of the major silicone component producers in the Wind Energy Sector. Kompotek manages operations through modernized production lines to serve reliable,

sustainable, high quality production by prioritizing and targeting customer satisfaction. Having the sense of responsibility for world's resources and with the fact that we serve for renewable energy, our motto is "We value our customers, we value our world."

Kompotek defined its main activity field as renewable energy sector among continuously growing composite product market and serves various types of composite products and silicone components for the global original equipment manufacturers (OEM's) with its qualified staff and modernized production lines. Kompotek provides serial, reliable, continuous and standardized quality production to customers, starting from mold design until production of final product in line with its main targets and principles. Kompotek optimizes processing conditions by implementing continuous development



activities in its manufacturing stages for a sustainable product quality.

Kompotek designs and manufactures heating system integrated molds. The company supports firms to develop products starting from mold making until the final product with its staff structure especially experienced in machining, CNC vertical processing and material science.

Kompotek also implements development and qualification researches for domestic production of consumables (membrane, vacuum foil, etc.) especially used in wind energy and marine sectors. Furthermore Kompotek continues its development activities to expand its production lines for vari-



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ous sectors over time as marine, commercial propellers, construction and automotive sectors.

Kompotek provides support for the acquisition, development of new materials, technologies and proper production methods for the final products that will increase the competitiveness of its customers. Kompotek acts with the vision "Being the leader composite parts manufacturing company of Energy Sector in Turkey". Kompotek works closely in touch with its customers analyzing needs thoroughly to proceed with the correct approach to improve the business model and provide offers in a value-added way.

Among the other services provided by Kompotek as a solution partner to its customers can be listed as;

- Product design and process development from prototyping stage
- Providing alternative materials, equipment and production methods suitable for the final product
- R&D and innovation support
- Composite materials and production techniques trainings
- Capacity to produce short length rotor blades up to 20 meters starting from mold making stage.

Certified by TÜV NORD for ISO 9001 Quality System, Kompotek has adopted the principle of providing high-efficient production and service to its customers, whose processes can easily be monitored, audited, improved, prioritizing customer satisfaction. Other quality certificates are ISO 14001 and 45001.



Kompotek feels proud of adding value to such an increasingly growing renewable wind energy sector and is grateful for being a part of this big family. Kompotek is highly motivated for the potential future collaborations.



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Türkiye's industrial market network
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From Turkey's first wind farm to today, Doğuhan Energy, the solution partner for more than 2,800 MW projects



Doğuhan Energy is a key player in major projects across Turkey. Starting from the Alaçatı Alize Wind Farm project, Turkey's first power plant in the field of wind energy, it has become the solution partner for over 2,800 MW projects by providing complete services to renewable energy projects, especially in wind energy.

Established in 1993, Doğuhan Energy shifted its focus to the renewable energy sector in 1996, aligning with Turkey's commitment to sustainable energy. Since then, we have involved in more than 30% of the power plants commissioned after the Alaçatı Alize WPP—the country's inaugural wind power plant—totaling over 2,800 MW and became a solution partner. Growing with Turkey's wind energy sector, the company offers complete and comprehensive services, for renewable energy investments, especially wind energy, from engineering to project planning to infrastructure and superstructure works, geological and geophysical ground surveys.

Among the crucial power plants offered by Doğuhan Energy, having involved in all major projects in Turkey's wind energy since Alaçatı WPP, Turkey's first wind energy power plant, process of which started in 1996; there are giant projects, such as Göktepe WPP, Elmalı



WPP, Germiyan WPP, Geycek WPP, Gündoğdu WPP, Karaburun WPP, Karacabey WPP, Kınık WPP, Soma WPP, Geyve WPP, Kurtkayası WPP.

Doğuhan Energy provides a full range of project design and engineering services tailored to our clients' needs. From access roads and turbine foundations to transformer centers, electrification, reinforced concrete structures, and power plant testing and commissioning, Doğuhan Energy offers turnkey solutions.

Doğuhan Energy, together with its group companies, with offices in Romania, Hungary and Italy as of 2022, stands by the investors in this challenging journey in many European countries.



Building the future

Together with our group companies in Turkey, Romania, Hungary and Italy, we offer turnkey solutions for renewables energy projects.

doguhan@doguhanenerji.com | doguhanenerji.com



BW Ideol unveils its standard floating foundation for mass production with a disruptive market approach

During the FOWT event in Marseille, BW Ideol, one of the global leaders in the sector, unveiled its brand-new market approach combining standardization and mass production to a selected panel of utilities and partners.



With over 22 GW already awarded in Scotland, around 8 GW in the USA, and several GW currently being awarded or in the tendering phase elsewhere in the world, floating wind is now entering an industrialization phase.

With the aim of accompanying and driving this evolution, BW Ideol now offers a standardized floating foundation product - based on the Damping Pool® solution in operation since 2018 in France and Japan.

This universal floating foundation is optimized for all meteocean conditions prevailing on the main floating wind markets (with 3 product classes adapted to different environmental conditions) and compatible with all 15 MW+ wind turbines currently available. This product retains the competitive advantages of the Damping Pool® patent, particularly its compactness, with dimensions limited to 54 meters, and its shallow draft, below 12 meters in operation. It can be easily scalable to the next 20 MW+ wind turbines when available. This standard product, pre-certified in advance, unlocks mass-production by allowing multiple projects to be supplied from the same manufacturing line.

BW Ideol has also unveiled its manufacturing line blueprint, easily scalable and replicable on multiple port infrastructures, for the mass

production of concrete floating foundations. This blueprint, optimizing each manufacturing steps, has a demonstrated capacity to produce up to one floating foundation per week, with minimal harbour requirements, guaranteeing local manufacturing and delivery time. It encompasses the structuration of the supply chain to ensure a lean manufacturing, its digitalization, quality control and a reduced carbon footprint.

Associated with the standard product, this manufacturing blueprint unleashes the volume effect to drive costs down across projects and provides developers with an early guarantee on price and delivery schedule. BW Ideol is the first floating foundation supplier to propose such an approach.

"The floating wind market is at a crossroads today: tens of gigawatts will need to be built in the coming years, requiring a change in paradigm from the floating foundation suppliers. We believe that adopting an approach similar to that of wind turbine manufacturers is necessary: offering a single and standard product, suitable for all geographies and turbines available on the market, produced in series based on manufacturing line serving multiple projects, so that developers can truly commit and know where they are heading" declared Paul de la Guérivière, Founder and CEO of BW Ideol.



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Launch of new heavy-lift cargo drones to support wind industry operations



Drone technology is becoming an increasingly integral part of the wind industry as major renewable industry players are looking at new ways to utilize the technology to support wind projects.

Until now, drones have primarily been used within the wind sector to provide additional aid with inspection services.

These advanced technologies have played a key role in capturing detailed imagery, conducting comprehensive blade inspections, exploring internal and external blade areas, and removing the requirement for potentially unsafe confined space inspections. (Find out how drone solutions are used within the GEV Group.)

New industry developments

This month, one of the industry's major energy companies announced the introduction of heavy-lift cargo drones for the first time in an operational offshore wind campaign. The concept was initially tested last year at a UK offshore wind farm through a series of trials using the new technology.

The drones, which have a wingspan of 2.6 metres, can transport up to 100 kg of cargo and aim to help improve operational efficiency and safety while reducing carbon emissions from operating an offshore wind farm.

Typically, a vessel would sail from one wind turbine to the next, using a crane to lift each box containing the equipment onto the tran-

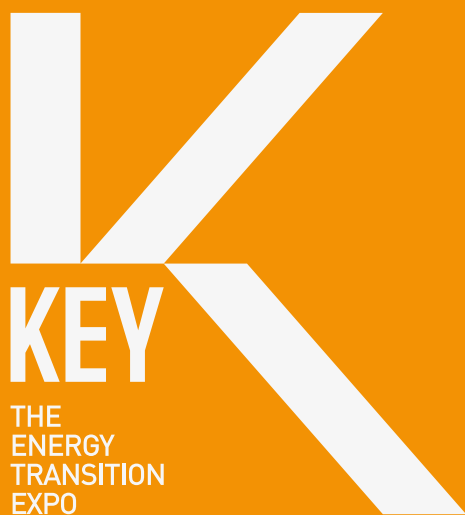
sition piece, after which the box would be lifted with the nacelle's crane to reach the nacelle and then be moved to the top of the turbine. Instead, the drone will fly back and forth from an offshore supply vessel directly to the top of the nacelle.

The drone flight from the vessel to the turbine takes roughly four minutes per turbine, while the conventional approach without using drones can take considerably longer. Taking vessel transport between the turbines and to-and-from shore into account, the use of the new drones has allowed the team to complete tasks at the wind farm 10-15 times faster than average.

The drones are said to reduce costs, save time, and improve operational safety and efficiency, minimizing the need for multiple journeys by ship.

The new technology also reduces work disturbance as wind turbines do not have to be shut down when cargo is delivered, preventing risk and making it safer for personnel working on the wind farm.

The announcement of the heavy-lift drones highlights the new innovative ways technology is being utilized to support the wind sector. Companies across the wind industry continue to harness cutting-edge technology to make green energy more affordable, reliable, efficient, and sustainable across the value chain.



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Flipping the Script on Traditional Wind Turbine Technologies

NREL Wind Researchers Undertake Sweeping Validation Study of a Downwind Turbine



In May 2024, researchers monitored what would happen when the blades on a 1.5-megawatt wind turbine at NREL's Flatirons Campus were turned downwind. Image by Pietro Bortolotti, NREL

Most wind turbines face the wind—and there is a good reason for that. Since the 1980s, wind turbine developers have been using what is called the “Danish concept” for their designs—three blades, positioned upwind (i.e., facing the wind), that are engineered to keep facing the wind to maximize energy production.

This spring, a group of National Renewable Energy Laboratory (NREL) researchers, in partnership with the Technical University of Denmark (DTU), sought to challenge the Danish concept by answering the question: What happens when we turn wind turbine blades around?

“There has been for decades this ongoing discussion in the research community about whether turbines should all be upwind,” said NREL wind energy researcher (and project lead) Pietro Bortolotti. “The turbines we started with in the 1980s, when this standard was set, were very different than what we deploy today. They were much smaller and had chunkier blades, chunkier towers.”

The goal of a recent experiment was to provide hard data about whether the upwind paradigm is still valid.

On the Flip Side

To complete the experiment, NREL and DTU researchers literally flipped the rotor of a 1.5-megawatt research wind turbine that lives on NREL's Flatirons Campus in Colorado—along with the wind vane and nacelle (which houses the gearbox) atop the tower. They then rewired the generator to spin the other way. “Plus, a million other things we had to do to make sure we were not going to break anything,” Bortolotti said.

After technicians spent days and nights atop aerial platforms to make the transition, attaching pressure belts and installing microphones at various distances from the wind turbine, the team was able to start capturing data.

“We conducted this experiment for two reasons: to study the techno-economic feasibility of downwind turbines and to utilize this very new instrumentation from DTU that can measure the performance of pressure distributions on a turbine blade,” Bortolotti said.

Bortolotti was supported by numerous other wind energy researchers and technicians, including Jason Roadman, Mark Iverson, Chris



A technician on an extended aerial lift installs instrumentation on the wind turbine blade. Transitioning the wind turbine from upwind to downwind took weeks. Image by Pietro Bortolotti, NREL

Ivanov, Jon Keller, and Derek Slaughter, who worked together to make the physical transition and monitor the results.

A Techno-Economic Analysis To Answer Decades-Old Questions

The experiment is one of the final projects being undertaken through the Big Adaptive Rotor (BAR) project, funded by the U.S. Department of Energy's Wind Energy Technologies Office. The goal of BAR is to support the development of land-based wind turbine technologies and identify ways to reduce costs, specifically related to making lighter-weight blades with increased flexibility.

"We looked at a whole spectrum of possible candidates," Bortolotti said. "And we wanted to investigate whether going downwind was an opportunity to further increase flexibility and decrease costs."

At first glance, a few aspects of the downwind scenario seem promising. First, the blades in a downwind turbine are naturally pushed away from the tower by the wind, so there is an opportunity to design lighter and more flexible blades that do not need to be stiff enough to steer clear of the tower. And the lighter the blade, the less expensive they are to make.

Second, the tilt of the wind turbine's rotor redirects the turbine's wake toward the ground, so it's less likely to interfere with other tur-

bines in a farm. And some studies show that downwind rotors increase the power performance of large wind farms.

But there is one major issue that comes along with the downwind scenario. The fact that, when a blade passes behind the tower, it is, for a split second, sheltered from the wind. This changes the pressure on the blade, producing an oscillation, or fluctuation, that causes fatigue on the blade itself and generates an audible "thump." And that thump happens every time one of the blades passes behind the tower—in other words, often.

Over the course of 11 hours of data collection, the team did indeed capture the thump, at audible-enough levels that could impact communities within earshot.

Blades Under Pressure

The oscillation did not just generate a noticeable sound. It also generated pressure on the wind turbine—pressure that, during the experiment, was measured via three special belts that researchers from DTU affixed to one of the blades and the turbine tower.

"The belts are very new instrumentation that DTU has been working on," said Bortolotti, who added that the belt devices can help researchers determine the performance of the rotor, whether it is upwind or downwind. "We used this experiment to help DTU push ahead this technology, because it's a very valuable and unique device that we hope to be using again in the future for upwind rotors."

During the experiment, the belts measured the pressure distribution along the rotor rotation, giving the team a precise look at the effect of the behind-the-tower oscillation on the blade. These measurements will help provide key insights into the increased fatigue loading experienced by downwind rotors.

One other key benefit of using the belts in the study was the data they produced. These data can provide real-world validation of aeroelastic numerical models the team developed with NREL's OpenFAST tool.

"At NREL, we develop a lot of tools for the numerical prediction of loads, performance of wind turbines, wind farms, and so on," said Bortolotti, who added that devices like





Once pressure belts were removed, NREL researchers David Barnes (above) and Ryan Beach and lead technician Mark Iverson set to work filling tiny holes in the leading edge of the blade left behind when the device's flyboards were removed. Image by Ryan Beach, NREL



the pressure belts are critical for validating these numerical tools.

The team plans to use the pressure belts in future experiments on more conventional rotors. "Thanks to the BAR project, we are now confident that the belts are a viable way to generate valuable experimental datasets that will help us improve our understanding of wind turbines," Bortolotti said.

Drawing Conclusions

While the formal results of the study will not be published until later in 2024, the preliminary results are enough to conclude that the potential benefits of downwind operations do not outweigh the drawbacks.

Bortolotti points out that the team knew that while the noise and blade fatigue concerns were present with downwind land-based turbines, the impact was unclear.

"The research community had to rely on datasets from the 1980s and anecdotal evidence, which in science are not sufficient," Bortolotti said. "We can now confidently say that the next generation of land-based wind turbines will be larger and more flexible, but the Danish concept will continue to be the dominant technology."

Ultimately, the experiment was a major accomplishment—and not just for the fact that it collected vital data on the performance of

a utility-scale downwind turbine while validating modeling and simulation tools.

"We did something that nobody thought that we could do, which was to spin a fairly big wind turbine outfitted with a large set of instrumentation that recorded a broad spectrum of aeroacoustics, loads, and pressure data," Bortolotti said. "This 1.5-megawatt turbine is small compared to modern installations, but still, it's a big beast, and spinning it downwind safely without breaking a single bolt was a big achievement."

for more information; www.nrel.gov



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Repair and maintenance expert in wind energy industry: Avrasya Rüzgar



Buğra AKBIYIK
General Manager
Eawind GmbH

Avrasya Rüzgar, offering repair and maintenance services for wind turbines, blades, towers, and tower interior equipment, provides solutions for globally leading companies. The company is a solution partner in the wind energy industry with its experienced and expert team. Avrasya Rüzgar General Manager Buğra Akbiyik shared the details of their services and goals with Rüzgar Enerjisi Magazine in the interview we conducted.

Could you please inform us about your experience in the Wind Energy market in Turkey?

Eawind (Avrasya Rüzgar) was established in 2010 as the successor of KompoTek, Composite Technologies, which had many years of experience in composite blade and mold production as well as composite boat building. With this experience, Eawind began serving international customers for their turbines in Turkey in 2010 for blade service, being one of the first in the market.

What services do you offer to your customers?

The main services we offer are "blade repair" and "blade retrofitting." As a wind turbine gets older, like a human being, the components such as blades, which are exposed to environmental changes, age, leading to the need for repairs. We also provide tower repairs and coatings as well as tower internal works, such as servicing hoists, winches, and ladder systems.

How are your technicians trained?

We have our own training center and are licensed to conduct GWO (Global Wind Organisation) trainings. We train and license our technicians in "Blade Repair" and "Basic Safety Training." Additionally, we provide other extra internal trainings that our technicians undergo. Depending on our customers' requests, there are also external training opportunities for our technicians.

Are these trainings open to other companies?

Yes, we offer GWO Blade Repair and GWO BST modules to other companies as well as freelance technicians. Our Training Center is in Izmir, Turkey, which is a perfect seaside location with direct flights to many European cities. We

welcome many trainees from Germany and Greece as well as countries from the Middle East and North Africa.

Who are your main customers and partners in your region and in Europe?

We are an approved ISP (International Service Provider) for Enercon, NordexAcciona, and SiemensGamesa Renewable Energy. Our technicians are trained to the highest standards by these companies. We also service Vestas, GE, Suzlon, and Sinovel turbines mostly on the customer side. Windsourcing of Hamburg is one of our partners in Europe, from whom we supply materials for servicing, and we offer our customers their product range. With our storage capabilities, we can keep composite raw materials for our customers. We also work with Mankiewicz Coatings of Hamburg, which has a location and storage capabilities in Turkey. This is extremely helpful when transporting chemical materials to Turkey is sometimes challenging.

What were the important steps your company took in the past to improve service quality?

Starting from 2014, we were the first company to use Temporary Suspended Platforms (TSPs) for working on the blades and towers of wind turbines. Understanding the importance of platforms, we joint-ventured with a German company and produced these platforms in our production line in Izmir. We are currently working on a new platform design aimed at increasing the efficiency of servicing time. Additionally, we were one of the first companies to establish our own Training Facility for our technicians, including GWO accreditation and other ISO accreditations. I believe these were the most important steps to improve service quality.

Are you planning service operations in Europe as well?

As an ISP for major turbine manufacturers like Enercon and NordexAcciona, we are eager to serve customers in Europe. Through our Germany-based company, Eawind GmbH, we provide comprehensive services to Europe.

We would like to thank Rüzgar Enerjisi Magazine for the interview.

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Avrasya Rüzgar, trusted by leading brands in the wind energy sector, provides exceptional repair and maintenance services for turbines, blades, and tower interior equipment. With our experienced team and advanced technologies, we ensure maximum efficiency in energy production. Serving across Europe and Turkey, we secure the power of wind for a sustainable future.



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I-MAK, Turkey's Emerging Gearbox Brand, Joins the TURQUALITY® Program



I-MAK Gearbox, which adds value to Turkey with its globally operating solution network, has been accepted into the TURQUALITY® Support Program, which was launched to help Turkish companies with potential establish brands abroad and strengthen the image of Turkish products. In addition to branding, I-MAK, which has been included in TURQUALITY® with the highest level of support packages, has achieved a first in its sector.

With more than 1,000,000 product references, I-MAK Gearbox is Turkey's gearbox brand that has opened to the world. By operating assembly centers in strategic locations, international sales offices in more than 50 countries, and gearboxes used in various sectors around the world, I-MAK adds value to Turkey by being beside its customers globally. I-MAK, which exports approximately half of its production to 55 countries and has assembly factories and service centers in strategic locations worldwide, including America, Europe, and Africa, has been accepted into the TURQUALITY® Support Program launched by the Ministry of Commerce's General Directorate of Exports to establish brands for Turkish products abroad and strengthen the image of Turkish goods.

Ensuring fast delivery with its facilities in Spain, the USA, South Africa, Poland, and India, and planning to reach 20 assembly centers soon

with continued investments, I-MAK Gearbox is preparing to further strengthen its global power within the scope of the TURQUALITY® program.

To maintain its status as a total solution provider, I-MAK continues to develop and expand its product range, options, and configurations. The company is working on projects for the energy sector with its new planetary gearboxes, for larger industries such as mega projects, mining, and infrastructure with its MA Monoblock Series, and for automation and precision sectors with its IRK, YP, and IR Series. With over half a century of experience, the company is working towards becoming Turkey's most global gearbox manufacturer, reaching from a deep-rooted past to a strong future



EIB and Haizea sign €35 million green loan boosting European wind energy sector component manufacturing



The European Investment Bank (EIB) and Haizea Wind Group, a Spanish company specialising in the manufacture of components for the wind energy sector, have signed a €35 million green loan.

The loan will enable Haizea to implement advanced manufacturing technologies, automate and digitalise processes and move forward with research and development applied to the manufacture and assembly of large metal structures for wind turbines such as wind towers, monopile foundations and offshore wind park transition pieces.

The project reinforces the EIB's role as the EU Climate Bank, backs the development of a major renewable energy technology and the international competitiveness of Europe's offshore wind industry, and strengthens the European supply chain for renewable energy.

"Loans like the one we are signing with Haizea today reflect the EIB's commitment to innovation and the development of renewable energy technologies enabling us to move forward with the energy transition and strengthening the competitiveness of our companies," said EIB Director of Operations for Spain and Portugal Gilles Badot. "A robust renewable technology manufacturing sector is vital to guaranteeing the European Union's energy security and autonomy."

This loan is part of the EIB's innovation support and falls under its cross-cutting climate action and environmental sustainability priority. Given Haizea's role as an equipment and structures provider to the energy sector, the operation also contributes to the REPowerEU plan's goal of increasing energy security and reducing EU dependence on fossil fuel imports. This loan is backed by the InvestEU programme to mobilise

public and private sector funds in support of EU policy goals.

Haizea Wind Group Finance Director Alvaro Quintana added: "The signing of this loan with the EIB is part of Haizea Wind Group's goal of helping its clients work towards a more sustainable economy by supplying large metal pieces like towers, transition pieces and large-diameter monopiles – currently key parts of the offshore wind power supply chain to achieve the green transition. The trust the EIB has shown by signing with us this green loan will enable us to implement advanced manufacturing technologies and move forward with research and development applied to the manufacture and assembly of large metal structures for wind turbines."

The EIB and energy security

In 2023, the EIB Group provided more than €21 billion in financing for energy security in Europe. In the same year, it allocated €4.5 billion to this goal in Spain, financing projects in areas including renewable energy, energy efficiency, power grids and storage systems. These investments are helping Europe speed up its transition to sustainable energy and reduce its reliance on fossil fuel imports.

In July 2023, the EIB Board of Directors raised the amount earmarked for REPowerEU projects to €45 billion. REPowerEU is the plan designed to end Europe's dependence on fossil fuel imports. To boost financing for the EU manufacturing industry, the EIB will also expand the range of eligible sectors to include leading strategic technologies with net-zero carbon emissions, as well as extraction, processing and recycling of critical raw materials. The additional financing will be disbursed between now and 2027. In total, it is expected to mobilise more than €150 billion in investment in the target sectors.



Empowering Women in Turkey's Energy Sector: A Deep Dive into Gender Equality and Future Strategies



The Turkish Women in Renewables and Energy Network (TWRE) was established in March 2018 as a social enterprise and networking platform for women in the renewables and energy sector. The network currently boasts almost 4,000 online members from a range of sectors, including energy, construction, sustainability and decarbonisation. Following the completion of over 100 projects, technical trainees, site visits, mentoring, a sailing team, gender equality research, a report and career guidance, TWRE has motivated more than 500 women pursuing STEM careers to pursue careers in energy transition.

In June 2022, with the support and approval of the energy sector, 24 women with diverse career backgrounds and achievements, who are the core of the network's volunteers, established the Green Collar Women's Association (GCWA). Since then, TWRE has become GCWA's women's community network.

The global energy sector is experiencing year-on-year growth. Turkey's energy sector is undergoing a direct proportional development in the global energy market. Indeed, over the past decade, we have witnessed a period of significant growth, driven by the acceleration of the transition to clean energy. By 12 August 2024, we had reached an installed capacity of 58% renewables. Our goal is to increase this figure to 80% by 2035.

The growth in this sector is the result of a number of factors, including technological developments, industrial capacities and infrastructure, sustainable finance, capital and incentives.

In addition to the aforementioned factors, the availability of a skilled workforce is a crucial element in driving this growth. This leads to the question of who is meant by the term "human resources."

Due to the difficulty of accessing data in the energy sector, it was not possible to create a detailed profile. However, a general statement can be made. As is the case across the globe, the Turkish energy sector is pre-



Sedef Budak,
Founder President, GCWA

dominantly male-dominated. However, this situation is beginning to evolve, with some indications of change over recent years. It is evident that women are also playing an increasingly active role in the sector. Given the current need for qualified personnel, the allocation of resources is a crucial area for women's employment. It is therefore vital to conduct research in the energy sector and contribute to its development in a variety of ways. TWRE and GCWA identified a need to collect data to drive greater inclusivity and equality in the sector and to provide diverse insights into energy transition.

GCWA has analysed the prospects of the Turkish energy sector in the context of gender equality. Collected data from energy distribution, and transmission companies, as well as plant owners and OEM companies. In this context, the report entitled "Gender equality in the Turkish energy sector - Women's Employment: global and local Dynamics" in cooperation with the German Energy Agency dena, Turkish German Energy Partnership Program. The findings presented in the report provide in-depth insights into the challenges faced by women in the Turkish energy sector, from employment inequalities to gender stereotypes. It provides a comprehensive analysis of the current landscape by identifying barriers and opportunities for women's participation and advancement in the energy sector.



The research was conducted using both quantitative and qualitative data. A total of 189 individuals were surveyed using a questionnaire, while fourteen female employees were also interviewed. Additionally, twenty-five companies were consulted to gain insight into the overall gender distribution of their workforce. The objective of this study was to examine the role of women in the energy sector.

The research was conducted in a way that allowed researchers to focus on their experiences and ask questions accordingly. Within collected data from responding companies' study has shaped the total number of employees of 45,000. Approximately 35 K of these are male employees, while only 9K are female employees. Examining the distribution of white- and blue-collar employees, the findings are as follows: While 66% of white-collar male employees are men, this figure is 34% for women. While 88% of blue-collar employees are men, only 12% are women.

The research revealed that 34% of female employees believe they have experienced gender discrimination in the workplace, while 33% reported that they have encountered prejudiced behaviour due to their gender. Despite the fact that 72% of respondents indicated that they were accepted in their workplaces as women, 37% reported that they felt the need to prove themselves. While 35% of female employees participating in our research highlighted that the division of labour is based on gender, 42% emphasised that it is independent of gender. In response to the question of whether gender is an important factor in professional progression and promotion, 54% of participants indicated that it is not. In terms of the impact of gender on recruitment processes, 43% of participants indicated that it is a significant factor. Forty-seven point three per cent of respondents believe that female employees may encounter greater challenges in pursuing senior management roles compared to their male counterparts. A majority of respondents (73.7%) indicated that their company has an effective gender equality policy. However, a significant proportion (54%) of participants stated that there is no effective gender equality programme in their company. When the number of directors is analysed, the gender imbalance is even more pronounced.

Accordingly, while men comprise approximately 78% of the board of directors, women represent only 22%.

In conclusion, the research findings indicate that organisations with gender equality policies foster a more egalitarian work environment among employees. It is crucial for companies to implement inclusive policies and conduct training and awareness programmes. To address the gender imbalance in the energy sector and cultivate future leaders, it is crucial to direct and encourage female students towards this field. The expansion of training programmes, scholarships, mentoring practices, job and internship opportunities for female students will contribute to workforce diversity in the sector. To achieve sustainable progress on gender equality, it is essential to raise awareness across the energy sector. Educational seminars, workshops, internal communication campaigns, and effective use of social media and digital platforms are key strategies for awareness-raising activities.

It is of great importance to promote the activities of civil society organisations in order to develop gender equality in the energy sector. Energy sector companies can expand their impact in this area by partnering with civil society organisations to develop training programmes, campaigns and events. It is crucial to ensure the regular collection of data in the energy sector to achieve social-gender equality. The sector must collect data on gender distribution, wage gaps, gender ratios in promotions and appointments, and gender representation at each level of decision-making on a regular basis. The regular collection of data will enable companies to develop effective policies and to monitor the sector's annual performance. It is evident that internationalisation plays a pivotal role in addressing the gender imbalance in the energy sector. It is crucial to encourage the formation of international business alliances and networks at this juncture. The exchange of best practice examples, the development of shared strategies and policies, and the formation of international partnerships can accelerate progress on gender equality.

Please do not hesitate to contact with Green Collar Women Association for any suggestions and partnership offers.

Sedef Budak, Founder President, GCWA



India Takes a Bold Step in Offshore Wind Energy: Viability Gap Funding Approved



In a significant milestone for renewable energy, the Union Cabinet of India, under the leadership of Prime Minister Shri Narendra Modi, has given the green light to the Viability Gap Funding (VGF) scheme. This groundbreaking initiative will support India's first-ever offshore wind energy projects, with a substantial investment of ₹7,453 crore (approximately \$1 billion). The goal is to install and commission 1 GW of offshore wind capacity, with 500 MW each off the coasts of Gujarat and Tamil Nadu.

This ambitious project not only marks a new era in India's energy landscape but also aligns with the country's National Offshore Wind Energy Policy, introduced in 2015. Offshore wind energy, known for its higher efficiency and reliability compared to onshore wind and solar projects, also offers significant employment opportunities. By making these projects financially viable, the Indian government is ensuring that distribution companies (DISCOMs) can purchase power at competitive rates.

Key to the success of these projects is the development of necessary infrastructure. The Power Grid Corporation of India Ltd (PGCIL) will be responsible for creating the power evacuation systems, including offshore substations. Additionally, ₹600 crore will be allocated for upgrading two major ports, crit-

ical for handling the large and heavy equipment required for offshore wind projects. The Ministry of Ports, Shipping, and Waterways will oversee these upgrades, ensuring that the logistical needs of the projects are met.

The completion of these 1 GW projects is expected to generate approximately 3.72 billion units of renewable electricity annually, significantly reducing India's carbon dioxide emissions by 2.98 million tons each year. Moreover, this initiative is set to catalyze further development, with the potential to unlock an additional 37 GW of offshore wind capacity, requiring an estimated ₹4,50,000 crore (around \$60 billion) in investment.

India's venture into offshore wind energy not only propels the nation towards its ambitious renewable energy goals but also sets the stage for broader ocean-based economic activities. This initiative is a key step in India's energy transition journey, promising a cleaner and more sustainable future.



BOEM Issues Offshore Wind Research Lease to State of Maine

Today, the Bureau of Ocean Energy Management (BOEM) announced the execution of the nation's first floating offshore wind energy research lease. The lease area covers a little under 15,000 acres located 28 nautical miles offshore Maine on the U.S. Outer Continental Shelf and could allow for the deployment of up to 12 floating offshore wind turbines capable of generating up to 144 megawatts of renewable energy.

The research array will allow the State, the fishing community, wildlife experts, the offshore wind industry, and others to conduct in-depth studies and thoroughly evaluate floating offshore wind as a renewable energy source in the region. Research conducted on the array will evaluate its compatibility with existing ocean uses and assess its potential effects on the environment, supply chains, and job creation.

"Floating wind opens up opportunities to produce renewable energy in deeper water farther offshore," said BOEM Director Elizabeth Klein. "Signing the Gulf of Maine research lease demonstrates the commitment by both BOEM and the State of Maine to promote a clean energy future for the nation. It is another example of a successful all-of-government effort to reach the Administration's offshore wind energy goals and to combat the impacts of climate change."

Information gathered from the research lease will inform responsible commercial floating offshore wind development in the future and allow BOEM and Maine to capitalize on innovative technology, while protecting local and national interests and industries.

"Clean energy from offshore wind offers an historic opportunity for Maine to create good-paying jobs, reduce our reliance on fossil fuels, and fight climate change by cutting greenhouse gas emissions," said Maine Governor Janet Mills. "This lease between the State and BOEM to support the nation's first research array devoted to floating offshore wind technology is the result of extensive engagement with stakeholders and communities across our state to establish Maine as a leader in responsible offshore wind, in balance with our state's marine economy and environment."

Since the start of the Biden-Harris administration, the Department of the Interior has approved the nation's first nine commercial scale offshore wind projects with a combined capacity of more than 13 gigawatts of clean



energy — enough to power nearly 5 million homes. In that time, the Department has held five offshore wind lease auctions — including a record-breaking sale offshore New York and the first-ever sales offshore the Pacific Coast and in the Gulf of Mexico. The Department also recently announced a schedule to hold up to 12 additional lease sales through 2028. On August 14, BOEM will hold an offshore wind lease sale for the Central Atlantic, auctioning areas offshore Delaware, Maryland, and Virginia that could generate up to 6.3 gigawatts of clean energy and power up to 2.2 million homes.

BOEM received an application from the State of Maine for a renewable energy research lease in October 2021. On March 20, 2023, BOEM issued a Determination of No Competitive Interest for the area identified in Maine's application.

BOEM engaged with the State of Maine Governor's Energy Office throughout the application review and lease development process to develop a lease that yields high-quality research on offshore wind in the Gulf of Maine. On May 24, 2024, BOEM offered a research lease to the State of Maine after completing a Final Environmental Assessment and associated finding of no significant impacts.

As a research lease, the State of Maine or its designated operator will propose and conduct research regarding environmental and engineering aspects of the proposed project. This information will be made public and used to inform future planning, permitting, and construction of commercial-scale floating offshore wind projects in the region.

Construction activity on the research array is not likely to occur for several years. The lessee is first required to submit a Research Activities Plan to BOEM, which will undergo environmental analysis under the National Environmental Policy Act. Additional details on the timing of construction will become clearer as the permitting process progresses.

TURKISH OFFSHORE WIND: CURRENT STATUS AND OUTLOOK

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1. Introduction

Türkiye current total installed capacity is approx. 106 GW of which wind power has a share of 10%. Wind installed capacity has reached approximately 13 MW at the end of January 2024. In terms of onshore wind power, it is a mature market and many experienced contractors can be found within Türkiye for transport, installation, civil scope, etc. The local production of wind turbine components is promoted through the provision of a surplus additional feed-in rate for the wind farm operator. Turbine manufacturers without local manufacturing must overcome this disadvantage with price discounts on the turbine price. The Ministry of Energy and Natural Resources has published the National Energy Plan of Türkiye covering the period 2020-2035. In the scenario prepared by the Ministry, in the period 2020 – 2035, primary energy consumption will reach 205.3 Mtep (Million tons of oil equivalent), electricity consumption will reach 510.4 TWh (Terawatt Hours), while the electricity installed capacity will reach 189.7 GW in total. Offshore wind target is 5 GW till 2035. World Bank report concluded that Türkiye has nearly 75 gigawatts (GW) of technical potential for offshore wind. The report detailed Türkiye's technical potential for offshore wind. The most attractive areas for offshore wind lie in the northwest in the Aegean Sea where wind speeds rise to 9 meters per second (m/s) the report said. The "Offshore Wind Energy Turkey Roadmap" Report, in which Turkey's offshore wind energy potential is analyzed and the road map to be followed for the development of this field is stated, was shared with the sector by Turkish Offshore Wind Energy Association (DURED). Moreover, the "Offshore Wind Energy Sector Inventory" Report, which involves all stakeholders of offshore wind energy in Türkiye, was also presented.

2. Offshore Wind Power in Türkiye

There are numerous studies related to offshore wind power potential of the country. Amongst, World Bank Group report mentioning that Türkiye has nearly 75 gigawatts (GW) of technical potential for offshore wind. The report also detailed Türkiye's technical potential for offshore wind. "The most attractive areas for offshore wind lie in the northwest in the Aegean Sea where wind speeds rise to 9 meters per second (m/s)," the report said.

Postponed 1200 MW Offshore Wind Farm Tender

Türkiye has begun a new chapter in its long-term policy on renewable energy with the Regulation on Renewable Energy Resource Areas ("RERA"), which came in force in October 2016. RERA establishes another set of incentives designed to encourage the effective and efficient use of renewable energy resources on state- and treasury-owned as well as privately owned sites in Türkiye. A central plank of the policy on renewables is the recently announced RERA Offshore Wind Power Farm project – Türkiye's first and the world's largest offshore wind farm, which is expected to yield investment of USD 3 billion. The wind farm should start generating electricity in 2023 – coinciding with the 100-year jubilee of the Republic of Türkiye – with a total capacity of 1,200 MW.

General Information on Postponed Tender

The tender announcement for the RERA Offshore Wind Power Farm was published in the Official Gazette in Türkiye on June 21, 2018. Saros (Edirne-Enez, Keşan), Kırıkköy (Kırklareli-Vize) and Gelibolu-Şarköy (Çanakkale-Tekirdağ) are among the nominee regions for the project. See figure below on 100m wind power potential atlas with circles.

Postponed Offshore Tender Details

The investors contracted for the project will establish the offshore wind power plant by choosing either two (2) of the listed areas or two (2) other areas it has selected itself, pro-

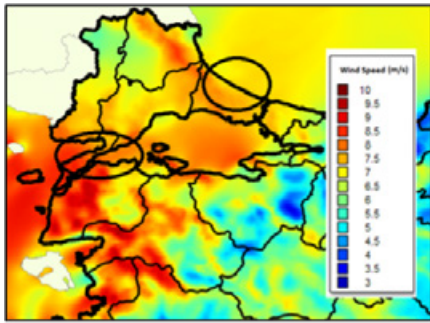


Figure 1. Offshore wind farm postponed tender locations.

vided it carries out the necessary measurements and surveys. The investor must first start work on an 840-MW power plant and then continue with the remaining part to reach a total of 1,200 MW. The investors will be able to use the remaining capacity as long as they:

- notify the Ministry of Energy and Natural Resources, General Directorate of Renewable Energy in writing within forty-two (42) months following the signing of the agreement;
- complete the installation within seventy-two (72) months.

Postponed Tender Qualifications

As for the tender qualifications, legal entities or partnerships formed from multiple legal entities or consortia are allowed to apply for the tender. In order to obtain the tender specifications, groups must pay twenty thousand Turkish Lira (app. EUR 3,700). The amount has to be deposited in the bank account determined in the Official Gazette.

In addition, a partially or completely cash convertible definite letter of guarantee of one (1) year amounting USD 20,000,000 should also be submitted to the Administration.

The winning party will be obliged to submit a letter of guarantee of ten (10) years amounting to USD 100,000,000 to the Administration prior to the execution of the energy sales agreement.

The Official Gazette indicates that the ceiling price for electricity produced at the country's first offshore wind farm will be set at US Cent 8 (eight)/KWh and that the tender will be carried out through an auction by underbidding. The investor who submits the lowest bid will execute an agreement, including the first 50 TWh of electricity production starting from the temporary admission.

The tender location, date and time will be announced by the Administration.

3. Outlook for Offshore Wind Power Market in Türkiye

Based on Türkiye's success in onshore wind, the Turkish Government announced plans in early 2018 to expand into offshore wind which is postponed. Offshore wind is experiencing global and increasing pressure to deliver energy at lower and lower costs. At the same time, the countries where the wind farms are being installed are increasingly aiming to profit from the manufacturing and installation of the wind farms, as well as the lower energy cost. In 2022, it is expected that 1500 MW capacity tender to be announced by Energy Ministry.

National Energy Plan of Türkiye

The Ministry of Energy and Natural Resources has published the National Energy Plan of Türkiye covering the period 2020-2035. In the scenario prepared by the Ministry, in the period 2020 – 2035, primary energy consumption will reach 205.3 Mtep (Million tons of oil equivalent), electricity consumption will reach 510.4 TWh (Terawatt Hours), while the electricity installed capacity will reach 189.7 GW in total.

Installed power planning in the field of energy for 2035

Wind energy: 24.6 GW onshore + 5 GW offshore total 29.6 GW

Solar energy: 52.9 GW

Hydroelectric power: 35.1 GW

Other renewable energy: 5.1 GW





Nuclear power: 7.2 GW

Conventional sources: 59.8 GW

Electrolyzer capacity: 5 GW

4. Power Purchase Tariff for Offshore Wind

The Turkish Republic Presidency has published a decree (Decree no. 7189) dated May 1, 2023 and announced new 10-year feed-in tariffs and 5-year domestic production incentives for renewable power projects commissioned between 1 July 2021 and 31 December 2030 under the new renewable energy support mechanism (YEKDEM). The feed-in tariff levels are determined in Turkish lira and will be subject to a quarterly escalation mechanism, based on the producer price index, consumer price index, US dollars purchase rates and euro purchase rates; FiTs in US dollars will be subject to a cap.

Renewable Energy Resources		Yekdem Tariff (Turkish Lira/kWh)	Term (Years)	YEKDEM base price (USDc/kWh)	YEKDEM cap price (USDc/kWh)	Domestic Component (local content) (Turkish Lira/kWh)	Domestic Component Term (Years)
Hydro power plants	With reservoir	144,00	10	6,75	8,25	28,80	5
	River type (without reservoir)	135,00	10	6,30	7,70	28,80	5
Wind power plants	Onshore	106,00	10	4,95	6,05	28,80	5
	Offshore	144,00	10	6,75	8,25	38,45	5
Geothermal		202,00	10	9,45	11,55	28,80	5
	Landfill gas or by-products	106,00	15	4,95	6,05	28,80	5
	Biomethanization	173,00	10	8,10	9,90	28,80	5
	Thermal disposal in bio	134,90	10	5,75	8,00	21,58	5
Solar		106,00	10	4,95	6,05	38,45	5
Wind / solar including storage systems		125,00	10	5,85	7,15	38,45	10
Pumped Hydro Storage		202,00	15	9,45	11,55	38,45	10
Wave and tidal forces		135,00	10	6,30	7,70	38,45	10

5. MetOcean and Wind Measurement Site Investigation in Türkiye

The Ministry of Energy and Natural Resources (MENR) has received a grant from the European Union toward the cost of the EU Instrument for Pre-Accession (IPA) Energy Sector Program Phase IV Project, and intends to apply part of the proceeds for Consulting Services. The Consulting Services ("the Services") include the conduction of meteorological and oceanographic analysis and measurements at specific offshore sites to be selected by MENR. The studies include:

1. Analysis, measurement and survey activities informed through the application of meteorological and oceanographic measurement systems,
2. Acquisition of high-quality and reliable meteorological and oceanographic data,
3. Preparation of meteorological and oceanographic measurement system application and data analysis reports,
4. Preparation of geological, geophysical and geotechnical seabed survey reports and assessment of all survey outputs, and other relevant activities. (Geological, geophysical and geotechnical measurements will be carried out under a separate contract while the data obtained from the relevant measurements will be assessed under this assignment.)

IPA Sites selected in Marmara Sea.



Figure 2. IPA Sites selected by the MENR.

3 companies already did bid for the MetOcean Tender and the process is pending.

6. Environment and Social Commitment Plan for Offshore Wind Support Project

The Republic of Türkiye (the Recipient) will implement the EU Instrument for Pre-Accession (IPA) Energy Sector Program Phase IV– Offshore Wind Support Project (the Project), through the Ministry of Energy and Natural Resources (MENR). The International Bank for Reconstruction and Development (the Bank), acting as administrator of the European Union Instrument for Pre-Accession Trust Fund, has agreed to provide financing for the Project, as set out in the referred agreement. The Recipient through MENR shall ensure that the Project is carried out in accordance with the Environmental and Social Standards (ESSs) and this Environmental and Social Commitment Plan (ESCP), in a manner acceptable to the Bank. The ESCP is a part of the Grant Agreement. Without limitation to the foregoing, this ESCP sets out material measures and actions that the Recipient shall carry out or cause to be carried out, including, as applicable, the timeframes of the actions and measures, institutional, staffing, training, monitoring and reporting arrangements, and grievance management. The ESCP also sets out the environmental and social (E&S) instruments that shall be adopted and implemented under the Project, all of which shall be subject to prior consultation and disclosure, consistent with the ESSs, and in form and substance, and in a manner acceptable to the Bank. Once adopted, said E&S instruments may be revised from time to time with prior written agreement by the Bank. As agreed by the Bank and the Recipient, through MENR, this ESCP shall be revised from time to time if necessary, during Project implementation, to reflect adaptive management of Project changes and unforeseen circumstances or in response to Project performance. In such circumstances, the Recipient, through the MENR, and the Bank agree to update the ESCP to reflect these changes through an exchange of letters signed between the Bank and the Recipient, through MENR. The Recipient, through MENR shall promptly disclose the updated ESCP. This has been already awarded by RPS Global Inc.

7. RERA Offshore Wind Project Sites

Within the scope of the Renewable Energy Resource Zone (REZ) Regulation; Ministry of Energy and Natural Resources announced four Offshore WPP Candidate REZ.



Figure 3. RERA Offshore wind project sites selected by the MENR.

References: Turkish Offshore Wind Energy Association, Denizüstü Rüzgar Enerjisi Derneği (DÜRED). www.linkedin.com/company/dured-towea/

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19-21 Eylül 2024
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24-27 Eylül 2024
WindEnergy Hamburg
Hamburg Messe und Congress
www.windenergyhamburg.com
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<https://solarstoragenx.com/tr>
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25-26 Eylül 2024
Batarya Teknolojileri Zirvesi
Bilişim Vadisi Gebze
www.battery-technologies-summit.com
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27-29 Kasım 2024
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İstanbul Fuar Merkezi
turkchem.com.tr
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30 Eylül - 5 Ekim 2024
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İstanbul Tüyap Fuar ve Kongre Merkezi
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Divan Otel Ankara
www.damshydropowersturkiye.com
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