

## Global strength – local presence.

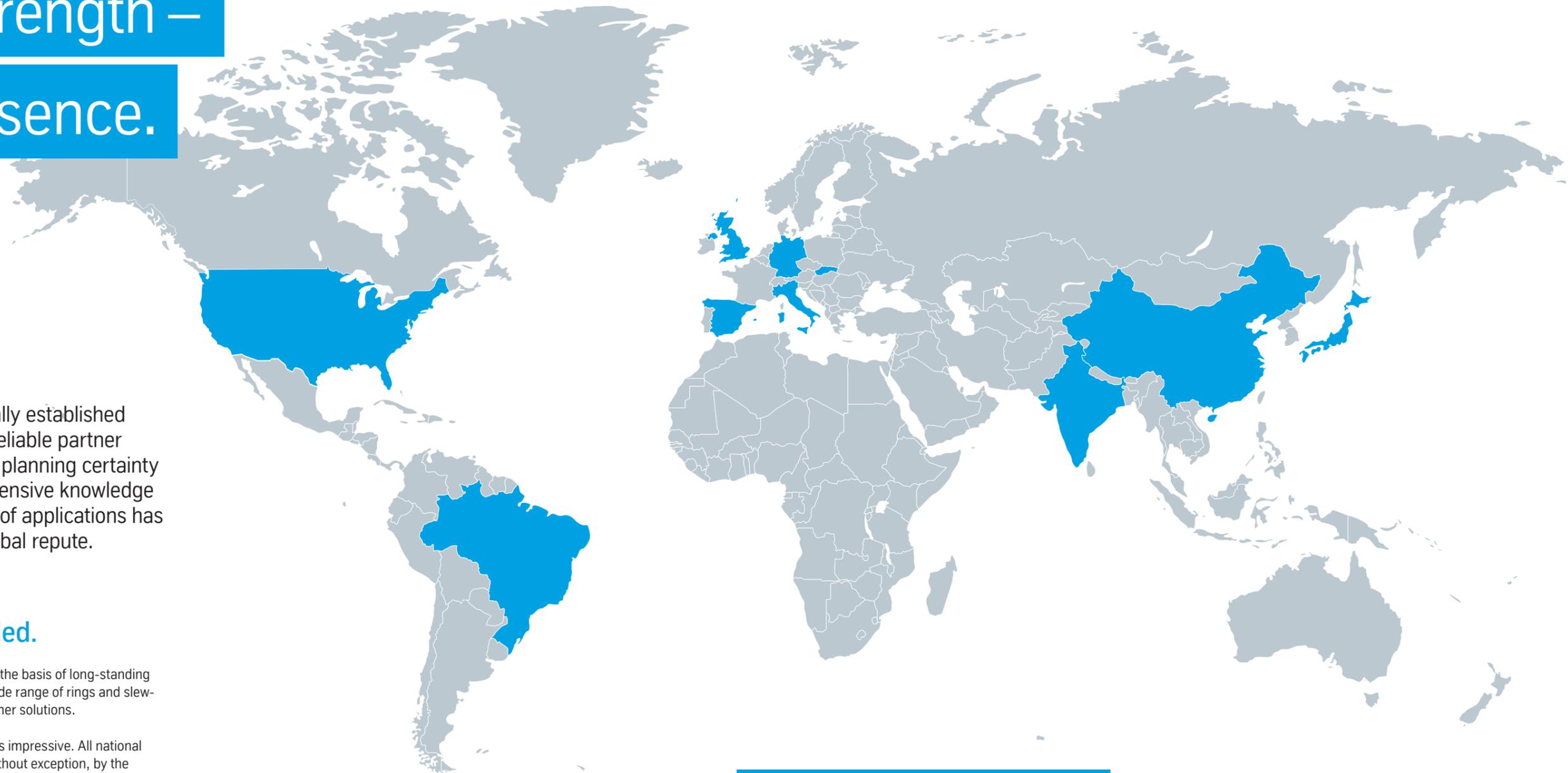
As part of an internationally established group, we are a strong, reliable partner offering you stability and planning certainty for your projects. The extensive knowledge vested in our wide range of applications has made us a supplier of global repute.

### You can find us where we are needed.

Our rothe erde® and psl® brands form the basis of long-standing customer relationships through our wide range of rings and slewing bearings and individualised customer solutions.

The depth of production we can offer is impressive. All national and international plants are bound, without exception, by the quality concept. Experienced and highly specialised employees with proven know-how work for constant innovation and adhere to the highest quality standards in the world.

Our outstanding position enables us to tackle projects by interdisciplinary approach and to import technology from other sectors. Our company has been a reliable partner to all the manufacturers of wind energy equipment since wind energy was first used.



The reliability and security which come from being a global group enables thyssenkrupp Bearings to provide you with fast and flexible decisions. With production sites in 10 countries and associated ring roller mills, thyssenkrupp Bearings and its subsidiaries represent a global brand which has a local presence.

# Wind energy plants – onshore and offshore.

Alongside innovative solutions for blade and yaw bearings, the main focus lies on developing main bearings. thyssenkrupp Bearings has been crucially involved in its role as the global market leader for slewing bearings. Intensive research and development has resulted in the successful deployment of thyssenkrupp Bearings products in wind energy plants (both onshore and offshore) throughout the world.

## The driving force.

Finite resources and rising energy prices constitute a global challenge. At thyssenkrupp Bearings we are taking on this challenge through our development of pioneering solutions.

With the aim of achieving advances in providing environmentally friendly energy, we are installing increasingly efficient wind energy plants throughout the world which are now able to compete against fossil energy resources. We at thyssenkrupp Bearings are a strong, progressive partner in the field of onshore and offshore systems. Our constant search for innovative concepts enables our customers not just to be part of the new energy era but to advance it and so make a crucial contribution to securing a more environmentally friendly future.

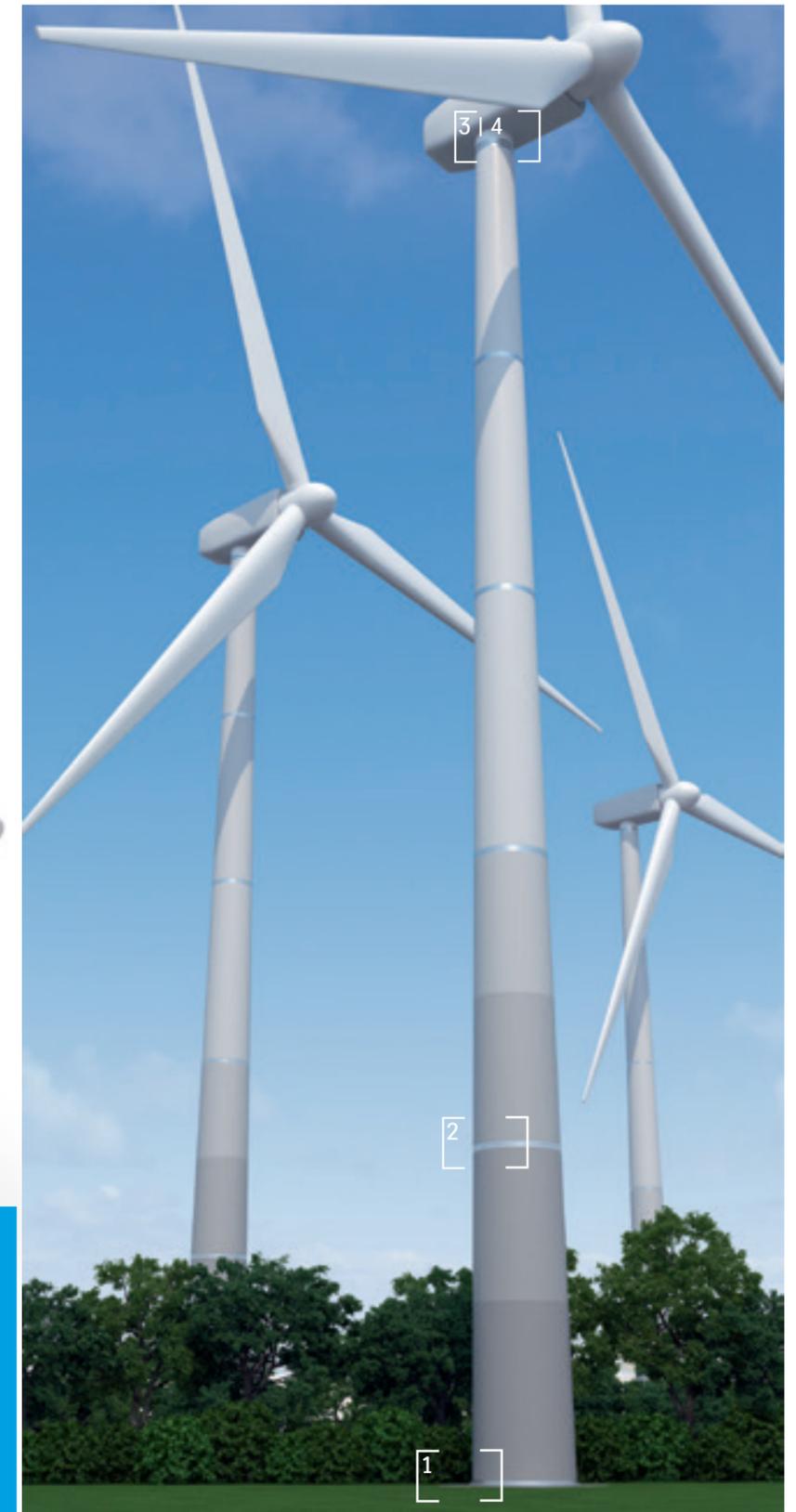
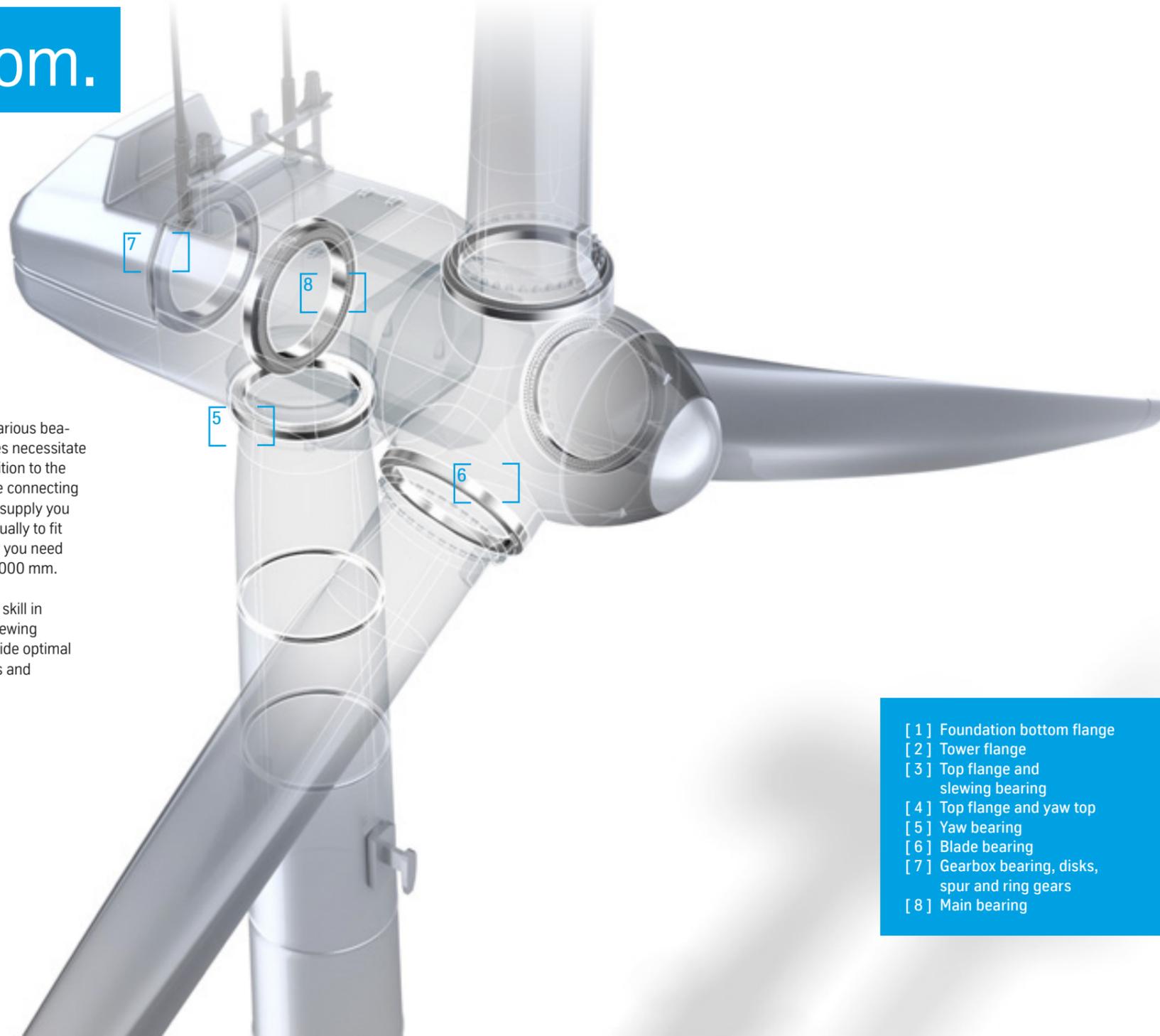


The carbon dioxide (CO<sub>2</sub>)-free energy gained through wind power is now ever more important. Germany is not just the leader in this technology, but also uses wind as the top alternative source of energy. The company's commitment to renewable energies has made it a reliable partner to all the important wind power plant manufacturers since the sector came into being.

# Wind energy plant expertise – from top to bottom.

The demands placed on the various bearings and rings in wind turbines necessitate individualised designs. In addition to the rings which provide the secure connecting element for the tower, we can supply you with suitable product – individually to fit your requirements – wherever you need them for diameters of up to 8,000 mm.

Many years of experience and skill in dimensioning ball and roller slewing connections enable us to provide optimal designs for the specified loads and operating conditions.

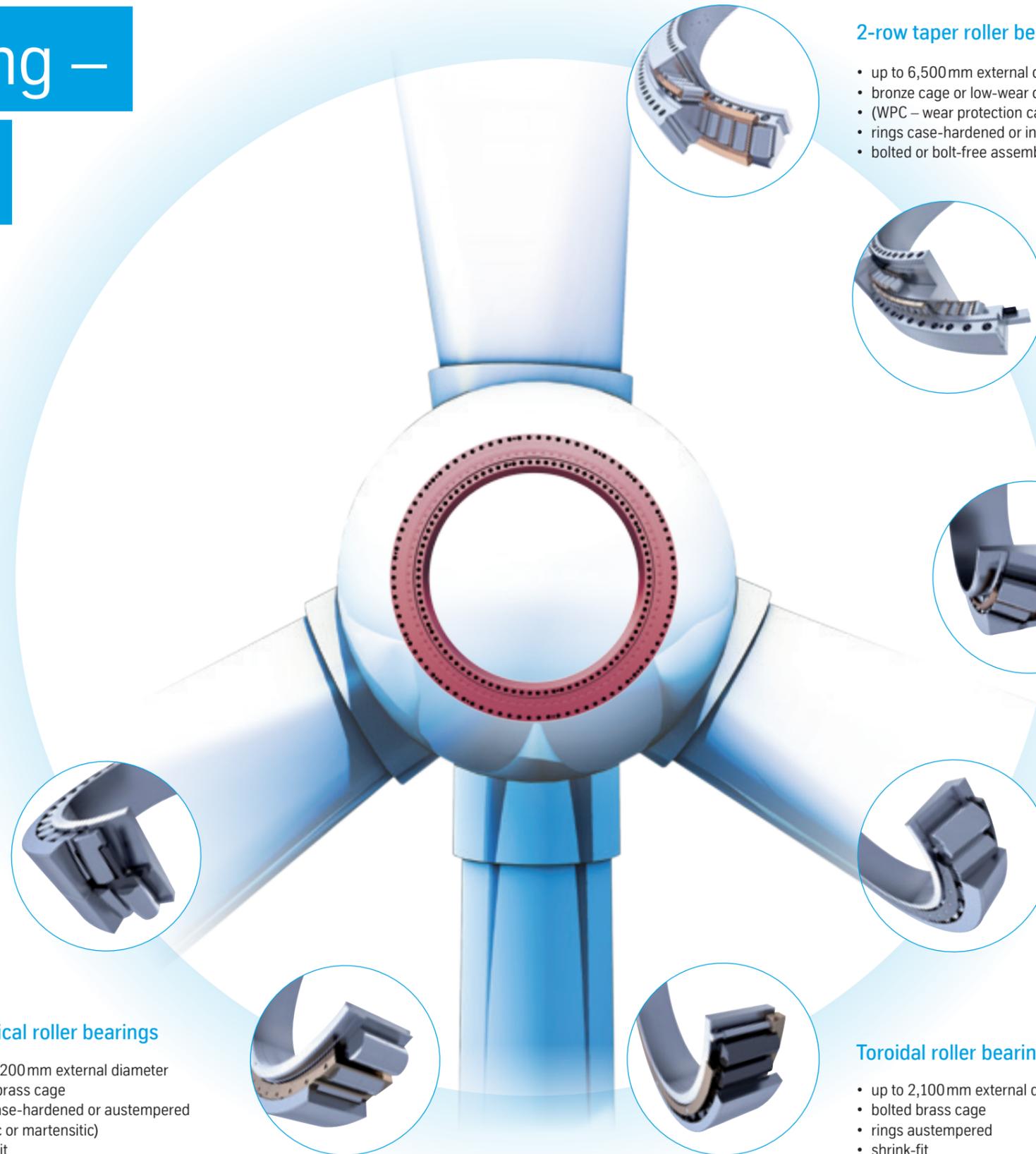


- [ 1 ] Foundation bottom flange
- [ 2 ] Tower flange
- [ 3 ] Top flange and slewing bearing
- [ 4 ] Top flange and yaw top
- [ 5 ] Yaw bearing
- [ 6 ] Blade bearing
- [ 7 ] Gearbox bearing, disks, spur and ring gears
- [ 8 ] Main bearing

# The main bearing – the central link.

The object of the main bearing is to enable the transmission of the torques from aero-mechanical energy conversion to the current-producing generator – with the least loss possible – and simultaneously to brace against the forces and moments which arise. The main bearing is therefore the central element of any drive train concept.

Whether one-row or multiple-row construction, clamped or bolted installation, case-hardened or slip-free induction-hardened raceways – we design these in close consultation with you and manufacture the appropriate solutions for diameters of up to 6,500 mm.



## Spherical roller bearings

- up to 1,700 mm external diameter
- integral brass or steel cage
- rings case-hardened or austempered (bainitic or martensitic)
- shrink-fit

## Cylindrical roller bearings

- up to 2,200 mm external diameter
- bolted brass cage
- rings case-hardened or austempered (bainitic or martensitic)
- shrink-fit

## 2-row taper roller bearings in O-arrangement

- up to 6,500 mm external diameter
- bronze cage or low-wear coated steel cage
- (WPC – wear protection cage) **WPC**
- rings case-hardened or induction-hardened
- bolted or bolt-free assembly possible

## 3-row cylindrical roller bearings

- up to 6,500 mm external diameter
- bronze cage or low-wear coated steel cage (WPC – wear protection cage) **WPC**
- rings case-hardened or induction-hardened
- bolted and bolt-free assembly possible

## 2-row taper roller bearings in X-arrangement

- up to 1,300 mm external diameter
- steel cage or welded pin-type cage
- rings case-hardened or austempered (bainitic or martensitic)
- shrink-fit

## 1-row taper roller bearings

- up to 1,300 mm external diameter
- steel cage or welded pin-type cage
- rings case-hardened using case-hardening steel

## Toroidal roller bearings

- up to 2,100 mm external diameter
- bolted brass cage
- rings austempered
- shrink-fit