



**INTORQ**

setting the standard

## Electromagnetic braking systems

for wind turbines



**German confidence  
combined with North  
American advantages**

[www.intorqusa.com](http://www.intorqusa.com)

# We set the standards

INTORQ stands for reliable brake solutions with the highest product standards. Whether in crane and lift systems, wind turbines, industrial trucks or brake motors, we offer you the right solutions for your drive – individual and safe.

The INTORQ module system with its broad range of different versions has set standards worldwide. We have a global presence, with sites in Shanghai, Atlanta and Pune. Our sales network and service are available for you locally, all across the world.

## INTORQ at a glance

- Sales volume >55 million euros per year
- 800,000 units per year
- 13,000 square metres of production space
- 275 employees
- Market leader with 63 sales partners in 49 countries



## INTORQ quality worldwide

We manufacture our products with the same processes and the same quality at all INTORQ sites. The basis for this is provided by our international production network. We can react flexibly in production thanks to our versatile assembly structure.

## INTORQ test laboratory

The main focus in our development work is on the quality and safety of our brakes. Our products are thoroughly tested, and function-relevant values are continuously documented.

In Germany, we have the honour of being one of only three firms worldwide that are allowed to carry out online tests on behalf of the TÜV-SÜD/Deutschland inspection agency.

## INTORQ logistics certified

Our approval as a “Known Consignor” carries the number DE/KC/0898-01. Our freight consignments now do not have to be checked at airports, so they can be delivered more quickly and more cost-effectively.

## INTORQ is an AEO

An AEO is an authorised economic operator in the European Union who has been checked by the Customs Office and consequently enjoys certain privileges (simplified customs procedures, preferential treatment etc.). The AEO programme is recognised by numerous other countries (for example, the USA and China).

## Our strength: we bring wind turbines to a precise, safe halt

Our brakes have been used in wind power installations for over 20 years, and they perform their task reliably. This field of application has special requirements: great reliability, long maintenance cycles, durability in the face of environmental influences, and tight braking torque tolerance.

For pitch drives we have developed spring-applied brakes as holding brakes. Even after a failure, they operate in a defined failsafe running mode. The brake is encapsulated and, if required, can be fitted with a tachometer.

For yaw drives we use brakes from our modular BFK458 series. They keep the turbines properly aligned in the wind. In the event of a fault, the brakes have to allow the nacelle to keep moving with the wind.



## Optimal solutions for the standard tasks

For more than 20 years we have kept our nose to the wind, offering our customers optimised braking systems for the heavy demands made on pitch and yaw drives. We are constantly refining our range of products, adapting them to the various requirements. Today you are in a position to select the braking system you require from a wide variety of variants, assembling it flexibly from different components.

We stand for the highest levels of quality and reliability, and we guarantee you short delivery times. Our production system is geared to low piece numbers, always ensuring you the most cost-efficient solution for your drive.

The BFK470 range of sealed-design brakes replaces the BFK460 spring-applied brake. A self-contained system, it is predestined for use in pitch and yaw drives. Thanks to its high level of ingress protection, IP66, its sealed hand-release, and its numerous different friction linings, this brake can be flexibly adapted to meet the various requirements in wind power installations.

The modular BFK458 range is mostly used in yaw drives, where it can be employed universally as a standard product. The modular design ensures a high degree of flexibility, and the use of standard components ensures cost-saving configuration.





Pitch drive with BFK470 spring-applied brake, pictured without transducer



Yaw drive with BFK458 spring-applied brake



BFK470 with hand-release, typical of yaw drives



BFK458 with mounted hand-release and flange, typical of yaw drives



BFK470 for transducer mounting with inductive micro switch, suitable for pitch drives



BFK458 without hand-release with friction plate, suitable for yaw drives

## BFK470 spring-applied brake – the solution for pitch and yaw drives

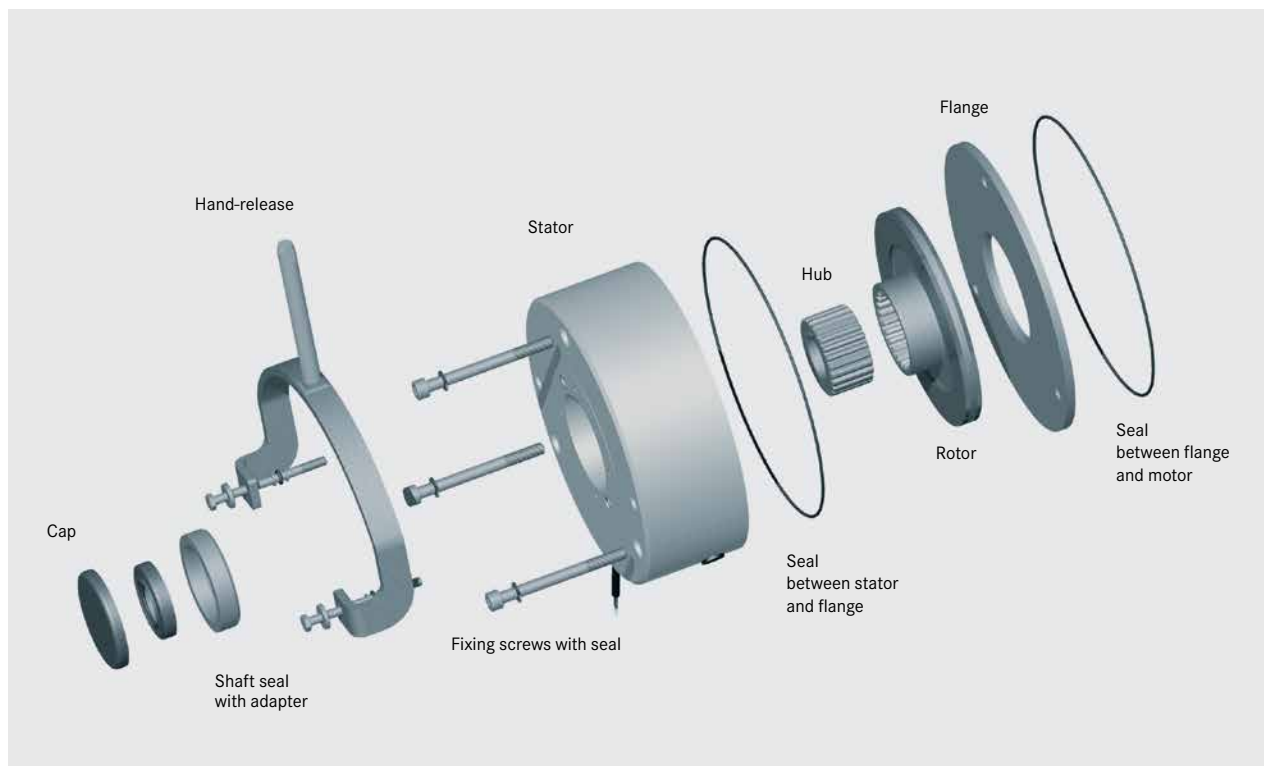
### Specifications

- IP66 enclosure
- Wear can be measured when the brake is mounted
- Graduated torques, from 40-250 Nm, 3 sizes
- Standard voltages 24-205V DC
- Temperature class F (155°C)
- Designed for 100% duty cycle
- Electrical insulation system is UL-certified (UL Standard 1446)

### Variants

- Temperature-proof up to  $-40^{\circ}\text{C}$  (CCV, cold climate version), also with sealed hand-release – open design, suitable for mounting a rotary transducer
- Function monitoring by non-contact proximity switch
- Rotor with plastic sleeve
- Models with and without flange
- Excitation possible with pulse width modulation (PWM)
- Overexcitation and holding-current reduction possible with bridge/half-wave rectifier

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# BFK458 spring-applied brake – the option for yaw drives

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## Specifications

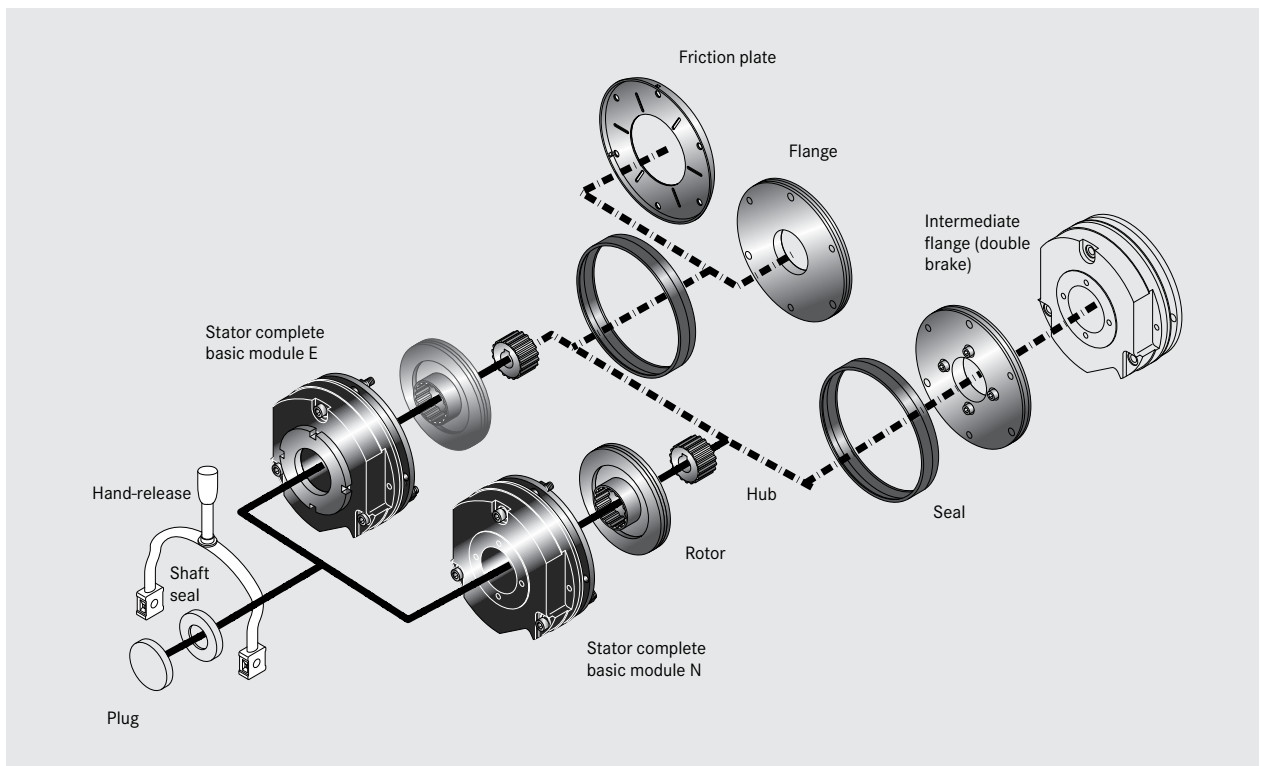
- Standard brake, modular structure with large number of variants
- IP55 enclosure
- Graduated torques, from 2-600 Nm, 9 sizes
- Standard voltages 24-205V DC
- Temperature class F (155°C)
- Designed for 100% duty cycle
- Electrical insulation system is UL-certified (UL Standard 1446)
- CSA/CUS certification on the basis of UL Standard 508

## Variants

- Temperature-proof up to -40°C
- Design E (torque can be reduced) and Design N (torque cannot be adjusted)
- Function monitoring or wear control via micro switch
- Rotor with plastic sleeve
- Models with and without flange or friction plate
- Excitation possible with pulse width modulation (PWM)
- Overexcitation and holding-current reduction possible with bridge/half-wave rectifier



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## Always a better idea – the options for sustained operation

### Special friction linings

We have developed different kinds of friction lining for the various applications and operating conditions. BFK458 spring-applied brakes can be equipped with standard linings, low-wear friction linings or HFC friction linings. The newly developed BFK470 spring-applied brakes can also be supplied with RIF and HT friction linings.

#### HFC (high friction coefficient)

- For higher braking torques
- For use as a holding brake
- Running-in period required
- Restricted maximum speed

#### RIF (run-in-free)

- Stable static torque
- For use as holding brake
- No running-in required
- Developed for the heavy demands on pitch drives in wind power installations
- Restricted maximum speed

#### HT (high temperature)

- Highly temperature-resistant friction lining, to facilitate significantly higher friction work (in comparison with the standard aluminium rotor)
- Stable static torque
- Especially suitable for pitch and yaw drives in wind power installations

### Rotor with plastic sleeve – a solution with many benefits

The rotor with the plastic sleeve reduces the necessary backlash to a minimum and thus increases the service life.



#### Features and benefits

- Low rate of wear between rotor and hub
- Recommended for operation with frequency inverter
- Also suitable for CCV



## Faster, better more reliable – bridge/half-wave rectifiers

After a set amount of time, the bridge/half-wave rectifiers switch from bridge rectification to half-wave rectification. Depending on the choice of voltage, this leads to an overexcitation (shortened brake release time) or to a holding-current reduction (low self-heating, energy savings).

It is also possible to combine the two features with each other: slight overexcitation with low holding-current reduction.



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## Benefit with far-sightedness – pulse width modulation (PWM)

We have modified the insulation system of the INTORQ spring-applied brakes specially for this area of use, in order to prevent possible damage through partial discharges.

This can occur in the excitation of spring-applied brakes from the intermediate circuit of a frequency inverter.



## With our nose to the wind for over 20 years: competitive advantages from INTORQ brakes

Our brake solutions have been tried and tested a 100,000 times in wind turbines all over the world. As a result of our many years of experience and our innovative refinements, we have continually extended our standard programme.

A recent addition to the programme is our new BFK470 series of brakes, which meets even more of the requirements in this market thanks to special friction linings combined with a high level of enclosure (ingress protection). In what we do, our focus is always on the customer benefits and the individual application.

### Our competence – your benefits

- Long maintenance intervals thanks to the special construction and the use of wear-reducing components
  - guide pins in the armature plate
  - rotor with sleeve
  - use of a steel hub
- Easy maintenance through wear assessment while mounted (dismantling unnecessary)
- Temperature-proof up to  $-40^{\circ}\text{C}$  (Cold Climate Version)
- IP66 enclosure, even with sealed hand-release
- Low torque tolerance through special friction linings
- Monitoring by non-contact proximity switch or mechanical micro switch
- Modular structure with short, defined delivery times
- Brakes and spare parts available worldwide from INTORQ companies and sales partners

### We understand your requirements and find the right solution

Do you need more than our standard programme can offer with its numerous ready-made solutions? Our experienced project management is used to fulfilling challenging requirements in a professional way. Together with you, our customers, we develop the right solution for your drive. That is one of our strengths. The first point of contact is our Key Account Sales Team, who will document your special requirements and support you in the very first steps of the planning process.

Within the organisation, our development engineers accompany the project from the construction to the sample production and to the series production release. In this way, together we find an individual solution precisely tailor-made to meet your needs.



## Service and sales, worldwide

We are available to our customers at all times and in all locations. Major customers and projects are supported directly by our Key Account Sales Team at our HQ in Aerzen (Germany) or by our locations in Shanghai (China), Atlanta (USA) and Pune (India).

In addition to this, we work with a global network of local trading partners and cooperate with Lenze's global sales organisation. Please send service requests directly to your local sales partner or to our HQ in Aerzen, Germany:

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› You can find more information on our products, as well as catalogues and operating instructions available for download, on our website at [www.intorq.com](http://www.intorq.com)





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