

Altra[®]
Motion

RENEWABLE ENERGY

Svendborg Brakes | Stromag | Ameridrives | Warner Electric | Twiflex

SUPERIOR SOLUTIONS

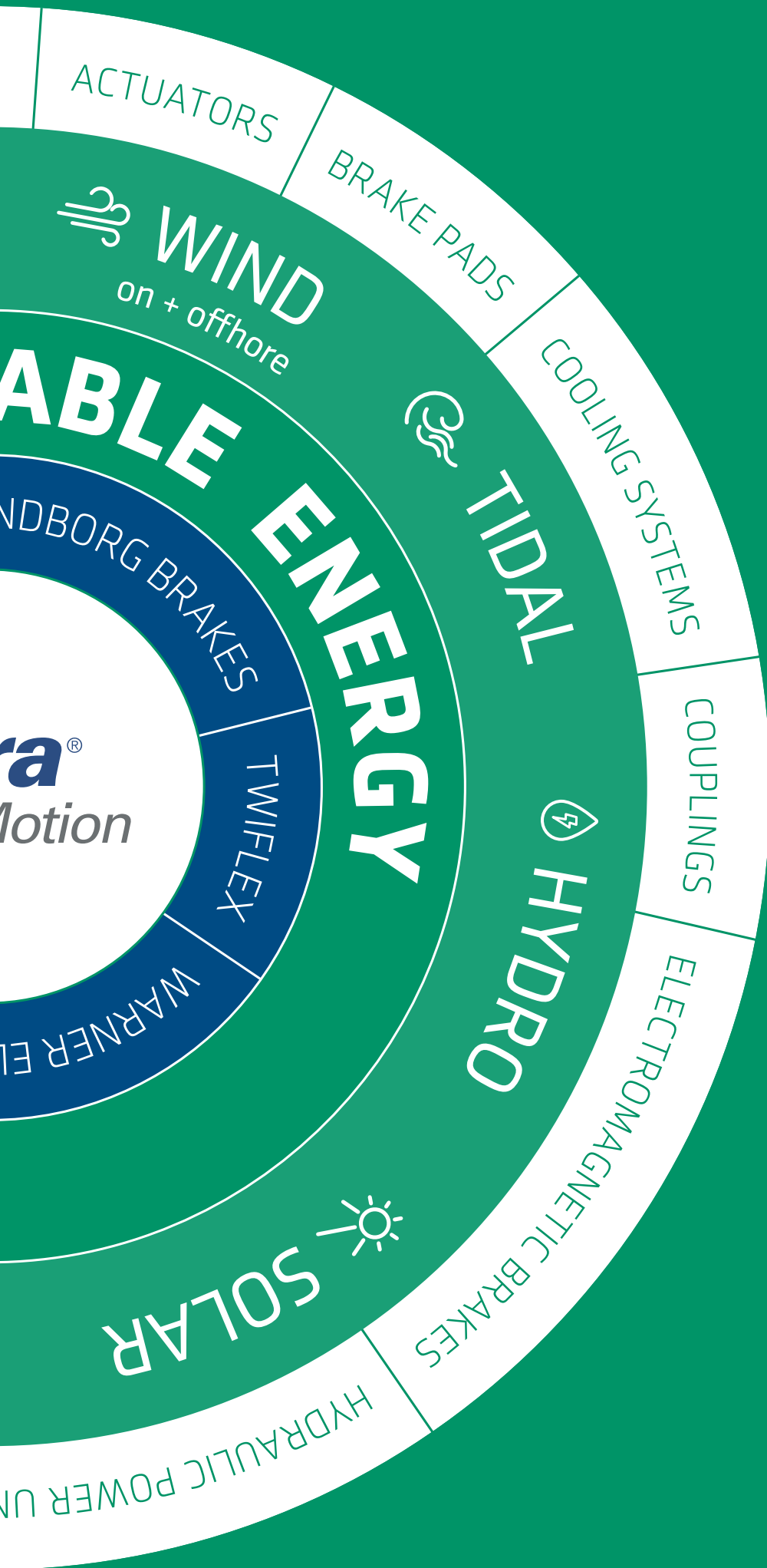
Way Beyond Products



We unite decades of engineering experience, traditional craftsmanship, and innovation excellence to support a safe, sustainable and economically viable production of renewable energy.



THE
POWER
OF
UNITED
BRANDS



ra[®]
Motion

ACTUATORS

Broad range of electric linear actuators.
Custom configured for the renewable energy market.

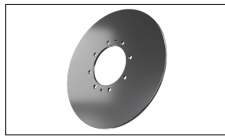


Electric Linear Actuators by Thomson

Customized to meet specific renewable energy applications | Special pin to pin and stroke lengths | Special end fittings and mounting brackets | Available for pitch system, rotor lock, yaw lock, ventilation/service hatches and access gates |

BRAKE DISCS

Standard and custom sizes.

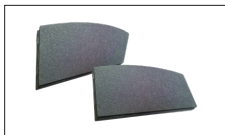


Steel Brake Discs by Svendborg Brakes

We supply steel brake discs according to application requirements | Standard sizes as well as custom sizes and special designs such as split discs are available |

BRAKE PADS

Leading supplier of friction materials meeting strict EU environmental regulations.



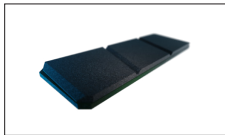
Organic by Svendborg Brakes

In-house developed and thoroughly tested friction material for a variety of brake pads | Manufactured to reduce noise during operation |



Sinter by Svendborg Brakes

Global supplier of sinter brake pads to the world's largest OEM's, wind parks, utility and service companies | Wide range available |



The Green Alternative by Svendborg Brakes

Developed inhouse in compliance with REACH legislation | Asbestos free | Containing less than 0.1% Mercury, Chromium 6+ and Lead | Less than 0.01% Cadmium |

COOLING SYSTEMS

Maximizing output and efficiency, keeping nacelle at optimum temperatures. Delivers outstanding performance and minimizing maintenance.



Cooling Systems by Svendborg Brakes

Available in various sizes and flow rate ranges | Optional passive cooling elements for installation on top of wind turbines | Coolant medium: Water/glycol mixture | Design temperature: -20 to +50°C | Expected lifetime: 20 years |

COUPLINGS

Custom designed lightweight couplings capable of transmitting high torques at high speeds.



Turboflex Wind by Ameridrives

Custom engineered | Torque limiter assemblies to protect gearbox and generator from extreme torque and damage | In-house research and development lab |

ELECTROMAGNETIC BRAKES

Pre-assembled on/off dry failsafe electromagnetic brakes for pitch or yaw motor brakes on wind turbines.



PK35, PK60, PK100 by Warner Electric

Up to 37 Nm | Multi-step braking versions available | Hand release and IP67 protection on request |



ERS VAR 11 by Warner Electric

Torque according to disc diameter and number of calipers | Floating magnet and fixed disc | EC 95/16 certified | Hand release | Over excitation (dual voltage) | Micro-switch equipped (IP66) | Air gap adjustment screws |

HYDRAULIC BRAKES

Decades of pioneering craftsmanship in developing innovative rotor and yaw brakes. Globally more than hundreds of thousands caliper solutions delivered.

YAW



BSAB 50 Dual-Action, Active by Svendborg Brakes

Clamping force: 32.400 N | Weight: 11 kg |



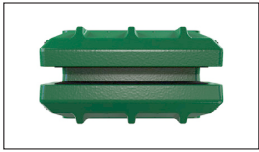
BSAB 90 Dual-Action, Active by Svendborg Brakes

Clamping force: 0 to 235.000 N | Weight: 62 kg |



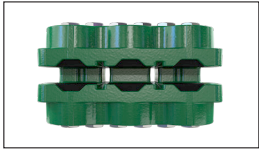
CB 90 A Ultra, Active by Stromag

Clamping force: 0 to 235.000 N | Weight: 61 kg |



BSAB 120 Dual-Action, Active by Svendborg Brakes

Clamping force: 0 to 628.000 N | Weight: 181 kg |



CB 120 A Strong, Active by Stromag

Clamping force: 543.000 N | Weight: 190 kg |

ROTOR



BSAB 50 Dual-Action, Active by Svendborg Brakes

Clamping force: 0 - 32.400 N | Brake pad distance (w) 0,056 m
Weight: 11 kg |



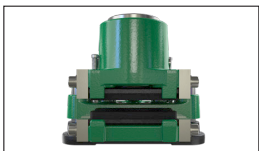
BSAB 90 Dual-Action, Active by Svendborg Brakes

Clamping force: 0 - 200.100 N | Brake pad distance (w) 0,102 m
Weight: 55 kg |



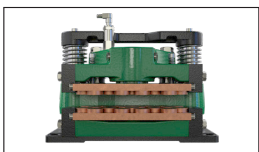
CB 90 R Ultra, Active by Stromag

Clamping force: 0 - 200.100 N | Brake pad distance (w) 0,114 m
Weight: 62 kg |



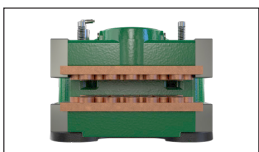
BSFI 200 Mono-Spring, Failsafe by Svendborg Brakes

Clamping force: 0 to 12.000 N | Brake pad distance (w): = 0,07 m |
Weight: 19 kg |



BSAK 300 Mono-Action, Active by Svendborg Brakes

Clamping force: 0 to 55.000 N | Brake pad distance (w): 0,13 m |
Weight: 75 kg |



BSAK 3000 Mono-Action, Active by Svendborg Brakes

Clamping force: 0 to 130.000 N | Brake pad distance (w): 0,20 m |
Weight: 160 kg |



MX Brake Caliper by Twiflex

Spring-Applied, Hydraulically-Released lever-type caliper brakes.
Clamping force: 0 to 18 kN | Brake pad distance (w): 0.033 m |
Weight: 11.6 kg |

HYDRAULIC POWER UNITS

Thousands of installations around the world testify the reliability of our hydraulic power units.



Power Units by Svendborg Brakes

For direct drive and conventional wind turbines | Certified pressure control valve to ensure pressure relief in case of control failures | Operational in cold and hot climate environment |



LCS Power Units by Twiflex

Compact hydraulic power units designed to operate small caliper brakes | Provides on/off control of spring applied/passive brakes |

LIMIT SWITCHES

Controls and sensors for pitch and yaw drives. Designed for yaw drives to stop the rotary motion of wind turbines safely.

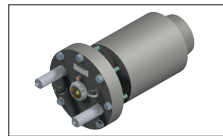


Limit Switches by Stromag

Yaw and pitch drive compatible | Pre-configured plug and run connections | Repeatable switching points | Easy alignment during installation | Maximum precision with easy adjustment | Different versions available |

ROTOR LOCKS

Custom-engineered for lightweight, high torque shrink connection between turbine main shaft and gearbox.



RL by Stromag

Compliance with safety regulation | Hydraulically operated | Conical locking pin for backlash-free locking | Nonstick coating and equal locking and unlocking forces - no jamming of the pin | Limit switches for locked/unlocked positions |

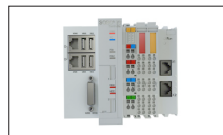


RO-LO by Svendborg Brakes

Compliance with safety regulation | Suitable for extreme wind loads | Monitoring capabilities by visual and/or electrical sensors | Fully automated rotor lock engagement | Hydraulic or manual options |

SOFT BRAKING SYSTEMS

State-of-the-SOBO® iQ is the next generation of our industry leading braking controller with cutting edge technologies.



Soft Braking Controller by Svendborg Brakes

Industrial-grade embedded PC | Built-in MODBUS TCP/IP interface | Custom optimized IP67 communications module | EtherCat-based internal network | Full BUS monitoring | Optional cable redundancy | Fast hydraulic operation | Optional manual operation |

360°

AFTERMARKET SOLUTIONS

Our dedicated aftermarket set-up supports OEM's, wind parks, utility and service companies.

We deliver 360 degrees life-cycle management solutions uniting decades of engineering experience, traditional craftsmanship and innovation excellence. We go way beyond products!

- OEM approved genuine parts
- Certified and global service teams
- Scheduled maintenance programs
- Patented service tools
- Upgrade and retrofit solutions
- Training academy courses
- 24/7 technical support
- IIo Innovation (Industrial Internet of Things)

SPARE PARTS

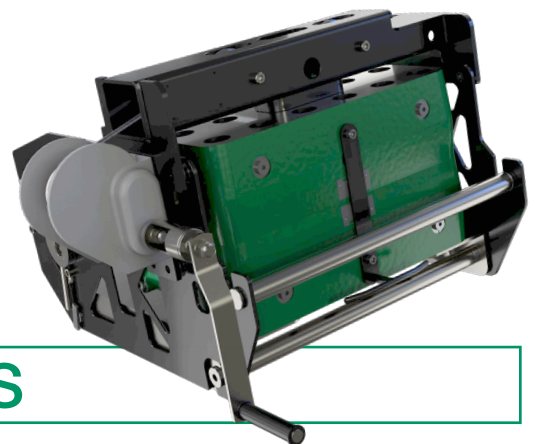
Supported by our 24/7 service support, we deliver OEM approved genuine spare parts.

- Brake pads
- Service/maintenance kits
- Indicators
- Etc.

SERVICE TOOLS

Exclusive and innovative service/maintenance tools specifically developed to improve safety, extend product lifespan while minimizing downtime.

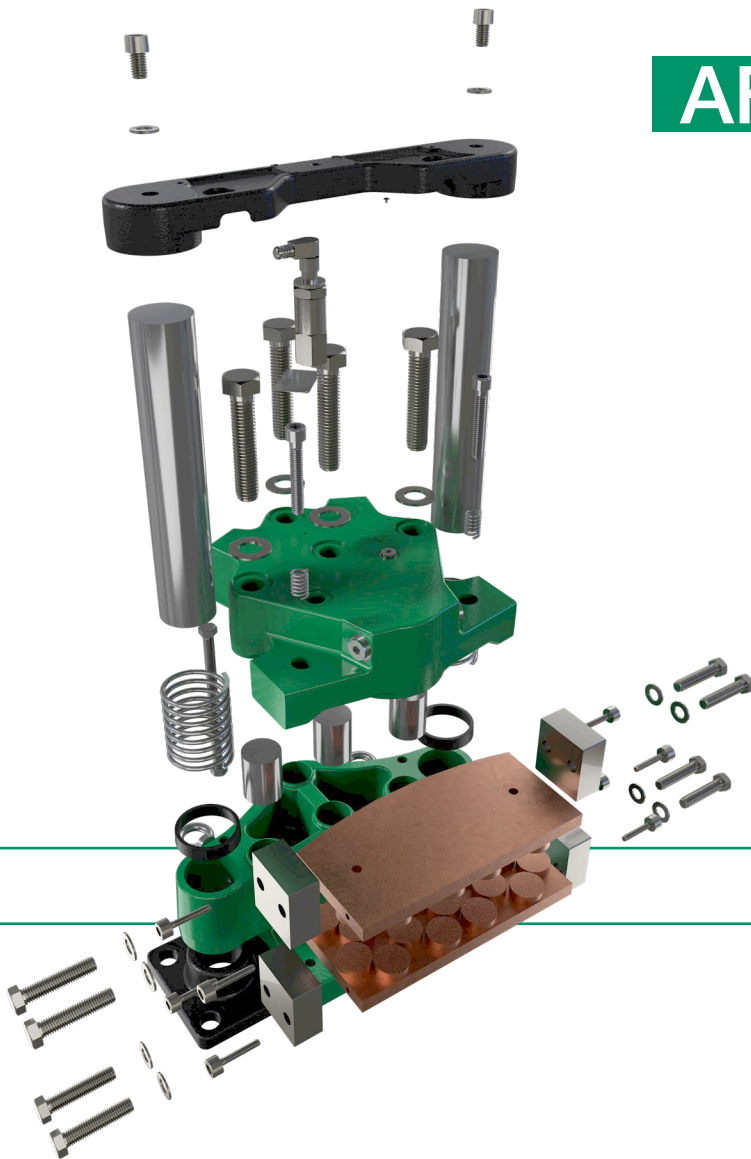
- Lifting & installation tool
- Disc resurfacing tool
- Yaw noise reduction groove tool



SERVICE TEAMS

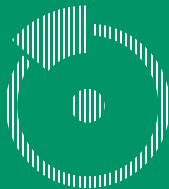
Our certified service teams work independently or with other service technicians during global service/maintenance campaigns. We also offer:

- Job-specific training
- On-site training
- Training academy courses
- 24/7 Service support

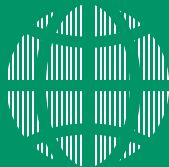




DESIGN SERVICES is the starting point of the process ensuring that your solution is just right for your specific operation.



PRODUCTS within the power transmission and motion control product groups. Used for renewable energy solutions in the wind, solar, tidal, biomass, hydro, geothermal and energy storage markets.



SUPPLY CHAIN SERVICES allows us to meet your needs no matter what they are – and no matter where you are. We solve your supply chain needs from end to end.



AFTERMARKET SERVICES is your guarantee that we will never let your operation out of mind or sight. With us you do not just buy a product. You also buy training, service and support that keep it working.

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