Understanding Customer Needs

Today's roller element bearings have limited load-carrying capacity and show high failure rates. They account for less than 1% of a turbine's total cost, yet their failure can lead to losses of up to 100% of the turbine's value. To overcome this disproportionate risk, Miba has developed a **Segmented Journal Bearing - SJB®** - with the following advantages:

Gain Creators

- **Low OpEx** due to improved availability
- **Future-ready** - Enabling power density increase or compact drivetrain
- **Simpler** yet efficient **condition monitoring concept**
- **Longer lifetime** due to simple design
- Easy and full recyclability providing **low CO_2 footprint**

Pain Relievers

- **Lower** system and service **costs**
- Significant improvement in **reliability** to **lower** the **failures** during **lifetime**
- **Low Downtime** due to simpler inspection and fast replacement concept
- **Low noise** emission
- Easy handling and **local supply** of spare parts

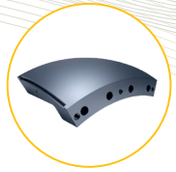
Miba's Broad Wind Components Portfolio

High-performance **Journal Bearings** for a long service life of wind turbine gearboxes

Majority of wind turbines have **Power Resistors** inside the energy management systems from Miba Resistors

Cooling Technology from Miba Cooling ensures that the power electronics in the switch boxes of wind turbines are kept at the right temperature

Miba Automation Systems specializes in **weld seam preparation** for offshore wind towers



The new **SJB®** for wind turbine main shaft is conceived for compactness, high power density and craneless service

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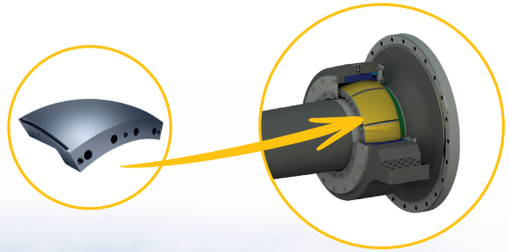
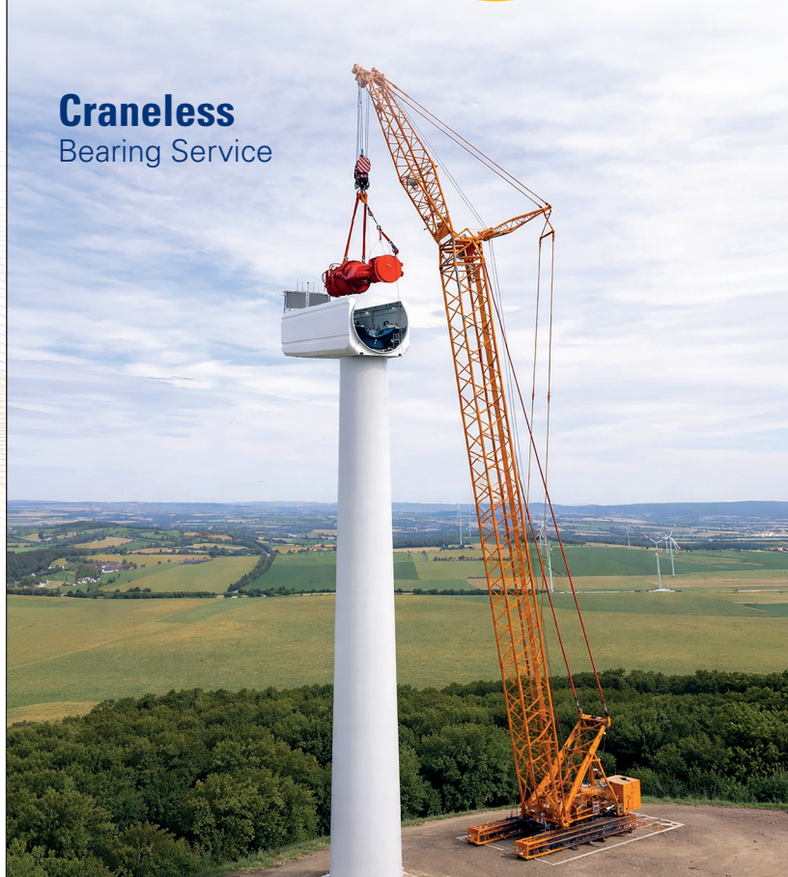
Innovation in Motion Miba

SJB® - Segmented Journal Bearing





Craneless
Bearing Service

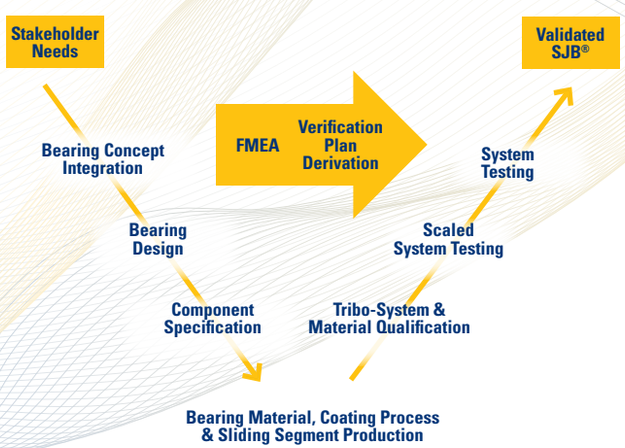
Your Trusted Development Partner

Miba Bearing Group is a reliable development partner for journal bearing solutions in commercial engines, wind turbine drivetrains, industrial machinery, hydropower and aviation.

With in-depth bearing expertise, we design components for the most demanding applications, operating in conditions where other technologies reach their limits.

Close Development Partnership

- Fast implementation of concepts into production-ready solutions
- Components with high technology readiness level and short time-to-market
- Solutions from a holistic system perspective: function, assembly, service, and cost efficiency
- Focus on concrete customer benefits through independent engineering and long term collaboration
- In house system engineering, design, simulation and validation
- Global footprint to support development and industrialization worldwide



Compact and Robust Technology

Substrate:
42CrMo4 steel

Bearing Material:
Laser-cladded CuSn12Ni2 (high wear resistance & metallurgical bond)

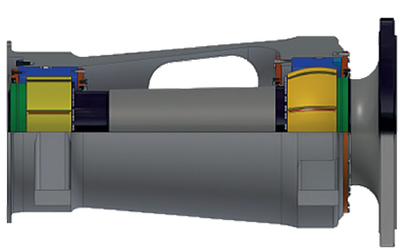
Validated SRB design spaces:
240/800 & 240/950 - no modifications of main shaft or housing required

Outstanding low-speed performance:
Significant hydrodynamic component from sliding speed as low as 0.05 m/s (equivalent to ~1 rpm for a 3.5 MW wind turbine)

Compliance by design:
The segment running surface geometry inherently accommodates shaft misalignment and bending - no adjacent tilting pads or compensation elements required

Even pressure distribution:
Non-Hertzian contact dramatically reduces peak pressures compared to roller element bearings, enabling further optimization of load capacity and bearing size

Superior break-away behavior:
Due to non-tilting design, the bearing rolls away before breaking away, maintaining a lubricated regime even after long standstill periods



Benefit from Miba Experience

- Miba's journal bearings have been operating reliably under extreme loads and harsh conditions across many applications
- Since 2008, we have developed specialized bearing solutions for wind turbines; our gearbox bearings are in series production
- We work closely with leading OEMs and gearbox manufacturers, combining application expertise with engineering know-how
- Since filing our first patents in 2010, we have continuously invested in R&D, people, and production capacity
- Using comprehensive design verification and in-depth engineering, we develop specific solutions for various drivetrain configurations

With around 100 years of bearing expertise, the Miba Bearing Group has grown into a reliable and global partner for functionally critical components. As a family owned company, we combine long term stability with worldwide presence - supporting our customers with deep technical competence and consistent partnership across the entire product lifecycle.