

# INNOVATION

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## WETZEL BLADE CONCEPT WINS OUTSTANDING VENTURE AWARD

*Space frame, field-assembled turbine blade holds potential for wind energy*



The complex logistics involved with transporting one-piece blades generally amounts to 3-5 percent of the total installed cost of each turbine.

Among the winners of the 2014 Clean Energy Venture Awards at the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory's NREL Industry Growth Forum, was Wetzel Blade.

The startup company was presented with the Outstanding Venture award for their work on what insiders might call the Holy Grail for wind energy — a pre-fabricated, field-assembled turbine blade that boosts production capacity and outlasts current generation composite blades. Award winners receive in-kind commercialization support to help increase their chances of becoming commercially successful.

The new blade technology is based on a space frame design and features independently fabricated pultruded FRP spars. The parts are sized for easy transport and field-assembly, in similar fashion to high reliability military equipment.

Today's current generation blades are fully assembled in large-scale factories and transported in one piece to wind farms. In the United States, the familiar 58-meter land turbine blades are the largest that can be transported in a traditional manner using supersized trailers with escort vehicles. The complex logistics involve coordinating drivers, escorts, permits and special-



Photo by Dennis Schroeder / NREL

Kyle Wetzel, CTO/Founder of Wetzel Blade receives the Outstanding Venture award for its innovative blade concept from Bobi Garrett, NREL, and Ashley Grosh, Wells Fargo, at the NREL Industry Growth Forum. The Pflugerville, Texas, startup has developed an innovative, field-assembled, component-based wind turbine blade.

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According to Kyle Wetzel, CTO/ Founder of Wetzel Blade and a

well-published expert in wind blade design, “This concept emerged from a project that our parent company, Wetzel Engineering, was involved with in China. We were engineering

a 100-meter blade for a 10MW turbine and wanted to eliminate shell panel buckling as a design driver. The balsa requirements presented another challenge – almost 10,000 kg of this expensive core material absorbing approximately 6,000kg of epoxy.

“Because of our involvement with the entire turbine lifecycle, we understand that to make a real shift in the economics, a blade design must generate more electricity, cost less to build and maintain, and be more efficient to transport and install. The industry is hungry for a solution that delivers on all those points.”

Wetzel Blade is currently in the structural testing phase with plans to demonstrate a sub-scale prototype in early 2015. The project has been partially funded through an SBIR/STTR award from the Department of Energy. ✈

— Source: Wetzel Blade

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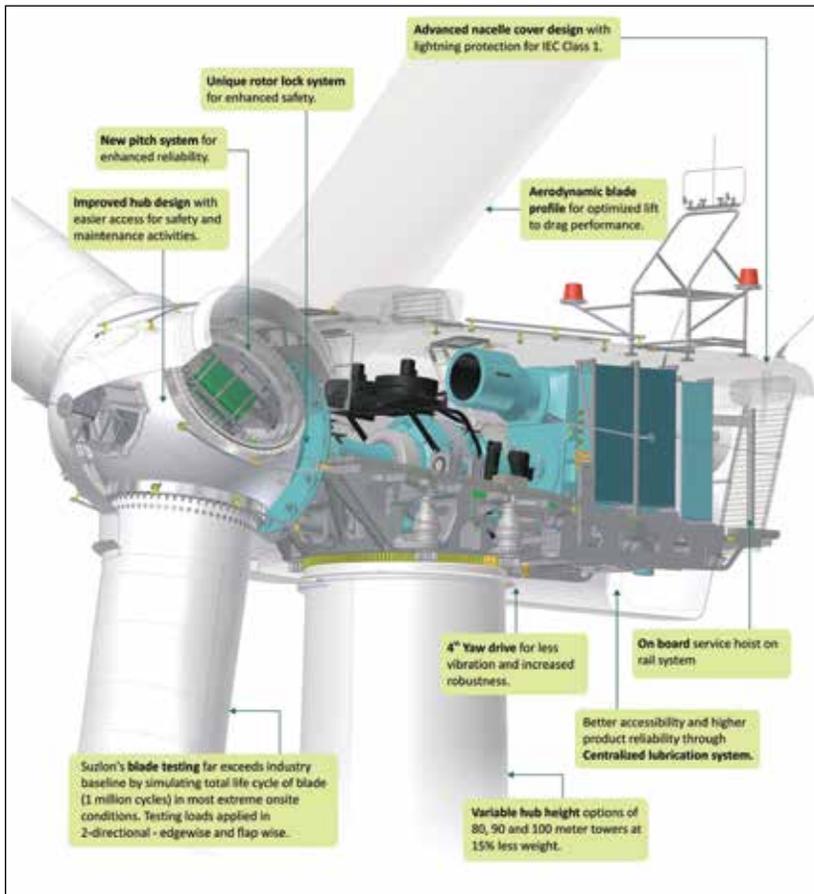
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## SUZLON UNVEILS WORLD'S TALLEST HYBRID TURBINE IN INDIA

*New model incorporates manufacturer's latest R&D efforts*



Suzlon Group recently surpassed yet another milestone by expanding the capacity of Asia's largest wind farm at Kutch, Gujarat to 1100 MW. With this expansion, Suzlon now generates 1800 MW in Gujarat thus accounting for 20% of Suzlon's total pan-India capacity of over 8250 MW. Commemorating this landmark occasion, the company unveiled its S97 120m wind turbine.

The S97 120m is the world's tallest hybrid tower model, designed indigenously to harness the wind energy across low wind sites. It is installed at Jamanwada, Kutch in Gujarat, India, and has successfully generated 1500-plus kWh in its

pilot stage of three months.

Speaking on the occasion, Hon. Chief Minister, State of Gujarat, Smt. Anandiben Patel said, "The challenge of global warming has given an opportunity, whereby the world is now looking at clean and renewable sources of energy to combat climate change. While the 20th century belonged to Information Technology (IT), the 21st century will be that of Environment Technology (ET). Gujarat has championed the cause of generating power through renewable sources and has adopted pioneering technologies in wind, solar and other renewable resources. Suzlon has played an integral part in enhanc-

ing Gujarat's renewable energy portfolio. Suzlon took up the challenge put forth by Shri Narendra Modi of establishing 2,000 MW wind energy in Gujarat and Suzlon has already delivered 1080 MW in Kutch. We will continue to forge alliances with private players to harness the full potential of renewable energy in Gujarat."

Tulsi Tanti, CMD, Suzlon Energy, said, "The S97 120 m hybrid tower, a potential game changer, is the result of our continued focus to invest in next generation technologies that will provide energy efficient solutions thus ensuring higher yields to our customers. As the world is waking up and implementing measures to combat climate change, the contribution of wind energy in the energy architecture mix across the world has increased manifold. Governments are now pivoting their attention on renewables to provide the much needed energy security for their respective countries."

Suzlon group's leadership in offshore wind turbine is a testament of the organizations technological prowess. It continues to drive innovation by focusing the R&D efforts to develop cost efficient and reliable wind turbine technology. The group has a wide range of on-shore and off-shore energy solutions ranging from sub-megawatt onshore turbines at 600 kilowatts to 6.15 MW offshore turbine. The group is catering to over 2,500 customers across Asia, Australia, Europe, Africa, and North and South America. The S97 120M hub height hybrid tower is part of Suzlon's S9X turbine suite.

— Source: Suzlon Group

## S97 120M FEATURES AND BENEFITS

- **Innovative & Powerful:** Combination of lattice and tubular which gives enhanced tower strength at lower cost. The three-dimensional lattice structure can support heavier weights due to the broad base. The tubular structure houses and protects the power and control systems, thereby keeping them safe and from bad weather and vandalism.
- **High yield and ROI:** 120m hub height- ensures 4-5 percent better wind speed and increased in power output of 12-14 percent over at 90-meter tower and at lower cost. This will deliver higher returns for the customer.
- **Logistics Friendly:** The Hybrid Tower can be transferred by normal trailers, thus significantly reducing transportation costs. The 17-meter base reduces the steel requirement by over 30 percent.
- **Reduced maintenance cost:** Structural bolts are covered with a friction coating to reduce wear-and-tear, thereby also reducing maintenance stress and cost.
- **Better Grid compliance:** The DFIG converter gives better provision for the windfarm to connect with national grid by controlling power parameters like frequency, active/reactive power regulation and stability during grid disturbances.
- **Safety:** S97 120 m is certified according to GL standards for 20 years of life. Safety has been incorporate in S97 120m in all aspects of product design, from the People Exclusive Suzlon- designed Cable Guiding Systems, to safe hub design and as per the highest safety guidelines. ✈

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