



WIND TURBINES

VESTAS

Vestas has a broad portfolio of wind turbines for all sites and conditions. With more than 30 years of experience in wind power and turbine development, the company's customers benefit from its long track record and in-depth knowledge. It monitors more than 22,000 units worldwide.



At the world's largest wind turbine test center, Vestas uses advanced methods such as Highly Accelerated Life Testing (HALT) to ensure that all critical components meet precise standards for safety, performance, and reliability.

Vestas is dedicated to partnering with customers to deliver the lowest cost of energy and maximum return on investment. From the V164-7.0 MW tailored specifically for offshore sites, to the V112-3.0 MW designed for offshore sites as well as onshore sites with low and medium wind speeds, Vestas helps customers find the turbine most suited to their needs.
www.vestas.com

GAMESA

Gamesa is a global leader in the design, manufacture, installation, and maintenance of wind turbine generators.

The Gamesa G97-2.0 MW wind turbine is the newest addition to one of the most versatile platforms available on the market, the company's G9X-2.0 MW series. With over 12,500 MW installed in 24 countries and availability levels well above 98 percent, the Gamesa G9X-2.0 MW platform is one of the most successful solutions in the industry.



The G-97-2.0 MW Class IIIA wind turbine is Gamesa's answer to the growing demand for technological solutions that guarantee higher output at sites with low and medium wind speeds. The G97-2.0 MW features a swept area 16 percent larger than its predecessor and exceeds the energy output by nearly 14 percent. The model also features a new aerodynamic blade profile for maximum energy production and reduced aerodynamic loads on the nacelle.
www.gamesacorp.com

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GE

GE's 4.1-113 offshore wind turbine comes from a long line of performance and reliability. The 4.1-113 direct drive technology has fewer moving parts, eliminating downtime from gearbox faults, maintenance, and exchanges.

Designed for the offshore environment, the 4.1-113 provides the lowest cost of electricity at sites where monopiles can be used in water depths of up to 40 meters, the company says.



The first 4.1-113 was installed in Gothenburg, Sweden, in 2011 and will produce enough electricity to supply 3,000 Swedish homes and reduce CO2 emissions by 15,000 tons—the equivalent of emissions from 7,500 cars per year.

Today, more than 17,000 GE wind turbines are installed worldwide as the company celebrates its 10-year anniversary in wind. Looking to the future, GE is now investing in developing a 10 to 15 MW next generation super conducting generator for deep water sites that will deliver low cost power to customers. www.ge.com

SUZLON

Suzlon technology transforms the valuable asset of wind into clean, competitive, and local energy.

Suzlon + REpower installations of 17GW globally and 3GW in North America prove the validity of Suzlon's business model and reinforce the company being a leader in the supply of wind turbines, Suzlon says. But its most valuable asset is its partnerships.



Leveraging relationships between communities, utilities, and the financial world is what keeps the company's customers satisfied.

The new S9X-2.1 MW platform, based upon Suzlon's workhorse S88 machine, has an outstanding track record in the U.S. market to build upon. The S9X series addresses demands in areas with medium to low wind speeds.

www.suzlon.com

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SIEMENS

Siemens Energy recently launched its new 6-mega-watt direct drive wind turbine at the European Offshore Wind Energy Conference in Amsterdam. The new SWT-6.0 will be available with rotor diameters of 120 and 154 meters and is designed for the most challenging offshore sites. It features the Siemens direct drive design with 50 percent fewer parts than comparable geared wind turbines.



With a towerhead mass of roughly 350 tons, the SWT-6.0 is the lightest machine in its class, says the company. This unique combination of robustness and low weight significantly reduces infrastructure, installation, and service costs, and boosts lifetime energy output and profitability.

The turbine is offered with two different rotor blades. The SWT-6.0-154 features the largest rotor blade in the 6-MW class, says the company, using the new B75 Quantum Blade. This 75 meter long blade delivers enormous strength at low weight, and thanks to its unique airfoils, the B75 Quantum Blade offers superior performance at a wide range of wind speeds.

The SWT-6.0-120 is equipped with the proven B58 rotor blade. This 58 meter long blade is known from the world's bestselling offshore wind turbine, the SWT-3.6-120. The SWT-6.0-120 will bring direct drive

technology to customers offshore, even in areas where air traffic and height restrictions ordinarily preclude wind turbine installations of the 6-MW class.

The SWT 6.0 is designed to increase the speed of offshore installations to bring down the cost of energy. The entire electrical system of the new 6-MW machine—including the medium voltage system and the full converter—is now enclosed in the nacelle. Thus, pre-commissioning testing can be achieved onshore faster and more safely. Furthermore, commissioning will be speeded up significantly as well.

www.siemens.com

AMSC

AMSC is helping wind turbine manufacturers capitalize on the offshore market by providing designs and power electronics for 3.0 MW to 10.0 MW wind turbines with varying drive trains.

AMSC's 3.0 MW turbine is available in direct drive, doubly-fed, and full-scale conversion platforms. Its 5.5 MW doubly-fed model features a three-phase induction generator, while its 5.5 MW full conversion model uses a synchronous generator or asynchronous generator with a full-scale converter. Its 10.0 MW direct drive wind turbine enables the maximum power per tower by utilizing a high temperature superconductor generator, which is significantly smaller and lighter than conventional and permanent magnet generators.

All of AMSC's turbines are designed to suit its customers' business strategies, ensuring a competitive advantage and a lower cost of energy.

www.amsc.com



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NORDIC WINDPOWER

Nordic Windpower is now working on the next generation of 1MW turbines, which are said to be ideal for community wind, small wind farm developments, and on-site generation projects like the U.S. Army base Ft. Huachuca.



At this military base near the Arizona-Mexico border, a 1 MW Nordic Windpower turbine does more than create renewable energy for the local post. It also lets the military study the effects of turbines on radio traffic and radar at this electronic proving ground (EPG). Project Engineer Mike Brown explains that the project was born of local enthusiasm at Fort Huachuca, one of the most environmentally progressive posts in the military, and received funding from the Department of Defense Energy Conservation Investment Program (ECIP).

Brown, who sees the turbines while walking his dogs through the Arizona hills, worked closely with Nordic employees during a last-minute change to a new site; Nordic's quick response helped keep the project moving.

www.nordicwindpower.com

ACCIONA WINDPOWER

Acciona Windpower invites wind project developers to think big with the AW3000 wind turbine. Think big production from taller towers and a 3 MW nameplate. Think big capacity factors with an impressive swept area and 116 meter rotor diameter. Think big return on investment, with savings on construction costs and operations and maintenance. Think big experience from a global leader in wind power.



ACCIONA Windpower's AW3000/116 brings the performance and reliability customers need to sites with stronger wind resources. ACCIONA Windpower offers taller concrete towers using local content and multiple transportation options to accommodate almost any project.

On sites with limited land or restrictive setbacks, the AW3000 makes it possible to locate more megawatts in less space.

www.aw3000.com

LEITWIND

Leitwind is one of the leading producers of direct drive wind turbine generators. Worldwide, the company had installed more than 180 wind turbines by the end of 2011.

Leitwind builds wind turbines with a synchronous generator using permanent magnets, which is simpler in construction, lower in maintenance, more reliable, and therefore more profitable, the company says.

This model of wind turbine—LTW77 with a rated power of 1.5 MW—was installed at the beginning of 2012 in Bayonne, close to New York City. The 3.3 GWh of electricity produced per year makes

a substantial contribution to New Jersey's renewable energy portfolio. The location near the sea coast demonstrated another challenge for the Leitwind R&D team. As a result of the salt content in the air, a special cooling system was developed.

www.leitwind.com



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