

When the wind shines 24/7



Wind leads the RE basket with an installed capacity of 35 GW. The Indian wind sector has an estimated potential of 300 GW. J P Chalasani, Group CEO, Suzlon Group says, "The move from Feed-in-Tariffs (FIT) to competitive bidding resulted in wind energy becoming one of the cheapest sources of energy. Today, it is driven largely by economic realities, improved reliability, and cost competitiveness backed by proven technology."

Chalasani adds, "We need to harness the 300 GW wind energy potential in India and seize this opportunity now to ensure sustainable, affordable and reliable energy for all."

A combination of coal, gas, and hydro for the 3- to 5-hour period when the Sun doesn't shine. Gas and hydro are limited for India, causing huge financial burden of underutilised coal plants, especially, as we scale to 100 GW solar by 2022. Average coal PLF is already below 60 per cent.

UB Reddy, Managing Director, Enerfra Projects (India) Pvt. Ltd. says, "The annual PLF of new large diameter wind turbines is now approaching 40 per cent, with much higher PLF during the approx. six-month windy season." This makes it highly probable that wind spread across states will contribute to peak load in windy season.

With a clearer regulatory framework that ensures RPO compliance, thermal power plants can take the secondary role of dispatchable generation. Dr Sanjiv Kawishwar, Senior Vice President, ReGen Powertech Private Limited, says, "Battery storage may not be easy or cost-effective for wind power, leaving grid management (market-based solutions and better predictions) as the fundamental solution to achieve reliable RE integration."

Wind energy, slated to be one of the key drivers to aid renewable energy has a long way to go in addressing the climate change issue. Here, the experts discuss why the wind can still shine when the Sun ceases to.

Where microgrids are deemed too expensive, the traditional grid supplemented with real-time feeder monitoring and analytics is capable of reaching rural households reliably. Kawishwar adds, "Wider geographical distribution/penetration of wind power has a natural effect of increasing its capacity value, making wind competitive with thermal for reliability. Therefore, such grid extension efforts are an opportunity for wind energy."

Digitalisation of O&M services

Digitalisation of wind turbines' O&M has been greatly assisted by the uptake of the IEC 61400-25 series of standards. Such systems have been used to mitigate risks and minimise insurance cost. Management of multi-brand turbines in a single farm is easier with IoT-based software interfaces.

Going forward, the focus will broaden from O&M to achieve customer-centric smart grid operation. Dr Kawishwar says, "Machine-to-machine communication techniques allow a wind farm to be operated autonomously, requiring human intervention only at the level of configuration and maintenance." This broadens the scope and will help in the development of asset management systems (AMS).

O&M of modern wind turbines is already highly digital, with benefits in higher production, superior reliability, and better forecasting. Reddy says, "Many global investors now hire independent service providers (ISPs) for O&M. In India, I think we will see the same shift."

Cutting-edge technologies for bigger and increasingly reliable turbines, improving supply chain, enabling grid integration and leveraging digital technologies and



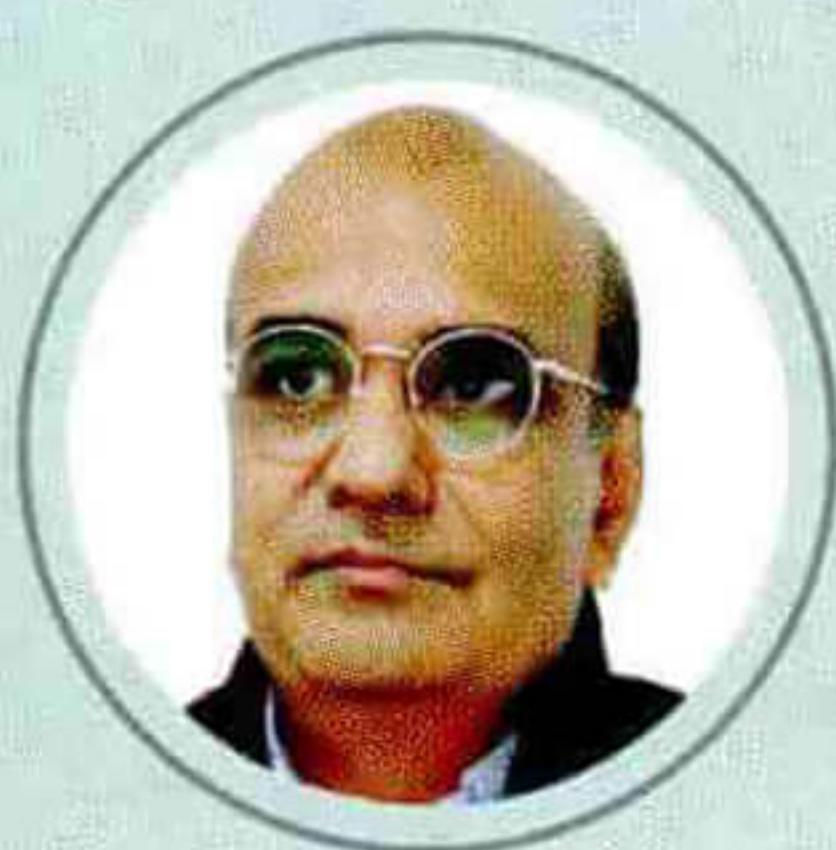
The move from Feed-in-Tariffs (FiT) to competitive bidding resulted in wind energy becoming one of the cheapest sources of energy

► JP Chalasani, Group CEO, Suzlon Group



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► UB Reddy, Managing Director, Enerfra Projects (India) Pvt. Ltd



Policies pending for DC metering have disqualified some OEMs from entering the wind-solar hybrid field

► Dr Sanjiv Kawishwar, Senior Vice President, ReGen Powertech Private Limited

employing IoT is crucial. Predicting turbine operations and energy output with higher certainty 12-48 hours ahead of time will enable greater penetration of wind into the grid as a reliable energy source.

Chalasani says, "Better analytics, simultaneously, assists in identifying areas for enhancing the wind turbine generation and optimising the operation and maintenance costs by proactively identifying failures and taking action before the failures occur."

Solar-wind hybrids

It makes great sense to push wind – solar hybrid, as both the sources complement each other. The "Wind Solar Hybrid Power Policy 2018" allows the setting up of solar power projects at wind power project sites as well as greenfield projects.

Chalasani says, "While solar and wind power are variable, these resources are complementary due to their generation cycles and their hybridisation would help in improving the security of grid besides optimising the existing infrastructure including land and transmission system." This enables optimal use of land and electricity transmission network and setting up of new hybrid projects.

The idea behind 'wind-solar hybrid' was to reduce levelised cost of energy (LCOE) by sharing common infrastructure. One can put panels around the wind turbine as the tower footprint is relatively small. However, there will be issues of dust accumulation from vehicle movement and wind, shadow from turbine, and the need to relocate panels if a crane has to be deployed.

The life of wind turbine is of 25 to 30 years, which is a proven fact, but life of modern solar panels needs to be proven, which we believe will be less than that of turbines. Reddy is of the opinion that this life mismatch will create financial burden of underutilised shared assets after solar panels are past their life. In our view, hybrid parks will be viable in India only on an exception basis."

MNRE released its policy on wind-solar hybrid and followed with the 1.2GW auction in 2018, clearly signalling the intention to capitalise on the possibilities of hybrid plants in India. However, Dr Kawishwar says, "Policies pending for DC metering have disqualified some OEMs from entering the wind-solar hybrid field. A pragmatic approach to adapting existing standards is required."

Given the capital expenditure involved in a conversion project, it is important to expedite due diligence and ensure state support for upgradation of transmission capacity. Suitable processes can be detailed by the nodal agency to help achieve this. ⚡