Dual blade system wind turbine

What is a dual rotor wind turbine generator?
This paper introduced a dual rotor wind turbine generator system,which consists of two rotors: one small auxiliary rotor at the upwind location and the other relatively larger main rotor at the downwind location.

Can a second rotor be used in a dual-rotor wind turbine?
The study focuses on the effect of introducing a second rotor to the main rotor of the wind turbine in what is called a dual-rotor wind turbine (DRWT). The numerical study took place on the performance of a small-scale model of a wind turbine of 0.9 m diameter using an S826 airfoil.

How does a dual rotor wind turbine work?
The dual rotors in front and rear side capture wind energy. The captured wind energy is transformed into high speed rotational energy by transmission system. In this Wind turbine the radius of the wind blades for the dual rotor is taken as 1.5m. The rated speed for the wind turbine is taken 10m/s.

How much power can a dual rotor turbine produce?
The scientific literature indicates that a dual-rotor system could extract additional 20-30%power compared to a single rotor system from the same wind stream. Our wind tunnel test indicates that a scaled-down version of the dual-rotor turbine system may produce up to 60% more power than a single-rotor system.

Are two-bladed wind turbines easier to install?
Two-bladed wind turbines are also easier to install. Whereas the three-bladed rotors spinning in today's offshore farms must be assembled on site,two-bladed rotors can be preinstalled on the turbine's machinery onshore; the assembled package fits more conveniently on ships and is light enough to lift onto the tower.

What is a dual rotor wind turbine gearbox?
In this paper author has designed of a gearbox of dual rotor wind turbine system. This gearbox composed of both compound and planetary gear train. The wind speed rotates the rotor of wind turbine 60-70 RPM in case of large wind turbines and 100-300 in small wind turbines.

To accommodate this, WTTC, that performs large wind turbine blade testing, ordered a new test bench with the size and power to test the next generations of wind turbine blades. This was part of the $4 million dollar US DOE and ...

In this paper author has designed of a gearbox of dual rotor wind turbine system. This gearbox composed of both compound and planetary gear train. The wind speed rotates ...

The dual rotor wind turbine (DRWT) which has two sets of rotor systems is considered an effective design to improve power generation efficiency, whether for a wind ...

Dual blade system wind turbine

This study focuses on the blade design and optimization of Dual Darrieus Wind turbines (DDWTs). Based on Genetic Expression Programming (GEP) model, a power prediction formula C P = f (?, ?, ?), containing radius difference ?, chord ratio ?, and offset angle ?, is proposed in this study.Hence, the power coefficient of various blade layouts can be directly ...

Aerodynamic interactions between turbines in a wind farm also lead to significant loss of wind farm efficiency. A new dual-rotor wind turbine (DRWT) concept is proposed that ...

The speed regulating wind turbine adopts the principle of direct grid connection of generator similar to traditional hydropower and thermal power generation, that is, the speed regulating machine of wind turbine is located at the front end of synchronous generator, the stator side of synchronous generator is directly connected to the power grid without frequency ...

The nacelle serves as the core of the transmission and power generation system, supported by dual bearings to ensure stable and reliable operation. To satisfy power generation requirements, the nacelle houses a gearbox with a ratio of 1:5, increasing the blade rotation speed to a level suitable for power generation and driving the generator ...

Aerodynamic interactions between turbines in a wind farm also lead to significant loss of wind farm efficiency. A new dual-rotor wind turbine (DRWT) concept is proposed that aims at mitigating these two losses. A DRWT is designed that uses an existing turbine rotor for the main rotor, while the secondary rotor is designed using a high lift-to ...

China"s Ming Yang Wind Power, the world"s ninth-largest wind-turbine manufacturer, recently announced plans for the largest test of the ...

The increasing size and complexity of the wind turbine blades demand that test systems also undergo continuous development to accommodate increasing requirements of the industry. ... "Developing good test equipment for dual-axis ...

MTS Wind Turbine Blade Fatigue Test Systems are designed to apply single- and dual-axis cyclic loading to full-scale wind turbine blades and sub-components at resonant frequencies, enabling test engineers to meet fatigue-testing ...

Guettab, A., Boudjema, Z., Bounadja, E. & Taleb, R. Improved control scheme of a dual star induction generator integrated in a wind turbine system in normal and open-phase ...

Wind turbines mounted on cold climate sites are subject to icing which could significantly . 8 . influence the performance of the turbine blades for harvesting wind energy. In this study, an . 9 . innovative dual de-icing system under development is described. This either prevents ice . 10

Dual blade system wind turbine

The dual turbine concept developed by Hexicon is characterized by a floating foundation, which hosts two wind turbines with relatively close separation of 1. 05 D $$ 1.05D $$ between the turbine rotors (hub to hub) and weathervanes around its single point mooring system located in front column, upwind of the turbines. This design specifically ...

We have developed a new dual-rotor wind turbine (DRWT) technology that aims to mitigate these two losses. One DRWT has been designed using an existing turbine rotor (the ...

showing the ideal placement of wind turbines in high rise zones 2.3 Wind Turbine Aerodynamics 2.3.1 Actuator Disk Theory for a one-dimensional HAWT 2.3.1.1 Betz"s Limit The simplest aerodynamic ...

The single and dual-rotor wind turbines were designed according to Tables 1 and 2, their performance is modeled and tested using the mathematical models for CFD that are related to fluid dynamics ...

First up, Aerodyn Consulting"s patent for a single point mooring system with dual wind turbines. This concept is only being utilized by MingYang for their OceanX wind turbine so far, but it"s promising. Then Newtech Group"s method for connecting modular wind turbine blades, which could make the concept more viable.

In this direction, a new wind turbine generator system (WTGS) has been recently introduced as shown in Fig. 1. This new WTGS, which is called as dual-rotor wind turbine (DRWT), has two sets of rotor systems and is more efficient than the conventional single-rotor wind turbine (SRWT) from the energy extraction point of view [3]. Because most of ...

Several major wind-power companies are testing a departure from the industry"s standard three-bladed turbine design by dropping one of the three blades and spinning the rotor 180 degrees to face ...

The twin vertical-axis wind turbine (VAWT) system is a high-performance design in which two turbines are placed side by side with a variable gap distance. In this paper, the large eddy simulation and the sliding mesh technique are employed to numerically study the aerodynamic performance of the dual-rotor configuration. ... The forward torque ...

Realizable k-shear stress transport turbulence models are used to solve the three-dimensional, turbulent, stable, and incompressible flow equations for the performance of dual ...

Airgenesis Senior Vice President Clayton Troxell says the 5-MW wind turbine, ... They will be in the same pattern but arranged around a flywheel for a clutch system. That arrangement is still in flux," said Troxell. ... Should be dual blade rotors verses tri blade. Save more weight and money. How is high cycle fatigue of downwind rotor ...

Based on a new crank-slider inertia vibration excitation device, a two-degree-of-freedom fatigue loading test

system for wind turbine blades was designed. Aiming at the problem of vibration coupling during bi-directional fatigue loading, the dynamic model of wind turbine blade two-degree-of-freedom excitation fatigue loading system is established. On this basis, a ...

Massachusetts Clean Energy Center"s (MassCEC) Wind Technology Testing Center (WTTC) has taken delivery of the world"s largest dual-axis blade exciter from Danish engineering company R& D Test ...

Then, an unconventional wind turbine design, the CO-DRWT (counter-rotating dual rotor wind turbine) is analysed with a CFD (computational fluid dynamics) code, varying the axial and radial ...

Historically, wind turbine blade fatigue testing has been performed through forced displacement methods using hydraulic systems which directly apply load to the blade. More efficient methods of fatigue testing are being developed at the NWTC that employ resonant excitation systems to reduce hydraulic supply requirements, increase the test speed, and improve distributed load ...