

Cheerleading India's Wind Industry

A Dive Into Events, Conferences,
Roundtables - and Wind India!



INSIDE

04

Who Will Tell the
Wind Energy Story?

16

Introducing Wind India

35

India Wind Energy
Market Outlook 2025

ONE STOP PROJECT MANAGEMENT SOLUTION FOR WIND, SOLAR & HYBRID PROJECTS WITH ASSET MANAGEMENT

Our key business verticals



Turnkey Solutions for Wind, Solar & Hybrid Projects



Industrial Solar Rooftop



Asset Management (Wind and Solar)



Solar Water Pump



Smart Energy Meter



1400+MW

Wind Ongoing



450+MW

Solar Ongoing



1024+MW

Asset Management

(Wind and Solar-Multiband Capacity Under Services)



1000+

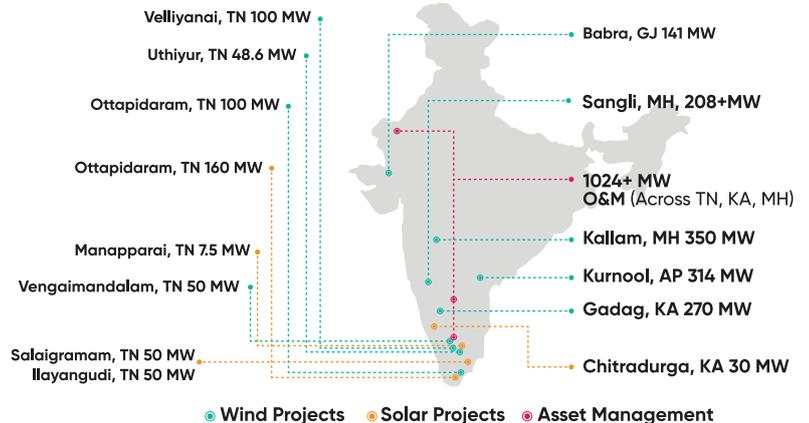
Solar water Pump Installed

(Haryana, Rajasthan, Maharashtra)

Everrenew Projects
2159+MW
Completed (Wind & Solar)



Key Projects in Wind, Solar & Asset Management



International Projects

Sri Lanka

15 + MW (O&M)
100 + MW (wind)

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65 Nos WTG Foundation





Indian Wind Power

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CONTENTS

APRIL - MAY 2025 Vol. 11 . Issue 1

- 02** From the CEO's Desk
- 04** Who Will Tell the Wind Energy Story?
- 06** Recent Advancements in Wind Turbine Blade Technology - A White Paper
- 16** Introducing WIND INDIA
- 18** IWTMA Conference for Component Manufacturers 2025
- 23** Welcoming IWTMA's New Members
- 28** WindEurope 2025
- 31** Littoral Offshore Wind Energy India Summit 2025
- 32** Road to Windergy 2025
- 33** India News and International News
- 35** India Wind Energy Market Outlook 2025
- 38** Meet the Klübersynth BEM 48-1501

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From the CEO's Desk

Dear Readers,

Let me congratulate the wind energy fraternity and the entire industry for crossing the historic milestone of 50 GW of installed wind capacity by the end of the last fiscal year and we have quickly moved to 51.5 GW now. This remarkable achievement is a testament to the collective vision, dedication, and relentless efforts of all stakeholders.

As we celebrate this success, our sights are firmly set on the future. The national target of 100 GW of wind power by 2030 is ambitious, yet well within our grasp. The last quarter alone witnessed an impressive 134% surge in wind installations—a clear sign of renewed momentum in the sector. Such progress would not have been possible without the steadfast support and progressive policies of the Government of India and the dedication of our policymakers, to whom we extend our deepest gratitude.

The Government's commitment to the Make in India initiative is evident through recent policy measures, such as the amendments to the RLMM (Revised List of Models & Manufacturers). These steps would help in fostering domestic manufacturing and enhancing the global competitiveness of India's wind industry.

IWTMA and its members remain fully committed to playing a pivotal role in realizing the Make in India vision. With a robust manufacturing capacity exceeding 18 GW (four times the annual demand for WTGs) in the country—the industry is well-equipped to meet the nation's needs and ensure price stability, alleviating any concerns of undue price escalation.

A special mention must be made of the resounding success of Global Wind Day, organized by MNRE in Bengaluru on 15th Jun'25 and graced by the esteemed presence of Hon'ble Minister Shri Pralhad Joshi. His inspiring words reminded us that India was among the first nations to recognize the immense potential of "Pawan Urja" (Wind Power) and encouraged the industry to walk the path of "Vayu se Viksit Bharat"—a vision of development powered by wind.

As we move forward, let us continue to collaborate, innovate, and lead the way for a greener, more sustainable India. Together, we can harness the power of the wind to build a brighter future for generations to come.

With warm regards,

Aditya Pyasi

CEO, IWTMA (Indian Wind Turbine Manufacturers Association)

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Who Will Tell the Wind Energy Story?

Bridging Communication Gaps to Propel India's Wind Energy Growth

Wind energy is one of India's biggest clean power assets, yet it barely gets the spotlight. While solar power basks in media attention, wind remains an underdog – underappreciated, underexplained, and often misunderstood.

The problem? It's not the technology. It's not even the policy. It's the story – or rather, the lack of one.

Wind energy needs more than turbines and transmission lines. It needs great storytelling. It needs local champions. It needs a narrative that resonates from boardrooms to village squares.

Because right now, the biggest obstacle isn't the wind – it's how we talk about it.

The Communication Gap

India's racing toward a greener future with ambitious plans for 500 GW of clean energy by 2030. But here's the thing – wind power, despite its massive potential, keeps hitting

turbulence. And it's not just about technical challenges or policy hangups. It's about "how we're talking about it."

Let's be real: wind energy in India doesn't have an engineering problem – it has a storytelling problem. While solar power gets all the glossy magazine covers, wind energy is like that brilliant friend who's terrible at self-promotion.

Consider what happened in Maharashtra's Nandgaon village. A perfectly good 100 MW renewable project faced fierce resistance because nobody bothered to have a proper chat with the locals first. Classic case of "build first, explain later" – and we all know how that usually ends.

When Turbines Become "Those Giant Spinning Things"

Here's what typically happens: Government officials roll into town with technical blueprints and economic projections. Meanwhile, locals are wondering, "What's in it for us?" and "Will these giant spinning things affect our land?"

The disconnect is real. While officials talk about "capacity factors" and "grid integration," communities see turbines as alien structures rather than local assets. It's like we're speaking different languages.



Let's Flip the Script

So how do we change this communication? We are thinking about a three-part approach:

1. Make It Personal, Make It Local

Imagine this: Instead of starting with megawatts and climate goals, we begin with Rajesh from the neighboring village who landed a maintenance job at the wind farm. Or Kalawati, whose small agarbatti making business now has reliable electricity thanks to the nearby wind project.

Stories beat statistics every time. Let's use them.

2. Invite Everyone to the Table – Early

Here's a radical concept: What if we talked to communities "before" deciding where to plant those turbines?

Some successful projects have experimented with profit-sharing models where locals get a slice of the revenue. Suddenly, those "eyesore" turbines become "our turbines." Funny how perspective shifts when you've got skin in the game.

3. Create Wind Energy Rockstars

Solar has the Prime Minister Narendra Modi. Electric vehicles have Elon Musk. But who's the face of wind energy in India?

We need charismatic industry leaders showing up on primetime TV, writing thought-provoking columns, and becoming household names. Wind energy needs its own rockstars – people who can explain complex concepts in ways that make sense to everyone from village elders to urban professionals.

Beyond the Press Release

Sending out a press release when you install a new turbine isn't cutting it anymore. We need:

- Wind energy champions who become regular fixtures in national conversations
- Local-language content that resonates with specific communities



Who is the face of wind energy in India?

- Transparent discussions about both benefits AND challenges
- Proactive myth-busting before misinformation takes root
- A wind energy sector that helps position India as a clean energy leader

Parting Thoughts

India's wind energy future isn't just blowing in the wind – it's riding on how well we communicate its value. It's time to stop whispering and start having real conversations that resonate from boardrooms to village squares.

The technology is ready. The financing is improving. Now we just need to get everyone talking – and listening – the right way. ■

The Payoff

When we get this right, the benefits extend far beyond smoother project approvals. We're talking about:

- Communities that advocate for wind projects rather than resisting them
- Investors who see reduced risk and stronger long-term returns

AUTHORS



Mayuri Singh An Energy Laws & Regulatory Communications Specialist, Mayuri has two decades of experience translating complex regulatory frameworks into actionable industry narratives. She bridges law, policy, and communication to reshape regulatory discourse in India's energy landscape.



Nishant Saxena A strategic communications practitioner, journalist, and founder of Climate Kahani, Nishant specialises in shaping high-impact narratives in energy and climate policy. Through strategic communications advisory, he integrates media, policy, and corporate storytelling to drive influence and thought leadership in India's energy sector.

Want to contribute to this magazine?
Write to nandini@indianwindpower.com

Recent Advancements in Wind Turbine Blade Technology

A Critical Evaluation of Advancements in Wind Turbine Blade Morphology and the Potential for Recyclable Blades

Authors: Dr. Raj Shah, Parth Patel, Beau Eng and Gavin Thomas



Siemens Gamesa RecyclableBlades leaving Hull for the Kaskasi offshore development

As the world transitions to sustainable energy generation, wind power contributes significantly to international renewable efforts. Around 10% of power generation is generated by wind turbines [1], with that percentage growing every year. **Figure 1** further explores the viability and efficiency of wind power generation, as future predictions estimate wind power generation and capacity to greatly outrank current options. Therefore, alternative energy researchers have prioritised efforts to bolster wind turbine research, namely in the field of wind turbine blades, as they dictate the quantity of usable energy extracted from wind power.

Previously, turbine blades were designed through styling and gradual tuning at low operational speeds. Lacking

prerequisite knowledge, blade styling was often based on speculation rather than solid findings, and required frequent manual adjustment. This approach was gradually phased out as knowledge of wind turbines increased, and modern analyses utilise computer simulations that accurately model wind and blade conditions without requiring expensive trial runs. A multitude of analysis tools have subsequently emerged, including VABS, a tool used to analyse and model cross-sections of wind turbine blades; CROSTAB, a tool that facilitates the modeling of a blade using a layered shell structure; and FAROB, an engine that analyses the structural design of wind turbine blades [2]. These advancements in computational modeling and material science enable far more precise and effective blade designs when used in conjunction with aerodynamic models for potential blade designs.

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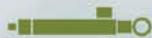
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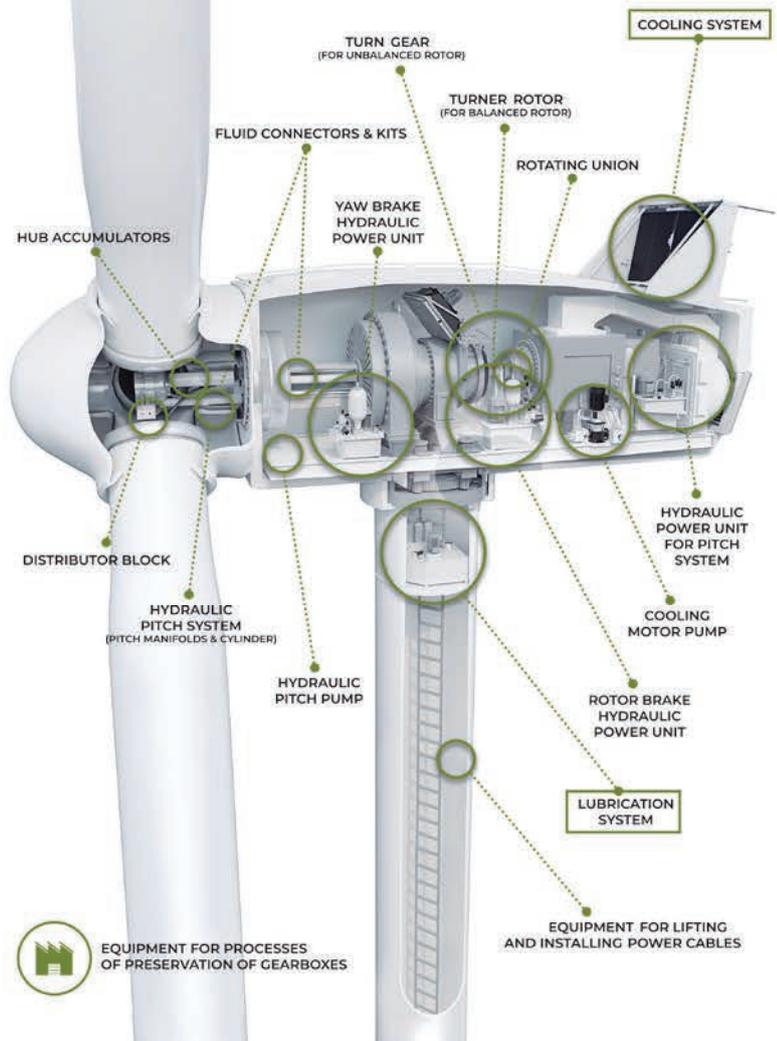


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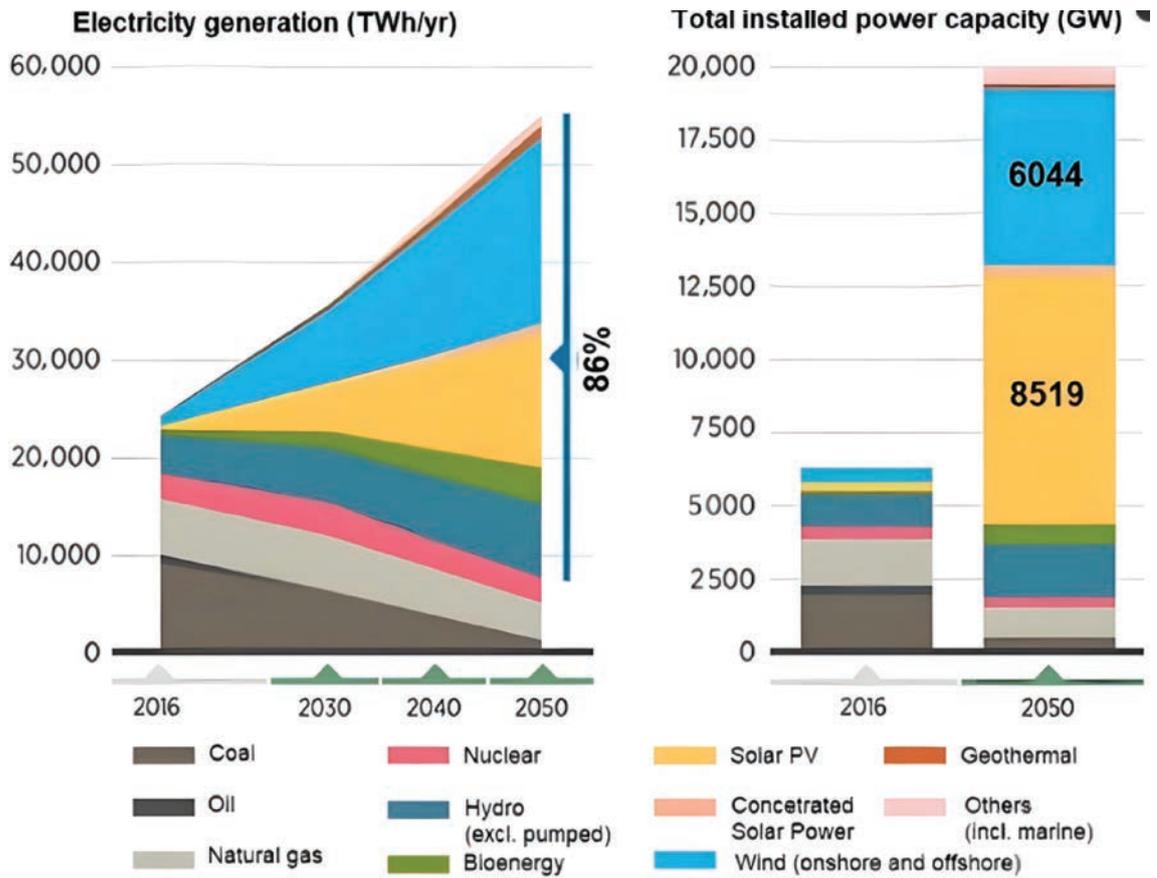


Figure 1: In depth statistics that include source of power generation (including wind)

This review presents several influential developments in turbine blade research within the past three years to provide a comprehensive understanding of modern innovations in turbine blade development and their impact on energy production and efficiency. Furthermore, present concerns about the long-term adaptation and sustainability of wind turbines are addressed, and studies aimed at developing adaptable and sustainable turbine blades are highlighted, determining the future state of wind turbine blade manufacturing and their role in modern energy generation.

V-shaped Blades

A significant advancement in recent wind turbine technology is the creation and enhancement of V-shaped blades. These blades were invented and patented by French engineer Georges Darrieus in 1931. Darrieus drew inspiration from earlier applications

of V-shaped blades in 7th century Afghanistan and 9th century Persia, where the first recordings of vertical axis wind turbines incorporating a v-shape emerged [3].

Almost a hundred years after their official invention, V-shaped blades are still being researched and incorporated in modern designs. For instance, Jie Su et al., affiliates of Shanghai Jiao Tong University [4], have assessed the performance of V-shaped blades in a recent study on wind turbine blade efficiency. This study was the result of the research group’s goal to address the mixed public attitude toward v-shaped blades by providing a definitive answer on the aerodynamic performance of V-shaped blades. The researchers designed the shape of these blades by moving the middle cross-section to the direction tangent to the blades’ rotor, thus creating the V-shape shown in **Figure 2**.

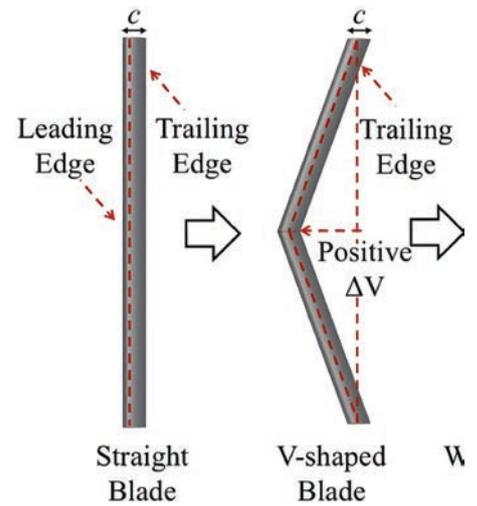


Figure 2: Diagram of Straight vs V-shaped Blades

Through computer simulations, the V-shaped blades were measured to have higher coefficients in both power and thrust parameters, with a maximum power coefficient and a maximum

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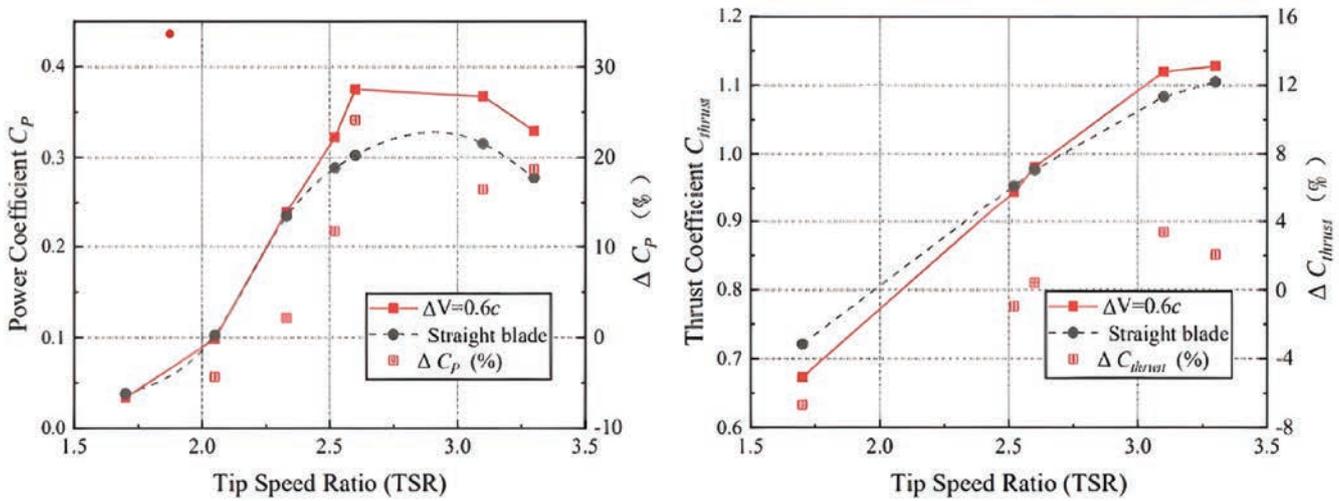


Figure 3: Results of V-shaped blades vs regular blade

thrust coefficient of 0.37 and 1.1, respectively, compared to the regular blades' maximum power coefficient and maximum thrust coefficients of 0.3 and 0.98, respectively. Furthermore, the V-shaped blades produced greater coefficients on average compared to the straight blades, as displayed by **Figure 3**. Those maximum values were recorded at medium and high tip speed ratios, which is the ratio of the speed of the blade tip to the speed of the wind, ranging from 2.5 to 3 [4]. While improvements seem marginal, the quantity of power generation within large wind farms is noticeably boosted with universal implementation of these blades. In this field, V-shaped blades remarkably improve power generation and efficiency without overhauling existing systems.

While V-shaped blades outperform traditional blades at moderate and high tip speed ratios, they tend to suffer at low tip speed ratios, where both the power and thrust coefficients of the V-shaped blades were equal to or less than the power and thrust coefficients of the straight blades. Furthermore, the results from the study were taken from a computer simulation, which is still not able to identically mimic realtime conditions. Nevertheless, since modern wind turbines typically operate



V-shaped blades offer a valid approach to bolster energy production without necessitating mass reform



The research team implemented Active Flow Control (AFC) with synthetic jet actuators, which allows for the manipulation of wind flow, optimising wind direction and turbine performance without significantly altering blade structure.

at higher tip speed ratios and computer simulations are still a great insight when studying a particular object, V-shaped blades are still observably superior to regular blades. Therefore, V-shaped blades offer a valid approach to bolster energy production without necessitating mass reform, bolstering universal wind energy production and guaranteeing an increase in energy efficiency and capacity.

Active Flow Control

Alternate strategies for improving power efficiency include synthetic materials and software-driven adaptability. These methods have directed a large quantity of research and development, as they are cost-effective and relatively simple to implement. These principles were demonstrated in a 2024 study conducted by Ahmad Nabhani et al., a research group affiliated with engineering institutions in Barcelona, Spain. In contrast to the method employed by Jie Su et al. [4], Nabhani’s team implemented Active Flow Control (AFC) with synthetic jet actuators. Implementing AFC allows for the manipulation of wind flow, optimising wind direction and turbine performance without significantly altering blade structure.

Therefore, this design implementation resolves the performance issues faced in non-ideal wind conditions such as increased turbulence and reduced drag, which both hindered energy production. The synthetic jet actuators were chosen for their ease of integration with existing blades and their low power consumption. To evaluate the jet actuators, the research group created a simulation where they measured the experimental wind turbines with the jet actuator against standard wind turbines without that technology. This simulation was performed via an Unsteady Reynolds-averaged Navier Stokes (URANS) [5] computer simulation. The URANS simulation was used because of the cost-effectiveness of the simulation’s computation. The group measured and compared the lift coefficient — how effectively a turbine blade generates

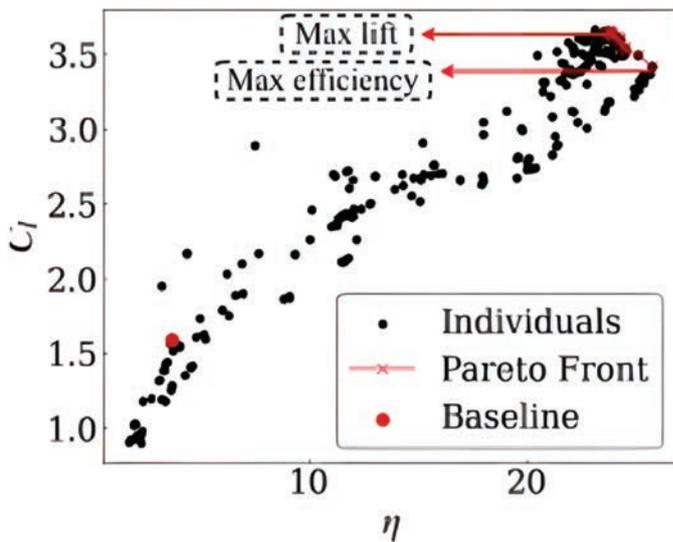


Figure4: Max lift and Max efficiency of the wind turbines versus airfoil efficiency

There are 400 data points which are represented by the black dots and there is also a red data point which represents the base-line value of the wind turbine with the base-line airfoil efficiency. The Pareto Front is located below as the point where both Max lift and Max efficiency are optimally compromised

wind force — which positively correlated with the turbine's power efficiency.

When simulating these jet actuators, the researchers determined that, for most of their trials, the lift coefficient of the blades that had greater airfoil (AFC) efficiency produced higher lift coefficients, as evidenced by **Figure 4** below. This finding yields great significance, as an increased lift coefficient correlates to higher power generation, demonstrating that the jet actuators increase power generation [6].

Furthermore, AFC implementation solves the critical issue of land availability. Land availability and scarcity is especially prevalent in suburban and urban areas, where usable land is in high demand for infrastructure and housing projects. This leads to the other finding that the researchers discovered, where the jet actuators were found to reduce downstream wake effects, which leads to increased wind turbulence behind wind turbines and a reduction in wind speed [7].

Significantly, reduced downstream wake effects allows wind turbine placement to be much closer to each other, maximising space efficiency as wind turbines can be placed closer without incurring turbulence [7]. Jet actuators not only improve energy output and efficiency, but also benefits land efficiency, directly enhancing the efficiency and performance of urban wind farms as a whole.

Recyclable Blades

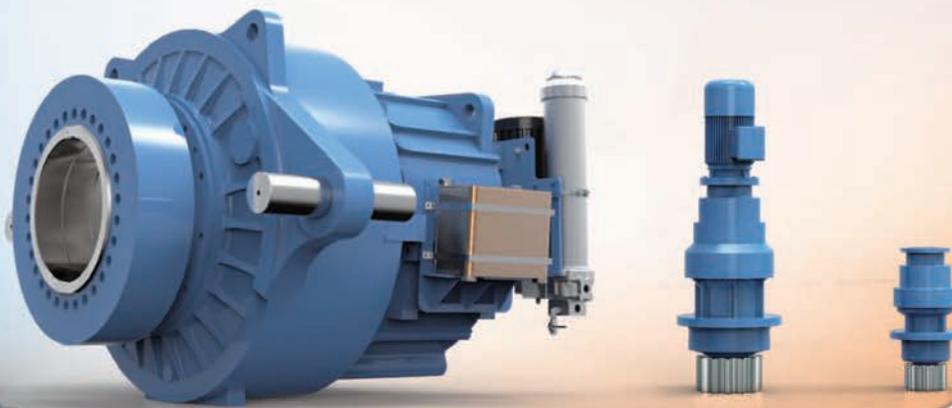
Despite numerous technological advancements, turbine blade disposal remains a significant issue. Constructed primarily from non-recyclable materials, these blades contribute to a considerable amount of material waste, leading to pollution and environmental degradation. To tackle this issue, Siemens Gamesa, a leading provider of wind power technologies and other environmentally conscious projects, is spearheading efforts to develop a sustainable and economically viable method for recycling turbine blades. Traditional blades use composite materials, such as glass fiber, carbon fiber, and polyethylene, which are encased in an incredibly sturdy and difficult to separate resin matrix. Because of this structure, recycling these blades becomes an impractical and costly task. The company's blades, however, employ a newly engineered resin that can be efficiently extracted using a mild acidic solution which does not affect the surrounding material. The resin reportedly has a greater than 95% certified recyclable rate set by the International Organisation for Standardisation's (ISO) procedure 14021 [9].

This breakthrough facilitates the recovery of blade materials and allows for the reuse of their materials in various industries, including automotive manufacturing and consumer goods. This resin is known as EzCiclo and is supplied by Swancor, a well-known Malaysian wind energy supplier that patented the resin in 2023 [9]. This



Despite numerous technological advancements, turbine blades, which are constructed primarily from non-recyclable materials, pose a significant disposal problem.

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Siemens Gamesa's sustainability initiative seeks to recycle over two million blades - for a total of 56 million tons of waste reduced

resin is the main reason Siemens Gamesa believe that their strategy will work, as it addresses all the problems with recycling turbine blades, paving the way for a greener planet [8].

Furthermore, Siemens Gamesa's initiative seeks to recycle over two million blades for a total of 56 million tons of waste reduced, assuming each blade weighs 28 tons on average. This goal is to be met by 2050, which is a monumental effort that could significantly reduce landfill waste and promote a circular economy, since wind turbine blades can be recycled to fuel new industries or into newer wind turbine blades [8]. As a result, this recycling method would lower the production cost of

new turbines with recyclable materials. By integrating these advancements with AFC and other significant turbine blade advancements, the wind energy sector can achieve greater power efficiency while significantly advancing sustainability efforts.

Conclusion

The recent advancements in wind turbine technology over the past three years, spanning from V-shaped blade configurations to active flow control (AFC) systems and recyclable blade materials, demonstrate the remarkable innovations in the field in both efficiency and sustainability. V-shaped blades yield a significant rise in energy output, and

AFC technology enhances aerodynamic performance while optimising the spacing of turbines within wind farms.

Siemens Gamesa's recycling initiative addresses waste concerns about wind turbine blades, offering a pathway for sustainable blade disposal and material reuse. These innovations and many others provide concrete pathways towards improving wind energy systems, enhancing power generation and mitigating the field's ecological footprint. As wind energy is critical for the transition to renewable power, embracing these advancements is essential for maximising efficiency, minimising waste, and fostering long-term sustainability in the energy sector. ■



As wind energy is critical for the transition to renewables, embracing these advancements is essential for maximising efficiency, minimising waste, and fostering long-term sustainability

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AUTHORS



Dr. Raj Shah serves in the role of Director at Koehler Instrument Company in New York, with an impressive 28-year tenure with the organisation. Recognised as a Fellow by his peers at eminent organisations such as IChemE, AOCS, CMI, STLE, AIC, NLGI, INSTMC, Institute of Physics, The Energy Institute, and The Royal Society of Chemistry, he stands as a distinguished recipient of the ASTM Eagle award. Dr. Shah, a veteran in the field, recently coedited the

highly acclaimed 'Fuels and Lubricants Handbook,' a bestseller that unravels industry insights.

In tandem with his role as an Adjunct Professor at the State University of New York, Stony Brook, in the Department of Material Science and Chemical Engineering, Dr. Shah's impact spans over three decades in the energy industry, with a prolific portfolio of over 650 publications. Dr. Shah can be reached at rshah@koehlerinstrument.com

This article was co-authored by Parth Patel, Beau Eng and Gavin Thomas, chemical engineering students at the State University of New York at Stony Brook and interns in the Alternative Energy Technologies program at Koehler Instrument Company.

Introducing WIND INDIA

Charting a Path to Support the Indian and Global Wind Industries

Wind India - a new strategic initiative from IWTMA - was launched on 29 April 2025 in Chennai, in the presence of our Chairman Mr. Girish Tanti, Vice Chairman-cum-Secretary Dr. Saravanan Manickam, Dr. Alarmelmangai IAS, Executive Director, TN Guidance, and Dr. Rajesh Katyal, Director General, NIWE.

Wind India will encompass IWTMA's flagship series of conclaves, roundtables, close door brainstorming sessions, conferences and events - all targeted towards conversations and resolutions to strengthen India's roadmap towards making 100 GW of wind energy by 2030 a reality.

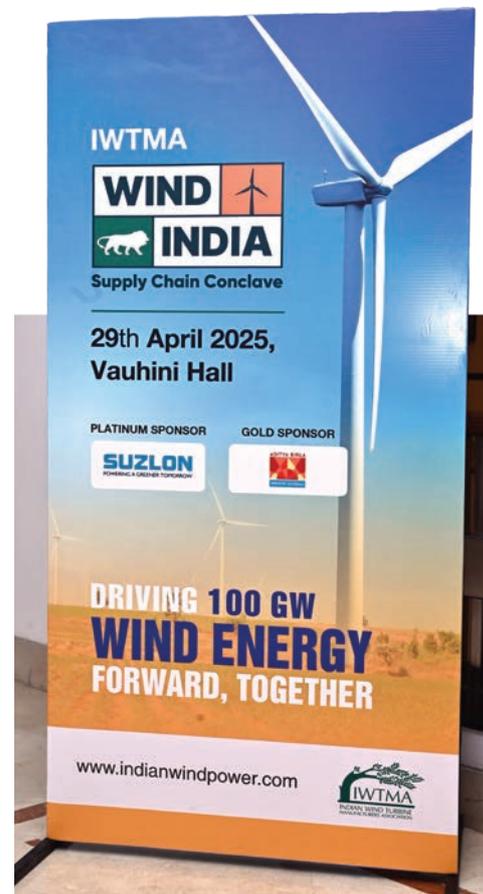
The IWTMA Conference for Component Manufacturers 2025 was the first event under the Wind India banner. It was, incidentally, also the first-ever

national conference for component manufacturers in the Indian wind industry, and a significant step in uniting the entire wind energy ecosystem, and aligning it with our national renewable energy aspirations.

The Conference served as a powerful platform to:

- Showcase the capabilities of the component suppliers in capacities and technical innovations
- Address challenges faced by component manufacturers
- Foster partnerships and collaboration, and
- Emphasise the critical role of policy support at both central and state levels

It marks the beginning of a more integrated and focused approach to scaling up India's wind sector, under



The Wind India logo on display at the IWTMA Conference for Component Manufacturers 2025 in Chennai

IWTMA's Wind India umbrella.

Mr. Tanti said: "I am confident that this platform will emerge as an empowering and collaborative space for all of us and other stakeholders of the sector in the coming years. I look forward to your support and enthusiastic participation in all events of Wind India." ■



Unveiling the Wind India logo are (L - R) Mr. Aditya Pyasi; Mr. Girish R. Tanti; Dr. Alarmelmangai, IAS; Dr. Rajesh Katyal; Dr. Saravanan Manickam



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Thanks to modern technologies, the implementation of SAP and a resilient, local supply chain, we are optimally positioned for the future. Our solid base and family-owned corporate structure enable us to grow further, particularly in the areas of services and training.

We will continue to invest in new locations and product generations. Thank you for your trust.

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2,900
CUSTOMERS

we have reached with
our services and
products

49,000
PROJECTS

have been completed
by us in the wind
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COUNTRIES

were quickly and
reliably supplied with
access technology

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IWTMA Roundtable (Tamil Nadu) 2025



The IWTMA Roundtable has been planned as a space where key stakeholders of the wind sector have the opportunity to discuss compelling industry issues with Government officials. On 29 April 2025, IWTMA Roundtable (Tamil Nadu) 2025 took place at Hotel Green Park in Chennai. In attendance were the Honourable Dr. Alarmelmangai, IAS (Executive Director of Guidance Tamil Nadu) and Dr. Rajesh Katyal (Director General of the National Institute of Wind Energy), who met with top industry representatives, including those from IWTMA member companies. Repowering, state road development, possible incentive schemes, creating a strong talent pool, investments - were all discussed, among other topics.

At a time when the energy transition to renewables needs to be ramped up and the Indian wind sector has a target to deliver 100GW by 2030, it is essential for the entire wind ecosystem to work together, in collaboration. We hope to build these Roundtable meetings into regular and effective dialogues between Industry and Government.

IWTMA Conference for Component Manufacturers 2025

A Glimpse into the Discussions on 29 April 2025

The IWTMA Conference for Component Manufacturers 2025, themed 'How to Achieve the 100GW Wind Power Target by 2030: From Concept to Reality,' brought together leading players in India's wind energy sector to discuss the latest advancements, challenges and opportunities in component manufacturing.

Inaugural Session

The Conference began at 11:30AM with the Lamp Lighting & Inaugural Session featuring the following key dignitaries:

- Welcome Address: Dr. Saravanan Manickam, Vice Chairman-cum-Secretary, IWTMA
- Inaugural Address: Mr. Girish Tanti, Chairman, IWTMA

- Introduction: Mr. Aditya Pyasi, CEO, IWTMA
- Special Address: Dr. Rajesh Katyal, Director General, NIWE
- Chief Guest: Dr. Alarmelmangai, IAS, Executive Director, Guidance Tamil Nadu

The conversation during this session centered on the need for the Indian



Key dignitaries light the lamp to inaugurate the Conference

wind sector to pool its collective efforts and collaborate to take the industry forward. Dr. Saravanan and Mr. Tanti touched upon the potential held by the industry at this unique time, and its responsibility to rise up to the global challenges of climate change. Dr. Katyal spoke on the expertise contained within the domestic wind manufacturing sector and how the government can help it reach its potential, while Dr. Alarmelmangai promised full support from the government trade agency for the industry.

Presentation 01

Mr. Sidharth Jain, Founder and CEO of MEC Intelligence, presented an in-depth take on the 'Competitive and Collaborative Approaches to Build Supply Chain for Wind,' in two parts.

He first gave a complete picture of the Indian wind sector's 'Supply Resilience for 140 GW Ambition,' expanding on the sector's need to establish strategic logistics alliances, setting up standards, building strategic collaborations on duties and taxes, collaborating on circularity initiatives and ESG compliances, and more.

The message is clear: In order to meet India's wind energy targets, scaling resilient domestic component



IWTMA CEO Mr. Aditya Pyasi speaks about the Indian wind sector

manufacturing is essential for timely, cost-effective, and competitive wind energy deployment.

Mr. Jain later outlined India's 'Potential to be a Global Export Hub.' He stated that globally, a supply shortfall is expected by 2030, creating an opportunity for low-cost countries like India to step in and become a key supply chain player. With existing global integration and scalable capacity, India can supply up to 40% of nacelle and up to 25% of the projected global needs across key components. So, enhancing manufacturing, forging

strategic alliances, and optimising logistics will serve to position India as a competitive global wind energy export hub.

Mr. Jain's presentation provided not just insightful data points, but also set the context for the two respective panel discussions that followed.

Panel Discussion 01

The first panel discussion was on "How the Component Industry Can Support to Meet 100 GW Wind Capacity by 2030". The distinguished panel offered the delegates a wealth of insights into how India can further strengthen its domestic manufacturing and supply chains.

Key discussion points included:

- Main challenges faced by each company and strategies to overcome these challenges
- Government support needed, localisation and BIS standards
- Promotion of Make in India initiatives
- Company contributions to the 100 GW industry target

A special thanks to the panel ensemble for their expert contributions -



Mr. Girish R. Tanti, Dr. Alarmelmangai, IAS, Dr. Rajesh Katyal, and Dr. Saravanan Manickam at the Inaugural Session

Moderator:

Mr. Gurpratap S. Boparai, CEO - Manufacturing Business, Suzlon Energy

Panelists:

Dr. Venkataraman Balakrishnan, President, Advanced Materials-Aditya Birla Chemicals

Mr. K. Bharathy, CEO and Managing Director, Windar Renovables

Mr. Durga Prasad Amudalapalli, Managing Director, Gurit Wind Pvt Ltd

Mr. Manoj Daur, Chairman & Managing Director, Mankiewicz Coating Solutions

Mr. Vivek Raut, Sales Leader Renewable Energy Segment, Owens Corning India

Mr. Dinesh Jagdale, Head - Corporate Affairs and Retail Business, Suzlon Group

Mr. Deepak Pohekar, Plant Head and Executive Director, ZF Group Wind Power

Mr. Ankit Bahri, Head - Wind Energy Business Unit, Schaeffler

Mr. Arun Sasidharan, Regional Sales Leader, LM Wind Power

quality control, quality standards, hallmarking, and much much more - all across numerous product groups. Her crisp and lively presentation showcased not only how BIS is modernising and digitising, but also how the wind industry can work hand in hand with the agency for improving the manufacturing standards in India.

Presentation 02

The afternoon saw an insightful presentation by Ms. G Bhavani, Scientist F/ Senior Director and Head - Chennai Branch Office at the Bureau of Indian Standards (BIS) on 'BIS for the Wind Industry.'

Ms. Bhavani captivated the audience with her knowledge and passion about



Panel Discussion 02

The second panel discussion was on the "Evolving Global Wind Industry: Positioning India as a Leading Wind Component Manufacturing Hub". The distinguished panel, all from companies with a strong export focus, had a lot of insights to offer. The discussion revolved around how India can achieve a 10% share in the global wind energy market.

A special thanks to the panel ensemble for their expert contributions -

Moderator:

Mr. Madanagopal Raghavan, Vice President / Director - Procurement, Nordex

Panelists:

Mr. Pandu Chillakuru, Whole Time Director, Flender



The panel discussion on 'Evolving Global Wind Industry' (above); Mr. Sidharth Jain presenting on 'Competitive and Collaborative Approaches to Buils Supply Chain for Wind' (top)

Contributing to India's Energy Transition

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4 Bn kWh of clean energy generated

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Achieved 1.3 Mn safe man hours in 2024



The panel discussion on 'How the Component Industry Can Support to Meet 100GW Wind Capacity by 2030'

Valedictory Session

All good things come to an end, and so did the IWTMA Conference for Component Manufacturers 2025. Dr Venkataraman Balakrishnan wrapped up the day's highlights with his Concluding Remarks, and Mr. SP Murali gave the Vote of Thanks.

In summary, here are the Key Takeaways for the industry:

1. Continue building a resilient and scalable local supply chain for wind energy components.
2. Ramp up local manufacturing capacities to meet growing domestic and global demand.
3. Invest in capability development, including workforce skills and advanced manufacturing practices.
4. Foster disruptive innovation and strive for global excellence in product and process.

5. Engage continuously with government bodies to secure:
 - Supportive policies and incentives,
 - Improved road and port infrastructure, and
 - Streamlined land acquisition processes, especially at the state level.

6. Ensure consistent annual installations of at least 10 GW for the next 5 years to stay on track.

This event has set the ball rolling, and we will continue, as companies and as an industry, to make meaningful progress towards the goal of 100GW by 2030. ■



Dr. Saravanan Manickam presenting a token of thanks to Smt. G. Bhavani of BIS



Delegates from the component manufacturing sector were immersed in the discussions and points raised



IWTMA extends a warm welcome to all our new members. We introduce you to three of them here: HEFT Energy, Jindal Steel & Power, and Venwind Refex. We will cover the other new members in the following issues.

WELCOME
IWTMA NEW MEMBER

HEFT Energy: Powering the Future



HEFT Energy offers integrated heavy lifting and EPC solutions with a strong emphasis on wind, solar and hybrid projects

HEFT Energy Private Limited, founded with a clear mission to accelerate the renewable energy transition, brings together a team of highly experienced professionals with 40+ GW of collective industry experience. We cover the entire project lifecycle with technical depth and execution excellence, from concept to completion, from hybrid integrations to asset management.

As a part of HEFT Cranes International – a global pioneer in heavy-lift solutions – HEFT Energy draws on a legacy of strength, innovation, and trust. Though young in years, our capabilities rival industry veterans – delivering over 1.5 GW of Wind, Solar, and Hybrid energy projects annually with precision, agility, and purpose.

What We Do

HEFT Energy offers integrated heavy lifting and EPC solutions with a strong

emphasis on wind, solar and hybrid projects. As a trusted partner in the clean energy value chain, the company specialises in the deployment of high-capacity cranes and precision-engineered project execution services.

Driven by a commitment to safety, quality, innovation, and sustainability, HEFT Energy aims to provide end-to-end project delivery of 'Concept to Completion'. The company's core philosophy revolves around exceeding client expectations while adhering to global standards of safety and operational excellence.

At HEFT Energy, we are not just building energy projects – we are crafting the future of clean power, one megawatt at a time. Our commitment to sustainability is matched only by our drive to deliver – faster, smarter, and greener.

Together, from concept to completion, we're building a cleaner, greener planet.

About the CEO

The driving force behind the company, Rajakumar K – CEO & Director of HEFT Energy – is a pivotal leader in the renewable energy sector, with more than three decades of experience and 10+ GW of renewable projects commissioned. He is an Executive MBA holder from Harvard Square, an alumnus of IIM Calcutta and IIM Bangalore.

By strategically addressing critical market gaps and real-world customer challenges, the company has quickly positioned itself as a rising force in India's dynamic clean energy sector.

Rajakumar K
CEO & Director



Jindal Steel and Power: Enhancing Capabilities And Enriching Lives

WELCOME
IWTMA NEW MEMBER

Jindal Steel and Power (JSP) is one of India's leading business houses, with a significant presence in steel, mining, power and infrastructure. With business operations spanning across India, Africa, and Australia, JSP has firmly established itself as a global player in its chosen industries.

What We Do

JSP is a leading player in the steel industry, renowned for its robust steel business. With cutting-edge manufacturing facilities, JSP offers a wide range of customised and standardised high-quality steel products from its integrated steel plants in India. Some of JSP's prominent focus areas continue to be innovation, excellence and sustainability, evident in its business operations that result in eco-friendly and high-performance steel solutions that contribute to a more sustainable future.

The company serves various sectors with its diverse product portfolio, including infrastructure, construction and automotive, establishing a formidable presence for JSP in both domestic and international markets across 36+ countries.

Under the visionary leadership of Mr Naveen Jindal, JSP has achieved remarkable growth. Currently, the company offers a product portfolio that caters to markets across the entire steel value chain and contributes to realising the vision of Make in India. The organisation's focus on innovation, enhancing capabilities and enriching lives continue to propel its growth and commitment towards building a self-reliant nation.

*Naveen Jindal,
Chairman - Jindal Steel and Power*



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Venwind Reflex: Advancing Sustainability, Enhancing Efficiency

WELCOME
IWTMA NEW MEMBER

Venwind Reflex is a wind turbine manufacturing company promoted by Reflex Industries Limited, a company listed at NSE with around \$1 billion market capitalisation in joint venture with AVAA trading group, having vast experience in the wind energy field. The Reflex group has diversified businesses, including refrigerant gases, ash and coal handling, medical equipment manufacturing, mobility services through EV cars, and the pharma sector.

What We Do

Venwind operates in technical collaboration with Vensys Energy AG, Germany, a global leader in innovative wind turbine technology. Vensys specialises in permanent magnet generator (PMG) designs, ensuring maximum efficiency, reliability, and sustainability.

Venwind has its sourcing collaboration with Goldwind, China, the world's largest company in wind turbine manufacturing and supply.

In a significant step towards advancing wind energy solutions in India, Venwind has signed a License Agreement with Vensys to manufacture the GWH 182 5.3 MW wind turbine in India.

At Venwind, we are committed to:

- Advancing sustainability through cutting-edge wind energy technology.
- Enhancing efficiency and reliability with state-of-the-art permanent magnet generator technology.
- Shaping a greener and cleaner future by promoting renewable energy solutions.

With a strong foundation in innovation and expertise, Venwind is poised to revolutionise the wind energy landscape in India and beyond.



Venwind, in technical collaboration with Vensys Energy AG, specialises in permanent magnet generator designs (pictured: Venwind product images)

Klübersynth BEM 48-1501

Emergency grease for roller bearing applications

The emergency grease that turns downtime into drive time.

When main bearings in wind turbines are already damaged, every extra hour of uptime matters. Klübersynth BEM 48-1501 is a high-performance emergency grease formulated to lubricate and protect already worn or damaged rolling bearings—especially main bearings in wind turbines—giving operators a critical edge in managing maintenance schedules and avoiding costly unplanned shutdowns.

This specialty grease forms a resilient lubricating film, supported by solid lubricants, EP additives, and high-viscosity base oil to shield against further wear. It allows continued operation even under high loads, extreme temperatures, and compromised bearing conditions—ensuring turbines keep turning until repair is possible.

Whether for damage control or emergency readiness, Klübersynth BEM 48-1501 is the solution that buys you time, protects your equipment, and keeps your power flowing.

Trust Klübersynth BEM 48-1501 to deliver reliability when it matters most.

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Reduction in unplanned
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WindEurope 2025: Scaling Up for a Sustainable Future

Takeaways from the Annual Event Held in April 2025

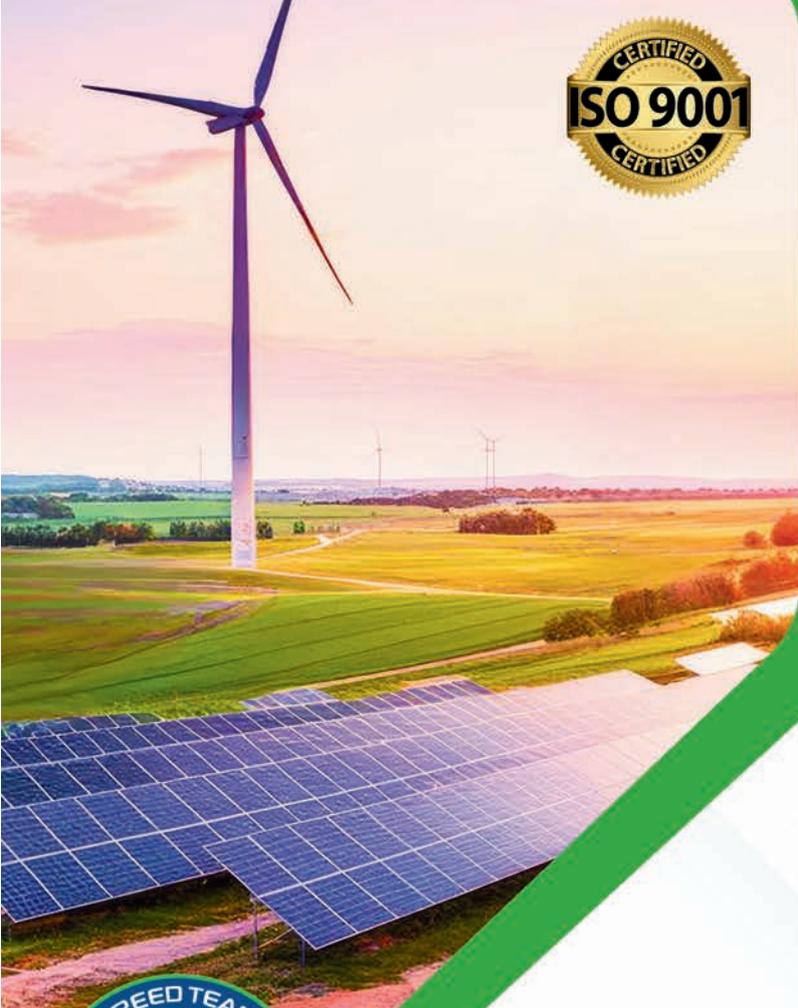


The theme at WindEurope 2025 was 'Scale Up, Electrify, Deliver' (top); Over 16,000 participants and 550 exhibitors gathered at Copenhagen for the 3-day event

The WindEurope Annual Event took place in Copenhagen from 8 to 10 April 2025. More than 16,000 participants and 550 exhibitors congregated at the Danish capital, united under the theme 'Scale Up, Electrify, Deliver,' highlighting wind energy's role in strengthening Europe's energy security and competitiveness amid growing demand and geopolitical challenges.

A key focus was electrification, with wind power driving the transition to a sustainable energy system. Discussions centered on accelerating deployment through grid integration, digitalisation, and cross-border collaboration,





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(India & Sri Lanka)

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Engineers Working in Wind
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2,000 +
Major Components
Replaced
USING DLI METHOD

3000+
GW

GLOBAL WIND ORGANISATION
TECHNICIANS GWO
CERTIFIED

Craneless revolutionary



WIND TURBINE
MAJOR COMPONENT
REPLACEMENT SERVICES



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Snapshots from The Pavillion at WindEurope 2025



What is the Copenhagen Call to Action?

The wind energy sector launched the Copenhagen Call to Action at WindEurope 2025, which outlines three specific recommended measures to boost Europe’s energy independence and competitiveness:

- Swift implementation of new EU licensing rules, so that more wind energy projects can be realised faster.
- Removing barriers to electrification, including through state support for renewable Power Purchase Agreements.
- Reducing investment risks through a stable stream of two-sided Contracts for Difference (CfD) auctions, which provide predictable revenues and lower capital costs.

alongside exploring offshore wind’s vast potential.

Strengthening the supply chain was another priority. Participants stressed that scaling up requires a resilient European manufacturing base and skilled workforce, calling for investments in innovation, production, and training.

Event Highlights

Over three days, the conference featured keynotes, panels, and thematic sessions, bringing together policymakers, industry experts, and researchers to tackle the sector’s biggest challenges and opportunities. Each day focused on a core theme:

Day 1: Scale Up, Electrify, Deliver – Strategies for rapid expansion.

Day 2: Wind as Europe’s Competitive Edge – Boosting economic growth through renewables.

Day 3: Revitalising Offshore Wind – Overcoming barriers to progress.

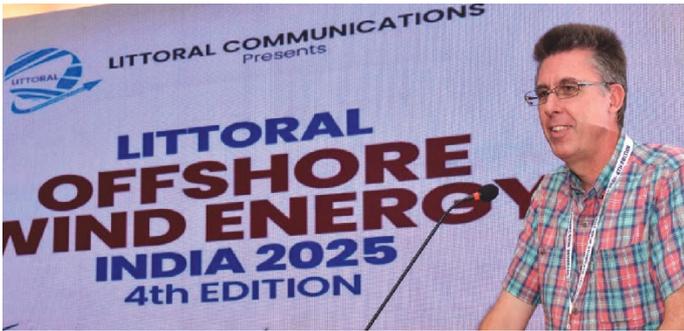
The event underscored actionable solutions and partnerships to advance Europe’s wind energy ambitions. On the business side, many notable contracts were signed at the event, by organisations such as GE Vernova, Forestalia, ScottishPower Renewables, HSM Offshore Energy, Green Power Denmark, Ukrainian Wind Energy Association, DEME, and more.

WindEurope 2026 Annual Event is scheduled for 21-23 April 2026 in Madrid, Spain. ■

All photos © WindEurope

Littoral Offshore Wind Energy India 2025

Highlights from the Event



Images from the event (courtesy: Littoral Communications)

The Littoral Offshore Wind Energy India 2025 (4th Edition) Seminar was organised by Littoral Communications on 12 April 2025 in Chennai. A spectrum of representatives and stockholders attended the seminar. Some highlights:

Mr. Harmis Jose, a Port & Marine Infrastructure expert, provided an insightful 'Developer's Perspective' for establishing offshore wind energy firms in India. He took the attendees through the journey so far covered in terms of Policy Frameworks by Govt. of India. He touched on the 'National Offshore Wind Energy Policy' and updated the audience on the availability of Stage I clearances (In-principle clearance) from the concerned Ministries for notifying the offshore wind energy blocks. The Offshore Wind Energy Lease Rules and the Guidelines for Implementation of Viability Gap Funding (VGF) Scheme for

Offshore Wind Energy Projects were also highlighted by Mr. Jose, among other pertinent topics in the offshore wind space.

Mr. Senthil Ram from Tata Consulting Engineers (TCE) briefed the audience on the hooking up of offshore wind power to the onshore grid through offshore sub-station and appropriate power transmission infrastructure. He highlighted the technical parameters thus bringing a technical flavour to the session.

Mr. Saurabh Antani from HR Wallingford explained the phenomenon of scouring for sub-sea cables and foundations and other environmental issues including noise that could be expected from offshore wind firms.

Mr. Christopher, from Jan De Nul- India, highlighted the importance of adequate

sub-soil investigation and required port infrastructure to handle the offshore wind farm turbines.

Mr. Supun Deshaprema, Acting Deputy High Commissioner of Sri Lanka, enumerated the offshore wind firm potential available along Sri Lankan coast and the conducive policy initiatives taken up by their Government.

Mr. M.A. Sekar, Sr. Policy Advisor-Maritime Affairs and Mr. M. Ilango, Ex. MLA & President- National Fishworkers Forum (NFF) highlighted the sociological perspective and advocated appropriate employment opportunities for the local fishermen.

Earlier Raja Vaiz, Chairman Littoral Communications, welcomed the Speakers and the audience. Kalaivasmi, CEO Littoral Cruises Limited, thanked the participants on behalf of the company. ■

Road to Windergy India 2025

Helping to Drive India's Wind Energy Growth



Windergy India is a high-impact forum where industry leaders can drive progress and shape the future of wind energy in India

India's wind energy sector is rapidly advancing, with an ambitious goal of achieving 100 GW of capacity by 2030. As of March 2025, the country has already surpassed 50 GW of installed capacity, driven by robust investments in technology, workforce development, and an expanding domestic manufacturing ecosystem, which boasts an annual production capacity of 18 GW for wind turbines and components.

Trade Fair & Conference

Windergy India 2025 stands at the forefront of India's wind energy journey, serving as the premier International Trade Fair and Conference dedicated to the sector. Scheduled from October 29-31, 2025, at Chennai Trade Centre, the event will provide a vital platform for collaboration, knowledge exchange, and business opportunities.

With 70% of exhibition space already sold, all the leading industry players are part of the show, such as Suzlon, Envision, Senvion, Nordex, Adani, SANY, ZF, Bonfiglioli, Flender, WEG, Timken, and many more. Windergy India 2025

is shaping up to be a landmark event, bringing together key stakeholders to accelerate India's wind energy transformation.

Supporting Partners

This pivotal event is supported by leading government agencies and industry visionaries, including the Ministry of Power (MoP), Ministry of New and Renewable Energy (MNRE), India Energy Storage Alliance (IESA), Indian Wind Power Association (IWPA), International Solar Alliance (ISA), Skill Council for Green Jobs (SCGJ), Wind Independent Power Producer Association (WIPPA), Solar Energy Corporation of India (SECI), Composites Excellence Centre of Asia (CECA), and National Institute of Wind Energy (NIWE).

Why Register?

Windergy India 2025 ensures a dynamic platform for innovation and collaboration within the renewable energy sector. Their collective participation guarantees a high-impact forum where industry leaders can drive progress and shape



7th International Trade Fair & Conference

29-31 October 2025

Chennai Trade Centre, Chennai, India

the future of wind energy in India.

Attendees can expect insightful discussions, networking opportunities, and an exhibition floor featuring the latest innovations in wind power technology, manufacturing, and sustainable energy solutions. Policymakers, regulatory authorities, investors, green power providers, technology developers, industry leaders, and global experts will converge to advance the clean energy transition and address emerging opportunities in the sector.

Windergy India 2025 invites all stakeholders to be part of this transformational event that will define the future of wind energy in India and beyond.

For more details, visit www.windergy.in. ■

India News

Santosh Kumar Sarangi Appointed Secretary of MNRE

Santosh Kumar Sarangi, a 1994-batch Indian Administrative Service (IAS) officer of the Odisha cadre, has been appointed Secretary, Ministry of New and Renewable Energy (MNRE), according to an official notification. He takes over from Nidhi Khare, who was holding the post as an additional charge.



With a career spanning three decades in various capacities at both the Centre and in the Odisha government, Sarangi brings extensive administrative and policy experience to his new role at MNRE. His tenure as MNRE Secretary began on April 18, 2025.

Sarangi holds an M.Phil. in Political Science and has previously held key roles such as Principal Secretary, Science & Technology Department, Odisha; Chairman and Managing Director of the Odisha Mining Corporation (OMC); and District Magistrate in several districts.

During his central deputation, Sarangi has held multiple strategic positions. In his role as Director General of Foreign Trade, Sarangi was responsible for formulating and implementing the Foreign Trade Policy, promoting exports, and ensuring policy alignment with India's global trade commitments.

His appointment comes at a critical time for MNRE as the ministry continues to implement India's renewable energy roadmap targeting 500 GW of non-fossil fuel capacity by 2030.

Source: *Economic Times* | 21 April 2025

IWTMA announces a new CEO for the Association



Mr. Aditya Pyasi brings 20 years of experience across the value chain of power, renewables & manufacturing sectors. He has been a founding team member of Indian Energy Exchange (IEX) and worked in Central Electricity Regulatory

Commission early in his career. He has held leadership positions in Corporate Strategy, Regulatory and Govt

Affairs in Reliance Infra, Vedanta Ltd and Statkraft India spanning more than a decade.

His demonstrated expertise in navigating complex policy, regulatory, and corporate strategy issues across renewables, notably the RPO & REC regulations, GNA & transmission connectivity, remission of duties on exports (RoDTEP) etc., will hold him in good stead at his new role with the Association.

Aditya holds a Bachelors in Electrical Engineering from the Delhi College of Engg and a Masters in Finance from Georgia Tech (Atlanta, US), with international publications in power & finance cited widely. His hobbies include marathons, yoga and travel.

Wind Sector Investing In Tech, Workforce To Reach 100 GW By 2030: IWTMA



At a high-level meeting with MNRE recently, IWTMA outlined the industry's readiness to scale up manufacturing, generate employment, and advance the 'Make in India' mission, the industry body said in a statement.

Leading players, including Suzlon Group, Nordex, Windar Renovables, Senvion India, Envision Energy, Siemens Energy, Flender, ZF Group, and Aditya Birla - Advanced Materials, manufacture critical parts – blades, nacelles, gearboxes, generators, and towers – within the country.

This strong value chain supports both domestic demand and India's emergence as a potential global export hub for wind equipment, IWTMA said, adding that the wind energy sector is set to become a major employment generator.

IWTMA also stressed the need for continued policy support, streamlined regulations, and improvements in infrastructure and testing facilities to realise the sector's full potential.

"The Indian wind industry is fully aligned with the government's clean energy vision. We are investing in capacity, technology innovation, and workforce development to achieve 100 GW of wind energy by 2030," said Aditya Pyasi, CEO, IWTMA.

Source: *Business Standard* | 04 May 2025

International News

GWEC's Global Wind Report 2025 Released

The Global Wind Energy Council (GWEC) released their annual Global Wind Report 2025. This report assesses where the industry stands today—highlighting new legislative wins and market expansion, but also confronting critical challenges like macroeconomic pressures, fragmented trade, supply chain misalignment, and disinformation. It sets out a roadmap to overcome these barriers, backed by a clear call to action. With supportive policies, collaborative planning, and targeted investment, wind energy can scale rapidly to unlock economic growth, energy security, and a clean energy future.

The report highlights India as a top market for new wind installations. In 2024, India

ranked fourth globally for new wind capacity additions, contributing to 81% of global wind growth. This momentum is powered by strong government policy support, including ambitious annual auction targets of 10 GW, strategic investments in transmission as well as skill development.

The report mentions the Government of India's Vayumitra Skill Development Programme as a transformative initiative, training over 5,000 technicians in its first phase alone to meet the sector's growing workforce needs. Globally, the wind sector is projected to generate 3.3 million direct jobs by 2025, and India's dedicated skill-building efforts ensure it will capture a significant share of these



opportunities.

The 2025 report delivers a firm call to action: governments, industry and civil society must work together to accelerate wind energy deployment at scale. It provides a roadmap that lays the foundation to scale from today's growth trajectory to the 320 GW per year needed by 2030.

Download the full report at gvec.net/reports/globalwindreport

First Wind Turbine for Germany's Largest Wind Farm has been Installed



The first wind turbine for EnBW He Dreiht, Germany's largest offshore wind farm currently under construction, has been installed, marking an important milestone in the project's construction phase.

He Dreiht is a world debut in technical terms as the largest 15 MW wind turbine available on the market (from Vestas) will be used for the first time. A single rotation of the rotor is enough to supply four households with electricity for a day.

Once completed, the 64 wind turbines with a total output of 960 MW will be able to produce enough electricity to supply the equivalent of 1.1 million households. This mega wind farm will have an output comparable to conventional modern-day power plants.

Source: *Energy Global* | 28 April 2025

How Climate Change's Influence on Wind Patterns Is Affecting the Wind Power Industry

Climate change is altering global wind patterns, creating challenges for the wind energy sector. Studies indicate that shifting atmospheric circulation, driven by rising temperatures and changing pressure systems, is causing wind speeds to fluctuate unpredictably in key regions. Some areas, like parts of Europe and the US Midwest, are experiencing weaker winds, reducing energy output from wind farms. Conversely, other regions, such as the UK and Australia, may see increased wind speeds, though extreme variability complicates long-term planning.

These changes threaten the reliability of wind power, a crucial renewable energy source for decarbonisation. Lower wind speeds can decrease turbine efficiency, leading to financial losses for energy providers. Additionally, more frequent extreme weather events—such as storms and prolonged calm periods—pose operational risks, including infrastructure damage and inconsistent power generation.

To adapt, the industry is investing in advanced forecasting models, turbine technology, and energy storage solutions. Some companies are relocating turbines to windier areas or designing larger, more efficient blades to harness lower wind speeds. However, these adjustments require significant investment and policy support.

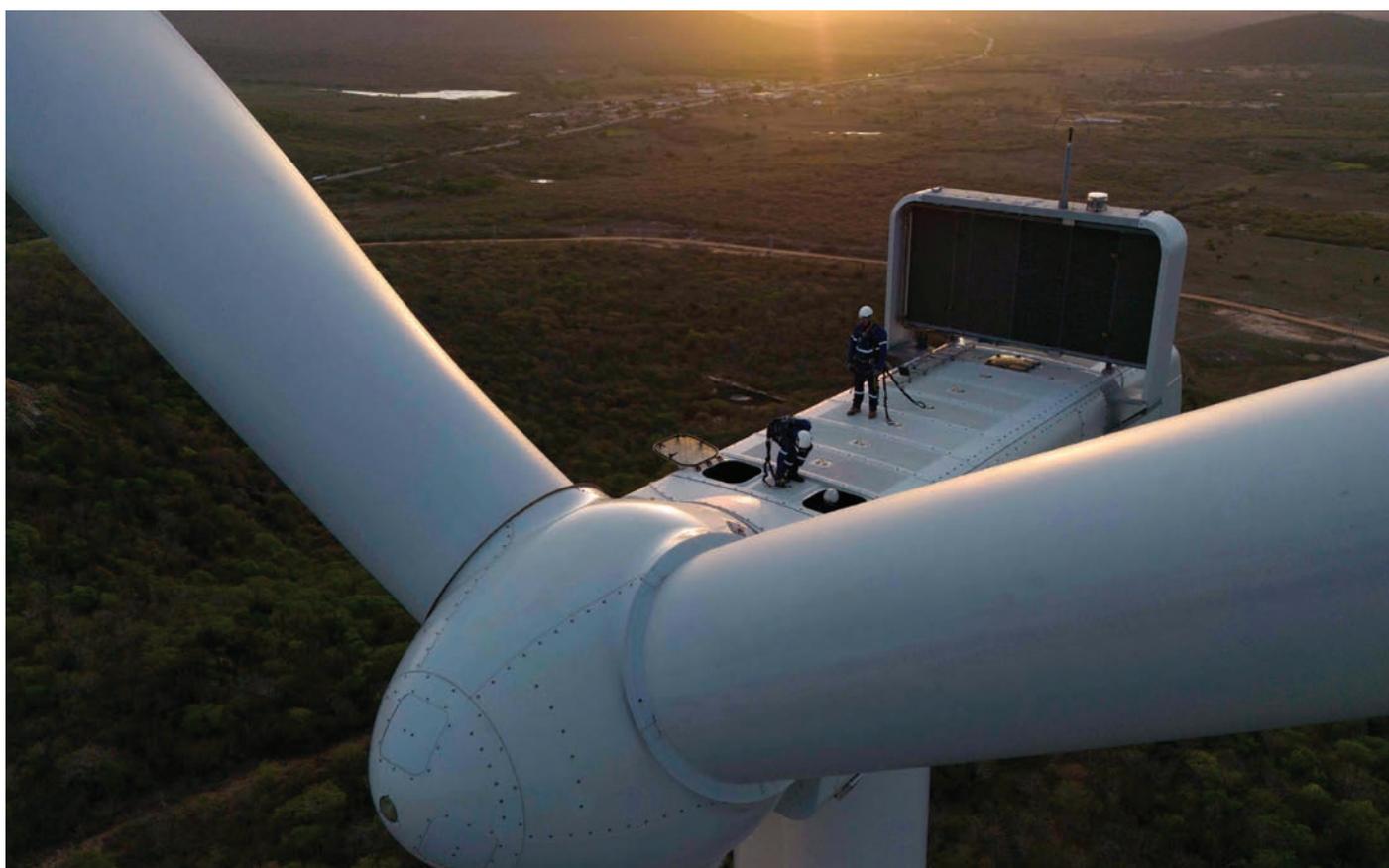
Policymakers and industry leaders must collaborate to enhance grid resilience and integrate complementary renewables like solar to offset variability.

Source: *Earth.Org* | 16 April 2025

India Wind Energy Market Outlook 2025

Wind is a Key Player in the Country's Energy Transition

This is an extract from the Global Wind Report 2025 by GWEC



The Report outlines how, with rising energy demand driven by industrialisation and urbanisation, wind energy is crucial to India's goal of achieving 500 GW of non-fossil capacity by 2030 and net-zero emissions by 2070

India's wind energy sector is witnessing strong growth, with 3.4 GW of new capacity added in 2024 – the highest annual installation level since 2017 – bringing total capacity to 48.16 GW¹. Most of the new installations were in Gujarat, Karnataka and Tamil Nadu.

With rising energy demand driven by industrialisation and urbanisation, wind energy is crucial to India's goal of achieving 500 GW of non-fossil capacity by 2030 and net-zero emissions by 2070. Achieving 10 GW of annual wind energy capacity additions by 2030 will

be key to positioning wind power as a cornerstone of India's decarbonisation strategy.

Under the National Electricity Plan for 2022–2032, installed wind capacity is estimated to reach 73 GW in 2026–2027 and 122 GW in 2031–2032. Sustaining this momentum, however, requires large-scale investment, enhanced grid infrastructure, streamlined regulations and technological innovations.

Driven by ambitious renewable energy targets and increasing electricity

demand, India's wind energy sector is a key player in the country's energy transition. Offshore wind holds immense potential but faces infrastructure, policy and investment challenges. Onshore wind growth, while supported by newer kinds of tenders such as hybrid and firm and dispatchable renewable energy (FDRE), is hindered by land acquisition issues.

Greater grid integration is needed, as well as the repowering of ageing turbines and a secure supply of rare earth materials for wind turbine production to



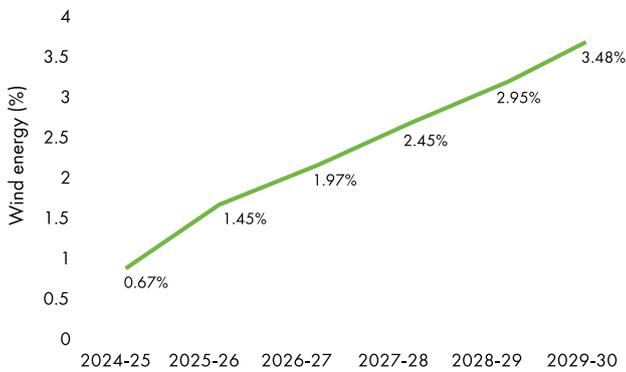
India is strategically placed for wind manufacturing expansion, reducing imports of large components such as castings and pultrusion carbon fibre

further boost India’s wind energy strides.

As the second-largest hub for onshore wind turbine assembly and key component production in the Asia Pacific, India is strategically placed for wind manufacturing expansion, reducing imports of large components such as castings and pultrusion carbon fibre.

The successful award of offshore wind tenders is likely to attract investments in domestic offshore wind manufacturing. The central government is exploring avenues to support local manufacturing and local content creation.

Wind RPO trajectory from 2024 to 2030



Source: India’s Ministry of Power

Onshore Wind and Repowering

Ranking fourth globally with 48.2 GW of installed onshore wind as of January 2025, India is the second-largest wind market in the Asia Pacific region after China.

India’s onshore wind sector is gaining momentum thanks to supportive policy, regulatory and infrastructure enablers. The central government is pushing to modernise transmission infrastructure through initiatives such as the Green Energy Corridor and HVDC networks.

Repowering ageing wind farms in key states such as Tamil Nadu, Maharashtra and Gujarat is likely to boost the country’s generation potential.

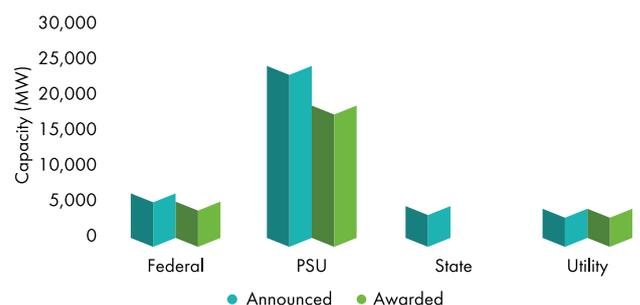
Further enablers for accelerating onshore wind installations in this market include:

- An onshore wind auctions target of 10 GW annually over the 2023–2027 period
- Wind-specific renewable purchase obligations (RPOs) from 2023 to 2030 and high demand from the C&I segment
- Inter-State Transmission System charges waiver up to June 2025 (i.e., installation will peak in 2025)
- Plans to upgrade the transmission network to integrate 48GW onshore wind capacity by 2030
- Policy measures in support of wind power procurement and an established local onshore wind energy supply chain.

Auctions Awarded and Announced in 2024

Following the government’s announcement that it was targeting 50 GW of renewable energy and 10 GW of onshore wind bids per year between 2023 and 2027 through single-stage/e-reverse auction bidding, last year saw a surge in activity. By the end of December 2024, nearly 27.3 GW of projects had been awarded, either as standalone wind or as wind components of hybrid projects. Gujarat, Tamil Nadu, Maharashtra, Rajasthan and Karnataka led the way for India’s 2024 wind energy auctions.

Wind Energy Auctions in India (2024)



Source - GWEC Market Intelligence.

Strategic Push for Offshore Wind

India's offshore wind sector gained some momentum in 2024 with the announcement of a 4 GW tender in Tamil Nadu and a 500 MW project off Gujarat's coast³. To ensure financial viability and attract private investment, the government approved a \$893 million Viability Gap Funding (VGF) scheme in support of 1 GW of offshore projects and port upgrades⁴.

These initiatives aim to leverage India's vast coastline and wind potential while reducing reliance on conventional power. However, sustained policy support, infrastructure expansion and technological innovation are all needed to scale offshore wind energy and achieve long-term renewable energy goals.

India must invest in grids, ports infrastructure, vessel availability, supply chain, secure blended and concessional finance, and leverage technological innovations for the seamless integration of offshore wind into the national energy mix⁵.

The wind industry in India is gaining momentum, with new opportunities emerging in areas such as supply chains, offshore wind and innovative tenders to harness wind energy. Progress in 2024 has raised ambitions, making it important to build resilience and introduce robust risk mitigation and support measures.

Onshore wind remains a key focus, with repowering initiatives in Tamil Nadu, Maharashtra and Gujarat enhancing efficiency. The C&I segment is booming with rising demand, and this is also evident from auctions that favour wind capacity additions. But challenges persist, including land acquisition disputes, transmission infrastructure limitations, and auction delays affecting Power Purchase Agreements (PPAs).

Download the full report from gwec.net/reports/globalwindreport

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It is important for the Indian wind sector to build resilience and introduce robust risk mitigation and support measures

Meet the Klübersynth BEM 48-1501

Emergency Grease for Roller Bearing Applications

Content provided by Kleuber Lubrication



When uptime is critical, Klübersynth BEM 48-1501 offers a proven way to bridge the gap between detection and repair

Wind turbines endure high mechanical loads, long maintenance intervals, and unpredictable environmental conditions. In this challenging landscape, even a minor fault in critical components like main bearings can lead to significant downtime and lost revenue. That's where Klübersynth BEM 48-1501 steps in – an emergency grease engineered to extend the life of already damaged bearings, keeping turbines operational until scheduled maintenance can take place.

Silent Failures, Costly Consequences

Main bearing damage in wind turbines often goes undetected until it results in unplanned outages. These failures are not just technical setbacks – they impact the overall profitability of wind energy projects. Unfortunately, immediate repairs are often impossible due to the remote location of wind farms or unavailable components. In such cases, continued operation becomes critical.

Why Conventional Greases Fall Short

Traditional greases are designed to prevent wear, but what happens when the wear has already occurred?

- **No damage mitigation** – Most lubricants are not designed to handle pre-existing bearing damage.
- **Lack of protective Film** – Once metal surfaces are compromised, standard greases fail to form a sufficient lubricating barrier.

- **Limited Support for Emergency Situations** – In urgent conditions, there is no provision for short-term solutions that ensure continued operation.
- **Flexible Application** – Works with standard dispensing tools already available in the field.
- **Reliable in Harsh Conditions** – Offers superior corrosion protection and high dropping point ($\geq 180^\circ\text{C}$).

Wind operators need a specialized solution – not just for prevention, but for damage control.

The Klüber Solution: Emergency lubrication with Klübersynth BEM 48-1501

Klübersynth BEM 48-1501 is purpose-built to provide effective lubrication for damaged rolling bearings, especially main bearings in wind turbines. Its unique formulation allows operators to delay costly shutdowns and safely extend operation until scheduled repairs.

Key performance features:

- **Delays Bearing Failure** – Forms a protective layer over damaged surfaces to slow the progression of wear.
- **Enhanced Protection** – High-viscosity base oil combined with EP additives and solid lubricants shields metal-to-metal contact.
- **Simplified Handling** – Easily applied using grease guns or automatic metering systems with no complex preparation.
- **High Thermal Tolerance** – Operates reliably between -10°C and 150°C with excellent load-carrying capacity.

Competitive Advantages for Wind Farm Operators

- **Maximised Uptime** – Keeps turbines running even with existing bearing damage.
- **Avoids Emergency Repairs** – Enables planned maintenance and reduces costs linked to sudden failures.

One solution. Multiple applications. Lasting performance.

Though developed with wind turbine bearings in mind, Klübersynth BEM 48-1501 is a valuable stopgap solution in other high-stakes industries where downtime is not an option:

- **Hydropower facilities** – Keeps turbine bearings running until planned shutdowns
- **Heavy machinery** – Provides emergency protection during unanticipated load peaks
- **Railway and marine sectors** – Extends equipment life in remote or mobile setups

Don't stop when bearings do – trust Klübersynth BEM 48-1501

When failure isn't an option and uptime is critical, Klübersynth BEM 48-1501 offers a proven way to bridge the gap between detection and repair. Wind turbine operators worldwide rely on its emergency capabilities to ensure their assets keep turning – and delivering clean, reliable energy.

If you have any queries about Klübersynth BEM 48-1501 or any other specific product, the experts from Klüber Lubrication are the right people to talk to. With our vast expertise in tribology, our company has specialised experience in the development and manufacture of tailor-made specialty lubricants for over 90 years.

A close network of support teams assists and advises users around the world directly on-site. ■

//
KLÜBER
LUBRICATION

Klübersynth BEM 48-1501

Emergency grease for roller bearing applications

Contact us – we'll do the rest!

Global Contact: Sudha. P

Assistant Manager - Business Support
Toll-Free Number: 18001237686
Fax: +91 8066901201
Phone: +91 8066901200
Email: marketing@in.klueber.com



See how Klübersynth BEM 48-1501 – the emergency grease – turns breakdown into breakthrough.

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Silver Partner: **GE VERNOVA**

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and Drive
Solution Partner: **winergy**

Registration and
Chair Tag Partner: **NeXHS**
Next Generation Hybrid Structures

Lubricant
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COMPANY PROFILE

Cooper New Energy Co., Ltd. was established in 2011 and is a diversified industrial group company. Its main business covers multiple sectors such as intelligent equipment, high-access lifting equipment, concrete tower equipment, safety protection equipment, wind turbine supporting equipment, and structural component integration equipment. It is a Chinese National Specialized and Innovative "little giant" enterprise, a National High-tech enterprise, and has obtained more than 160 patents.

Cooper has established long-term strategic partnerships with well-known domestic and foreign new energy enterprises such as China Huaneng Group, State Power Investment Corporation, China CSSC, China Three Gorges Corporation, Goldwind Technology, Windey Wind Power, Mingyang Intelligent, Enercon, Siemens Gamesa, etc., through a full range of low-carbon technology solutions and comprehensive benchmark demonstration projects. Cooper takes "green, cooperative, and sustainable" as its core values and is committed to "promoting energy transformation and creating a beauty era of new energy".

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01 INTELLIGENT EQUIPMENT- LIFTING

The first 10MW production model of windey Onshore was successfully hoisted



02 INTELLIGENT EQUIPMENT - AUTO TURNING GEAR MACHINE

The world's first 16-megawatt offshore wind turbine was installed



Nacelle crane

Offshore platform crane

Nacelle lifting gear



Dual-drive hydraulic turning gear

Four-drive hydraulic turning gear

Four-drive electric turning gear

03 DESIGN SERVICE FOR WHOLE TOWER INTERNALS

Based on the customer's configuration requirements for wind turbines, design and develop the internals inside the tower, mainly focusing on the platform, ladder, cable wiring, tower lighting, tower sealing, and cooling systems. Output complete tower internals' drawings and related technical documents.



04 ONE-STOP INTEGRATED MANUFACTURING FOR ALL TOWER INTERNALS

We provide one-stop packaging services for our independent developed, designed and manufactured products according to your requirements, such as high-access equipment, tower internals, ladders, tower platforms, lighting, cable protection devices, etc., to make sure to reduce customers' costs, ensure product quality, and improve customers' running efficiency.



05 ONE-STOP PACKAGING SERVICE FOR CONCRETE TOWER

- Design
- Splicing tooling
- Tower body painting
- Mold
- Installation platform
- Embedded parts
- Production
- Installation
- Tensioning

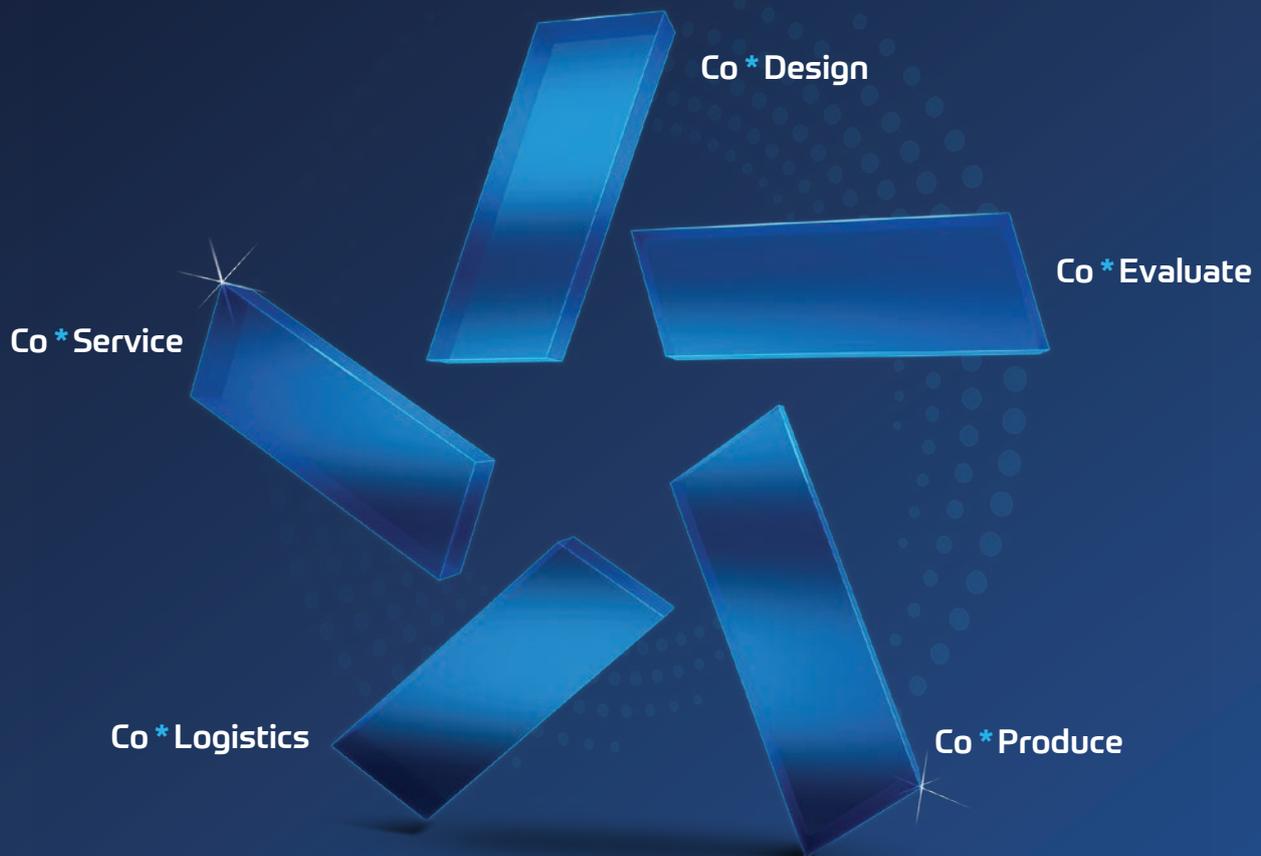


Environmental production of half ring design based on local regulations - cost reduction of 20%



DRY SPLICING TECHNOLOGY - EFFICIENCY INCREASED BY 30%

Next Level of System Co*operation in Wind Power



With more than 45 years of experience, ZF Wind Power is a global system partner throughout the entire product life cycle. Our unique **System Co*operation** emphasizes close collaboration with partners in five key areas: design, evaluation, production, logistics, and service, ensuring the highest performance and reliability in gearbox and powertrain designs. Our technology powers over **200 GW** of wind turbines worldwide, with more than **50 GW** already utilizing our cutting-edge **modular gearbox platforms** and nearly **10 GW** driven by our state-of-the-art **offshore solutions**. Close cooperation drives excellence in reliability, efficiency and intelligence; while our products (SHIFT), services (THRIVE) and extensive experience empower a sustainable future **together**.

Visit: zf.com/windpower

