

INNOVATION

SPOTLIGHT from the brands of Altra Industrial Motion Corp.



CALIPER BRAKE SOLUTIONS FROM ALTRA PROVIDE RELIABLE PERFORMANCE ON WIND TURBINES AROUND THE WORLD

The wind turbine market has been slowly recovering since the 2008 global financial crisis. While there was significant improvement in 2012 and 2013, global wind power grew by a record 50+ GW in 2014. There are currently six countries that have an installed wind capacity of more than 10,000 MW, with China, the U.S. and Germany leading the world. The U.S. alone produces enough wind energy to power more than 16 million homes.

Europe has been experiencing substantial growth in offshore wind capacity, with 408 turbines added in 2014. This brings the cumulative total of installed and grid-connected offshore turbines to 2,488 in 11 European countries.

The small wind and distributed wind segments of the market (turbines from 5 kW to 500 kW) are also growing. In the U.S., 40% of distributed wind (power which is primarily consumed at the point of generation) is deployed in residential applications, while agriculture accounts for 26% and industrial/commercial uses 20%.

SUPERIOR ROTOR AND YAW BRAKING TECHNOLOGIES

As they meet the world's growing demand for wind energy, global wind turbine OEMs rely on Svendborg Brakes and Twiflex Limited for innovative hydraulic caliper braking solutions. The braking systems control the speed of wind turbine rotors as well as the 360 degree yaw rotation of the turbine's nacelle as it follows changing wind directions. These two Altra brands work closely with major turbine OEMs as they develop new turbine models of various designs and capacities, while improving efficiency, performance, and cost-effectiveness.



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I N N O V A T I O N

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SVENDBORG BRAKES SUPPORT ALL TYPES AND SIZES OF WIND TURBINES

Svendborg engineers have developed a series of hydraulically-applied caliper brakes specifically for rotor and yaw braking applications on direct drive, compact drive and conventional wind turbines.

To meet the most common turbine OEM requests, the brakes provide easy maintenance and friction pad replacement. They also feature corrosion protection, monitoring systems (on-off switch, pad wear monitor, etc.), and special friction material designed and tested to meet typical wind turbine rotational speed and heat dissipation requirements.

Newer, large turbines do not require full-scale, high-speed rotor braking. The brakes are engaged to bring a drivetrain that is operating at a reduced/idling speed to a complete stop. Both rotor and yaw brakes also provide holding functionality.

BSAK Series caliper brakes are preferred for rotor braking duty where large pads are required for high thermal dissipation during dynamic braking. Special versions of Model BSAB 90 and BSAB 120 caliper brakes also feature large pads but are designed for turbines where space is limited.



A Swendborg Model BSAK 3000 caliper brake is shown mounted to a wind turbine rotor disc.

A minimum of four Model BSAB 90 or BSAB 120 hydraulically applied caliper brakes are typically utilized on wind turbine yaw braking systems. These brakes are designed to provide years of quiet, leak-free performance. This is especially important for offshore applications, but also a concern for rivers, lakes and underground water.

Extensive wind turbine application knowledge and accumulated experience allows Swendborg engineers to routinely modify these standard brake models to fit unique customer turbine designs and specific performance requirements.

As part of their complete braking package solutions, Swendborg has designed a variety of stand alone and combined hydraulic power units for yaw brakes and dynamic rotor brakes or rotor lock and roof hatch control on compact drive and conventional wind turbines. All units are built in-house to meet particular customer requirements.



TWIFLEX LIMITED PROVIDES PROVEN BRAKING SYSTEMS FOR THE DISTRIBUTED WIND MARKET

Twiflex is recognized by OEMs as a high quality manufacturer of rotor and yaw caliper brakes used in small- to medium-sized wind turbines (typically 20-200 kW). The brakes provide both static and dynamic stopping functionality.

Twiflex braking technologies are designed to meet customer demands for compact size and low weight, minimal maintenance, ease of installation and competitive cost.

Robust Twiflex VCS-FL and VKSD-FL spring-applied, hydraulically-released models feature reduced axial widths, which makes them ideal selections for both rotor and yaw applications in smaller turbines.

The FL "floating" caliper configurations feature a single spring module and reactive half to accommodate axial movement of the shaft. These versions are consequently highly tolerant of misalignment during installation. Large pad versions are available to address particular heat dissipation requirements.

With the brake in the "parked off" position, disc spring load and hydraulic pressure are zero, allowing pads to be removed in safety. This feature also permits brake installation without the need for hydraulic pressure.

The Twiflex team provides complete technical and engineering support for all wind applications to ensure proper brake selection and system configuration.

* Source: Global Wind Energy Council; www.gwec.net



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