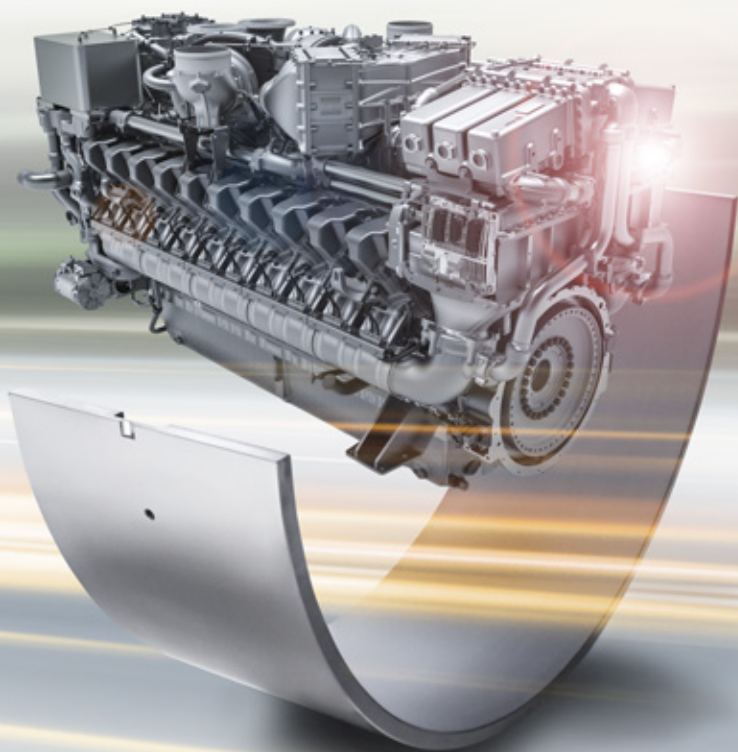


Innovation in Motion



Miba Bearing Group

**High-precision engine bearings balancing
performance, reliability and cost**



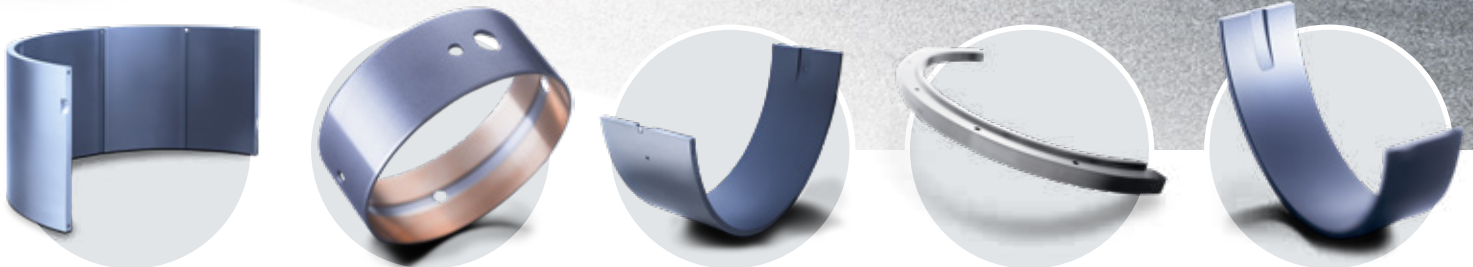
Miba bearings keep your engine running

They are used in connecting rods, crankshafts and camshafts in diesel and gas engines of heavy-duty commercial vehicles, locomotives, power plants and ships.

We produce engine bearings for various applications

Engine bearings

- Heavy duty truck engines
- High speed diesel & gas engines
- Locomotive engines
- 4 stroke medium speed diesel & gas engines
- 2 stroke engines
- Compressors & gas turbines
- Aircrafts
- Wind turbines



Your development partner

for a hidden component with complex technology

Our main focus is always on understanding the customer's unique challenges and to deliver the most cost effective and technologically appropriate solution.

**We offer the right balance
between function,
reliability and cost.**

Operational
excellence

Product
leadership

Customer
intimacy



The best solution for any application

Miba has developed a broad knowledge and expertise regarding the tribology of engine bearings and their associated powertrain components over decades.

Lining compound



Aluminium

- All standard aluminum-tin and self developed advanced aluminum materials for high load applications
- Belt caster for aluminum development and production
- Roll bonding



Bronze

- All standard lead bronze and self developed lead free copper based materials from own production (thin and heavy wall)
- Micro cast plant for material development
- In line cast plant – leaded and lead free bronze
- Spin casting – bronze bushings



Babbitt

- Tin based materials
- Ideal solution for 2-stroke applications
- Offers excellent tribological and damping properties

Surface technology

Electroplating

- Lead and tin based overlays
- Tower rack device
Diameter > 200 mm and bushings
- Slot rack device
High volume up to about 200 mm
- Experimental plating shop

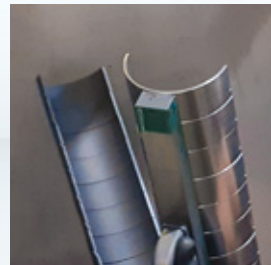


SYNTHEC® coatings

Lead free overlay completely environmental friendly during coating and in the application:

Truck up to 2 stroke bearing dimensions

- Coating process
- Production device
- Experimental coating device



Sputtering

Aluminum-tin based overlays coated within a special coating process based on central cathode delivering a completely uniform layer

- High volume coating device
- Large bearing coating device
Diameter 150 to 350 mm



Technological edge thanks to our R&D expertise

Thanks to our many years of experience in integrated product development, we can actively support our customers in engine development – from the design phase to simulations and operational

risk analyses. Our emphasis on research and development ensures that our products stay a step ahead, precisely aligned with customers' needs.



ENGINE CONCEPT

Feasibility study

- Hydrodynamics
- Technical specifications
- Bearing loading
- Target costs



ENGINE DESIGN

Bearing design

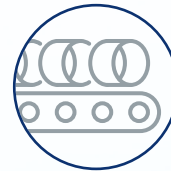
- Assembly situation
- Hydrodynamic simulation
 - Cranktrain hydrodynamics
 - Housing optimization support
 - Fretting risk
 - Cavitation risk
 - Lifetime estimation
 - Oil flow system
- Model testing
- Bearing type recommendation
- Validation program



ENGINE VALIDATION

Bearing validation

- Prototype supply
- Assembly test
- Bearing inspection
 - Lifetime
 - Phenomena analysis
 - Improvement opportunity
 - Lifetime accompanying program



ENGINE PRODUCTION

Bearing supply

- Production of bearing and supply



SERVICE

Service

- Remaining bearing life program
- Special investigation services
- Improvement support on demand
- Bearing judgment criteria



Global Manufacturing Footprint

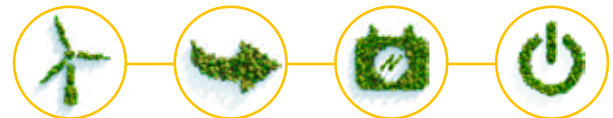
Local for Local. Our network spanning three continents allows us to respond quickly and flexibly to the different needs of the individual engine manufacturers.



- 1 MIBA BEARINGS US**
McConnelsville, OH, USA
- 2 ABM ADVANCED BEARINGS MATERIALS**
Greensburg, IN, USA
- 3 MIBA GLEITLAGER AUSTRIA**
Laakirchen, Österreich
- 4 MIBA BEARINGS MATERIALS**
Aurachkirchen, Austria
- 5 MIBA PRECISION COMPONENTS**
Suzhou, China

Miba Group Technologies for a Cleaner Planet

Miba develops and produces functionally critical components along the entire energy value chain. Our products make an important contribution to the efficient and sustainable generation, transmission, storage and use of energy. Miba sintered components, engine and industrial bearings, friction materials, power electronics components and coatings are used around the world in motor vehicles, trains, ships, aircrafts, wind turbines, power plants, refineries, compressors and industrial pumps.



Energy
Generation

Energy
Transmission

Energy
Storage

Energy
Use





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