Wind tower power generation patent

What are the different types of wind energy patents?
These patents cover inventions related to ofshore wind energy, including key technology concept groupings such as: fixed and floating foundations, towers, mechanical power transmission, blades and rotors, hybrid systems, energy storage, and grids and submarine cables.

When did wind energy technology become a patented technology?
Following an initial phase marked by limited patent filings, the patenting activity in ofshore wind energy technologies experienced a notable surge starting in 2006. Subsequently, a period of consistent annual expansion persisted until 2012.

How many wind energy patents are there?
However, it is worth noting that patent filings specifically classified as "ofshore" are too few to conduct meaningful analysis, so we expanded the search to include all wind energy patents. Between 2002 and 2022, the number of patent filings covering these two technologies increased by a factor of fourteen.

Are floating foundations the future of wind power?
Market trends indicate a growing interest in developing floating foundations given their potential for siting turbines in deeper waters with abundant wind potential. This is confirmed by patent data,which shows that industry players are innovating in this technology area. Tower and blade designs to reduce steel demand and enhance sustainability.

How many ofshore wind energy patents are there?
This study identifies approximately 17 000 patent families related to ofshore wind energy technologies published between 2002 and 2022, as well as revealing a significant surge from 2015 onwards. European countries, particularly Denmark and Germany, have taken the lead in generating inventions.

What percentage of wind energy patent families are international?
Twenty-seven percentof all ofshore wind energy patent families are international patent families (IPFs) i.e. excluding single domestic filings. More specifically 79% of the total patent families developed by European countries are IPFs,as- are 64% by the United States of America. Four percent of Chinese patent families are international.

A wind power generating system in which a plurality of stationary modules form a toroidal shaped tower that accelerates wind passing around and between the modules due to the Bernoulli Effect. Between the modules are located a plurality of vertical axis wind turbine rotors with an integrated generator system that in combination forms an integrated rotor and generator assembly ...

Justia Patents US Patent Application for Sub-Terranean Updraft Tower (STUT) Power Generator Patent

Application (Application #20210091634) ... Unlike thermoelectric power generation systems such as natural gas, coal and nuclear, and Wind/Solar, STUT Power Generation systems can be established in almost any location, either off-grid, remotely ...

2010-06-21 Priority to US13/383,419 priority Critical patent/US20120192514A1/en 2010-06-21 Priority to CN2010800303875A priority patent/CN102510947A/en ... Communication tower with wind power generation system provided with double-power blades and wind leakage protection WO2014161215A1 (en) * 2013-04-01: 2014-10-09: Qi Yongwei ...

Patents were identified with a significant focus on Machines, Structure, Applications in Vehicles, Methods, and Control, that apply the concept of a horizontal axis wind turbine ± HA WT ...

According to GlobalData"s company profile on Orsted, DC-DC converters was a key innovation area identified from patents. Orsted"s grant share as of September 2023 was 37%.Grant share is based on the ratio of number of grants to total number of patents. Transportation system for wind turbine towers

A wind-tunnel type power generator includes an outer cover, a turbine rotor, an air escape valve, and at least a rear fin. ... 2007-07-19 Publication of US20070164571A1 publication Critical patent/US20070164571A1/en ... Wind power generation tower provided with gyromill type wind turbine (versions) WO2011088042A1 (en)

Patented innovations in the wind-power industry have focused on several key areas, including improved equipment design, especially for wind towers in remote locations; improved construction and assembly methods; ...

A wind energy generation system includes a tower, a nacelle provided in an upper portion of the tower to be rotatable around a central axis of the tower, a hub provided in front of the nacelle to be rotatable around an axis orthogonal to the central axis, and one or more blades provided on the hub. An oil receiving portion is provided on an outer wall of the tower to ...

Tower for wind turbine generator and wind turbine generator US20170175434A1 (en) * 2015-12-22: 2017-06-22: Acciona Windpower, S.A. Curved Cross-Section Wind Turbine Tower and Wind Turbine Comprising Said Tower US9782710B2 (en) ...

The wind power generation tower, according to one embodiment of the present invention, can implement wind power generation by accelerating wind speed even for low speed wind and ...

Tower tube is an important structural form of high-rise structure, and has been widely used in fields such as transmission towers, television towers, and cooling towers. Especially in the field of wind power generation, towers can be used to support upper impellers and generators. As the power of wind turbines increases, the diameter of the impellers becomes larger and larger, the ...

2009-01-08 Priority to US12/350,299 priority Critical patent/US20100171314A1/en ... The shroud can be the veil of a conventional cooling tower, with the wind generator assembly including a rotor connected to an electric generator arranged for converting rotary motion of the rotor to electrical energy, thus saving some of the energy created by ...

Wind turbines are currently the main wind power generation system used in the world. Japanese local governments also promote wind turbines for to its "eco-friendly" image. However, it represents less than 1% of the total electricity production. Due to its inefficient wind collection, wind turbines are far from being cost-efficient.

axis wind turbine - VAWT (5.6%) and incipient development in non-rotational systems (static) - WS (0.6%). Finally, a summary of the functional components of a wind energy system is included as a conceptual model for the development of a vertical axis wind source (VAWS). Keywords: wind, power, electric, generator, patents. INTRODUCTION

The transmission covered by this patent can be retro-fitted into current wind turbines or designed into the next generation. U.S. Patent No. 9,273,666 for a "Magnus Type Wind Power Generator" was issued to inventor Hamid Reza Kheirandish just last year, and it represents a new design in wind turbines that has revolving blades. The invention ...

A power transmission tower carrying power lines has a wind turbine mounted to an upper portion of the tower. The wind turbine has a rotor which drives a generator for generating electric power. The generated power is stepped up using a transformer before being fed into one of the power lines. Optionally, electric power generated by a plurality of such wind turbines ...

Instead of the usual tower, nacelle, and blades as used in conventional turbines, the device has a fixed mast to capture wind energy, a power generator, and a shaft. ... U.S. patent no. 9,856,854 ...

Northstar Endeavors, LLC, dba as Northstar Wind ("Northstar"), has designed a line of modular towers, with patent and patent pending technology, for Megawatt (MW) Class wind turbines. The Northstar tower is designed to be the highest quality and lowest overall cost tower solution for larger turbines (2.0mw+) at 95-140 meters.

FIELD: power engineering. SUBSTANCE: invention relates to a wind power generation tower (versions). Wind power generation tower comprises a wind collection section including wind inlets, into which wind enters, the inlets being formed in a plurality of tiers, and each tier being configured to change a strength and direction of the wind; and an energy conversion section configured to ...

A similar wind tower system is disclosed in US Patent 2,616,506 which includes a tapered air-intake scoop connected to a tapered air-outlet spout via a restricted throat structure. A wind-driven turbine is positioned within said throat for generating rotational energy. ... Tower type wind power generation device

CN101749179B (en) * 2010-03-03: ...

An environmentally friendly combination of wind turbine and solar energy collectors are provided. Solar photovoltaic material is secured to the surface of the wind turbine tower to augment the power generation capability of a wind turbine. The wind turbine energy output is controlled by a power management program and may be combined with the solar power energy that is ...

A wind power generator having a nacelle, which is mounted to an upper end of a support tower, supports in rotary manner a rotor, and is oriented around a rotation axis by an orienting device provided with at least one gearmotor. ... 2013-02-14 Publication of US20130039763A1 publication Critical patent/US20130039763A1/en 2015-07-28 Application ...

This is a portal site for the Hitachi Group"s clean energy initiatives, particularly wind power generation, solar power generation and hydrogen energy. The site introduces solutions, services, products, project case studies and other news.

17 000 patents (from the EPO"s patent database). These patents cover inventions related to offshore wind energy, including key technology concept groupings such as: fixed and floating foundations, towers, mechanical power transmission, blades and rotors, hybrid systems, energy storage, and grids and submarine cables. Policy insights

BT Patent LLC: Wind turbines with diffusers for the buildings or structures DE102012010576A1 (en) 2012-05-16: 2013-11-21: Forkert Technology Services Gmbh: Wind power machine with axis of rotation substantially perpendicular to the wind direction ... Wind-collecting tower for a wind power generator CN201599146U (en) 2009-12-24: 2010-10-06 ...