

Miba Friction Group

Engineered Tribology for Friction Lining Solutions



Our Mission

Leading Solutions in Friction Systems



Miba Friction Group's Key Performance Elements boost the Efficiency of Clutches and Brakes for Vehicles and Industrial Applications.

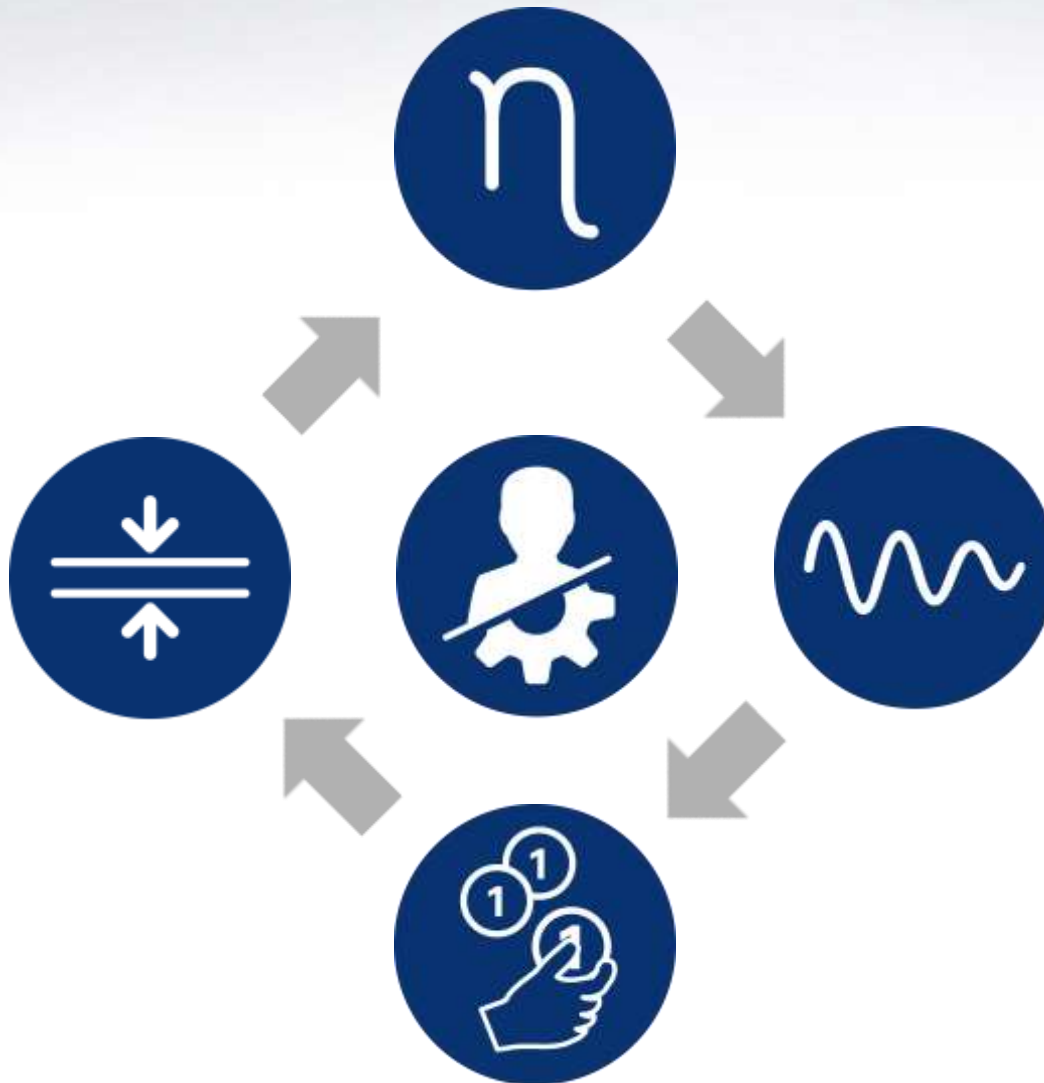
Our Solutions contribute to making our Customers' Applications

- more efficient
- more economical
- more environmentally friendly



Engineered Tribology

Our technology core values



Efficiency

Minimum energy losses at desired functionality

NVH Noise Vibration Harshness

Most capable controllability and highest level of comfort

Total Cost of Ownership – TCO

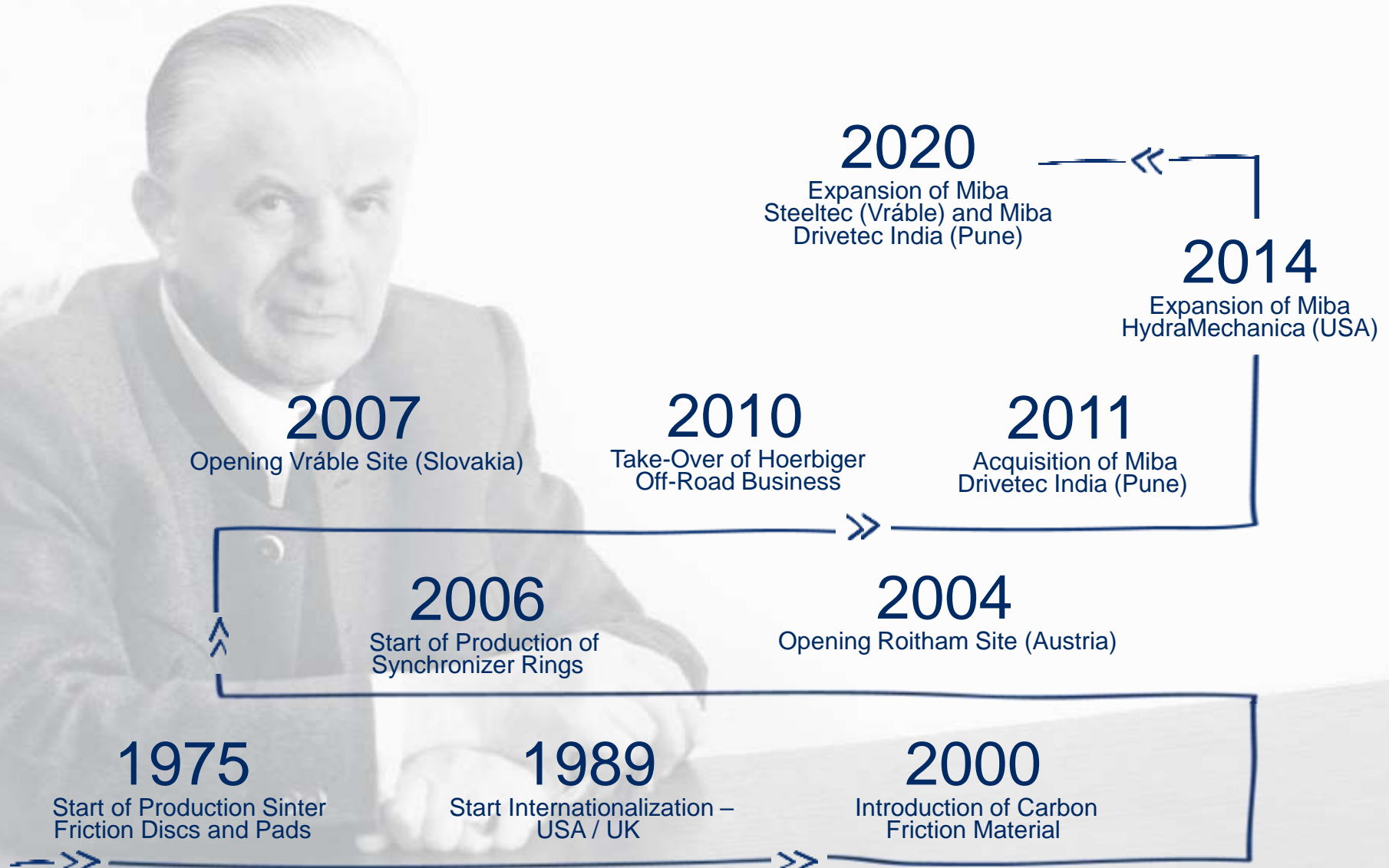
Best product lifecycle value

Power Density

Minimum package at desired functionality

Operational Excellence

History Miba Friction Group



Friction Systems & Applications

Focus on technologically demanding Market Segments



Disc Clutch



Disc Brake



Clutch & Brake



Synchronization

Dry Running

Wet Running (in Oil)



Passenger Cars

Organic
PCC®

Organic



Truck/Bus

Organic
Sinter / PCC®

Organic



Agriculture/Construction

Organic
Sinter

Organic



Rail/Industry/Wind

Organic
Sinter

Transmission Fiber Composite
AWD/LSD: Fiber & Carbon Composite, Molybdenum

Sinter Molybdenum
Fiber Composite Carbon

Fiber Composite Sinter

Sinter Molybdenum
Fiber Composite Carbon

Fiber Composite Sinter Molybdenum
--

Miba Business
No Miba Business

Fiber Composite:
resin bonded, high tech fibers
(with Carbon)

Sinter:
Cu/Fe based powder, sprinkled
or pressed, sintered

Organic:
Rubber-based, vulcanized or
resin bonded

Our Business Focus

Leading Solutions in Core Segments



Leading Development Partner and Supplier of Friction Material

Serving highly demanding wet- and dry-running friction applications in three business segments:

- Off Highway wet
- Automotive wet
- Dry

...we offer:

- Broadest Portfolio of Friction Materials
- Highly qualified Application Engineering
- Innovation by Research and Development + Testing
- Global footprint „local to local“ production



Off-Highway Wet

Number 1 in Europe – Top in the World, One Stop Shop



Innovative Technologies for

- Agriculture
- Construction & Mining
- Industrial Application
- Busses
- Aircraft & Marine

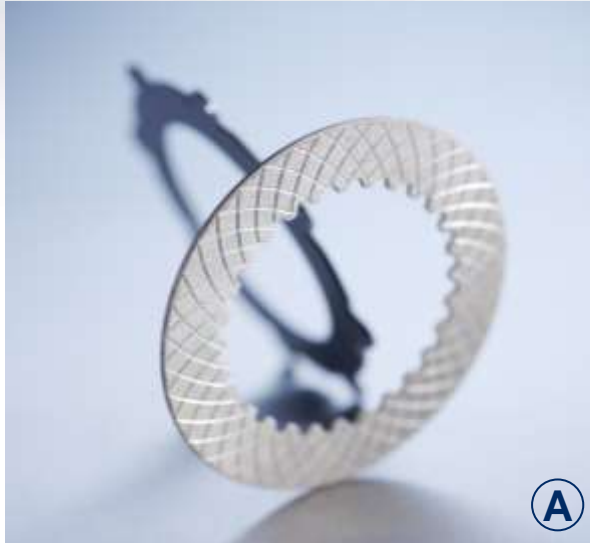
Design and Manufacturing Expertise for Discs and pre-assembled Packs

Unique Technological Portfolio:

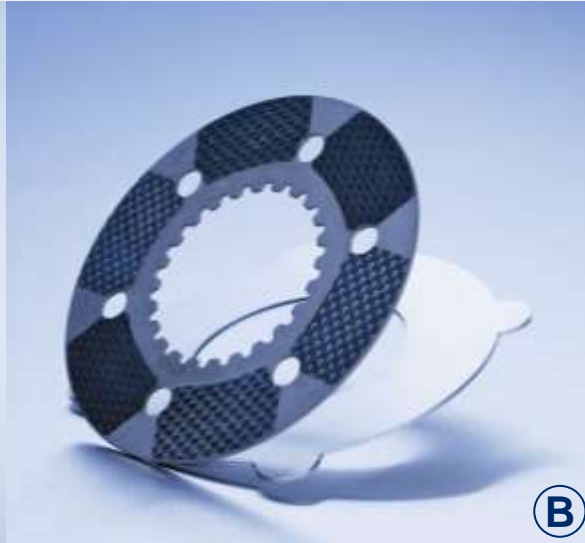
- Ⓐ Fiber Composite Discs
- Ⓑ Sinter Bronze Transmission Discs
- Ⓒ Sinter Bronze Brake Discs
- Ⓓ Steel Mating Discs
- Ⓔ Molybdenum (not shown)
- Ⓕ Gas nitrated (not shown)

Automotive Wet

Focus on driving Efficiency and Fun



A



B



C



D

- Complete Carbon-Coated Single-Cone and Multi-Cone Rings
- Disc Packs for Differential Locks and Torque Vectoring Systems

A Sintered Friction Discs

B Carbon Friction Discs

C Synchronizer Ring Car

D Twin-Cone Truck Rings with Carbon

Dry

High Performance in Product and Process guarantees the Success of our Customers



- High Temperature Resistance
- Low Wear of Friction Material and Mating Material
- Cost Efficiency through highly automated Production Equipment
- High and stable coefficient of friction

- A** Clutch Buttons for Tractor and Truck Applications
- B** Brake Pads for High-Speed Trains
- C** Brake Pads for Wind Turbines
- D** Brake Pads for Industrial Applications

Fiber Composite Discs

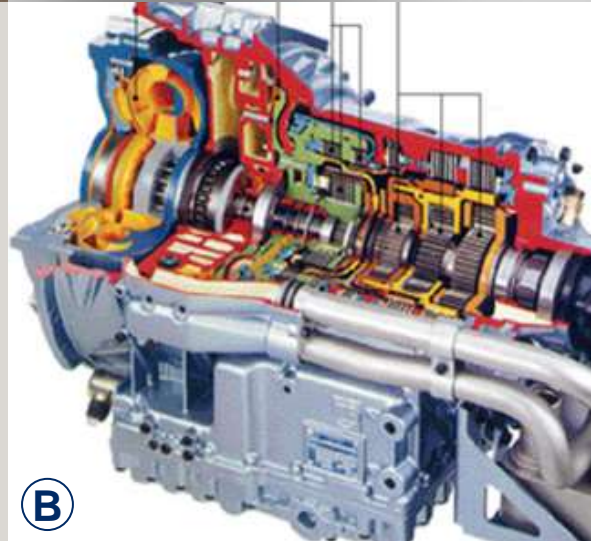
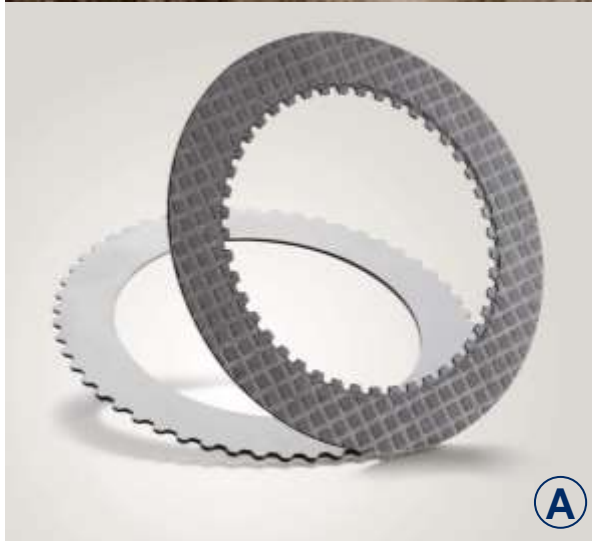
Wide Range of Fiber Materials



Fiber Composite Discs for Clutches and Brakes

Applications

- Agriculture
- Construction & Mining
- Busses
- Industrial Aircraft



A Fiber Disc
Friction for Clutch
Applications

B Automatic Bus Transmission
with Fiber Composite Discs

A **B**

Sinter Bronze Discs

High Performance Applications in Brakes and Transmissions



Sinter bronze discs for Brakes and Limited Slip differentials

Applications

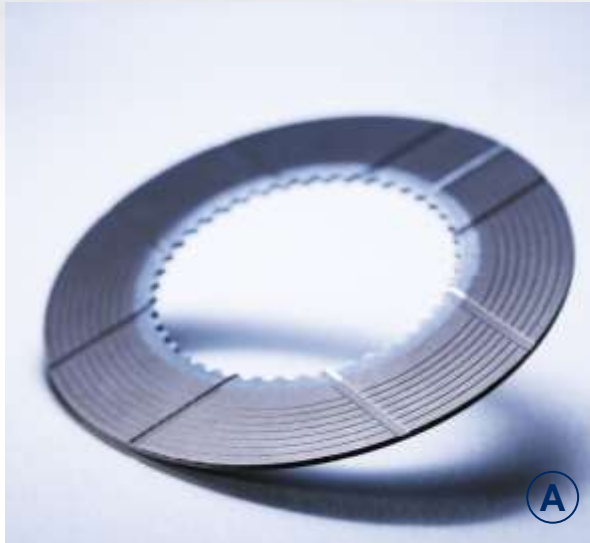
- Agriculture
- Construction & Mining
- Busses
- Industrial Application



- A** Sintered disc and reaction plate for brake application
- B** Limited Slip differential (LSD) for Agriculture application
- C** Collated sinter pack for LSD for tractors

Molybdenum Discs

For Applications where no other Friction Material prevails



Molybdenum discs for 4WD clutches and Limited Slip differentials

Applications

- Agriculture
- Construction & Mining



A Molybdenum disc with spiral and radial grooves

B LSD für Traktor

Carbon Discs

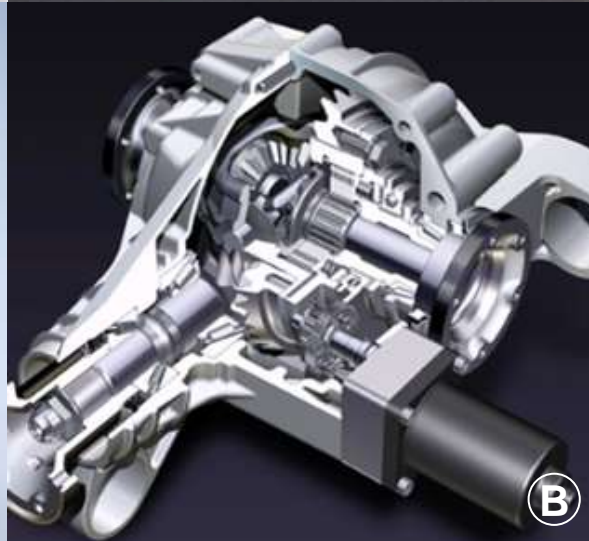
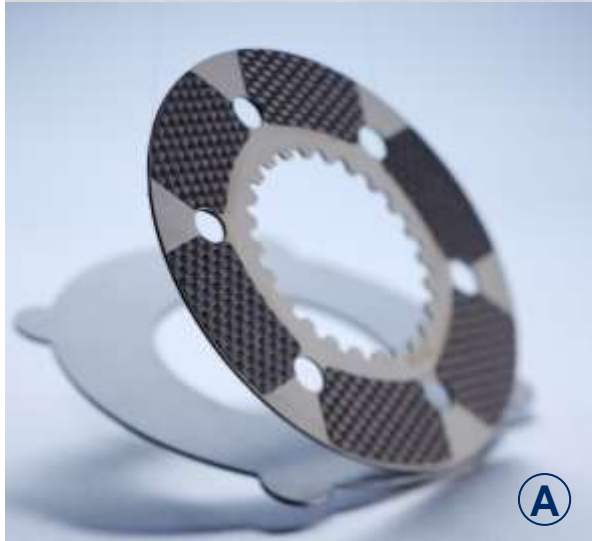
High Performing Differentials



Carbon Discs
Woven Carbon Linings

Applications

- SUVs
- Sports Cars
- Pickups



A Patented Design for best Carbon Material Utilization

B Rear Axle Differential with Carbon Friction Pack

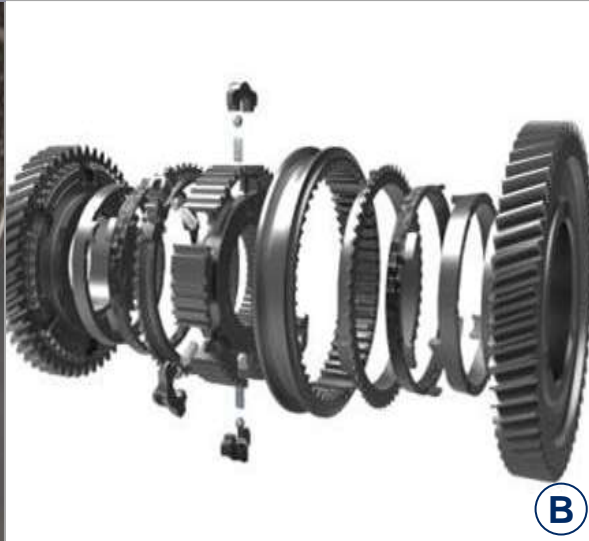
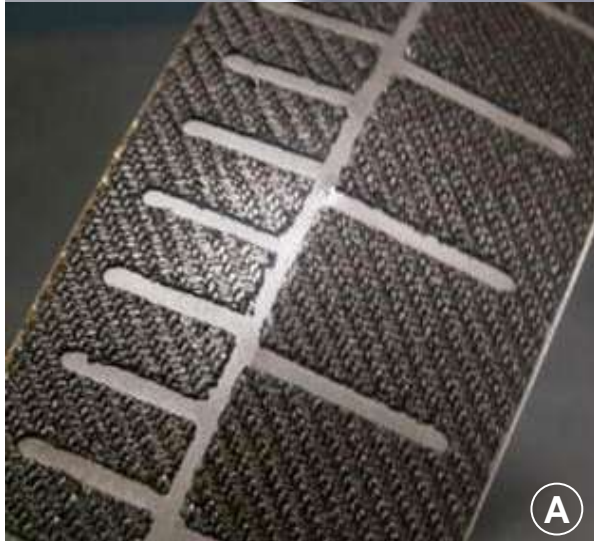
Synchronization

Carbon Linings



High-Load Synchro Applications

- Trucks
- Passenger Cars
- Pickups



A Twin-Cone Ring

B Synchronization

Sinter Brake Pads

For severe Applications



Pressed Sinter Parts for High-Speed Train Brake Applications

- Ⓐ Boogie
- Ⓑ Brake Pad
- Ⓒ Axle with three Brake Discs



Sinter Clutch Buttons

For heavy loaded Applications



Sinter Clutch Buttons for High-Load Truck and Tractor Clutches

Applications

- Tractors
- Class-8 Trucks in US
- Indian Truck

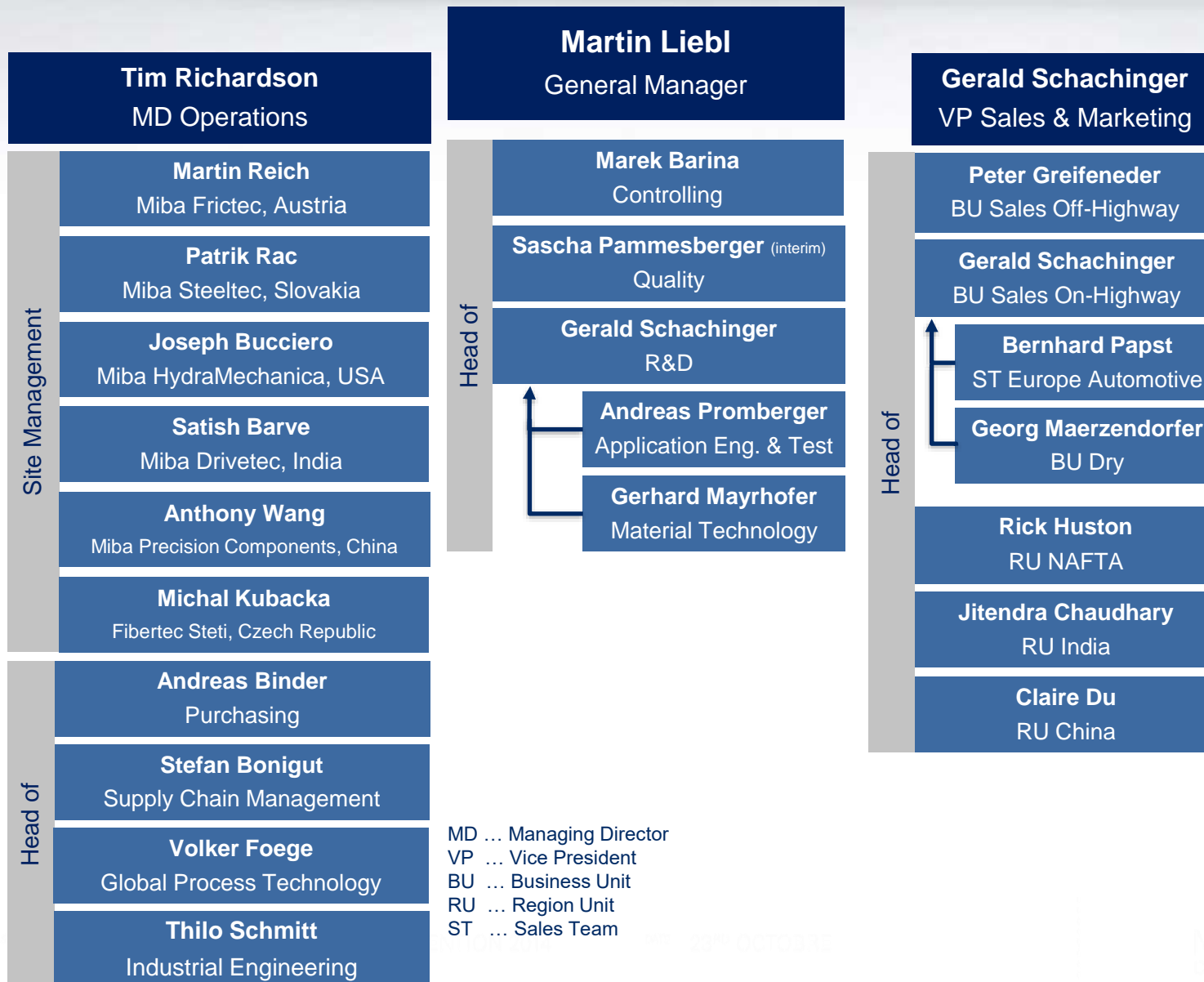
(A) Clutch Button

(B) Main Clutch



Miba Friction Group

Our Organization as of February 1st, 2021



Our Customers

Global OEMs rely on our high-quality Friction Materials

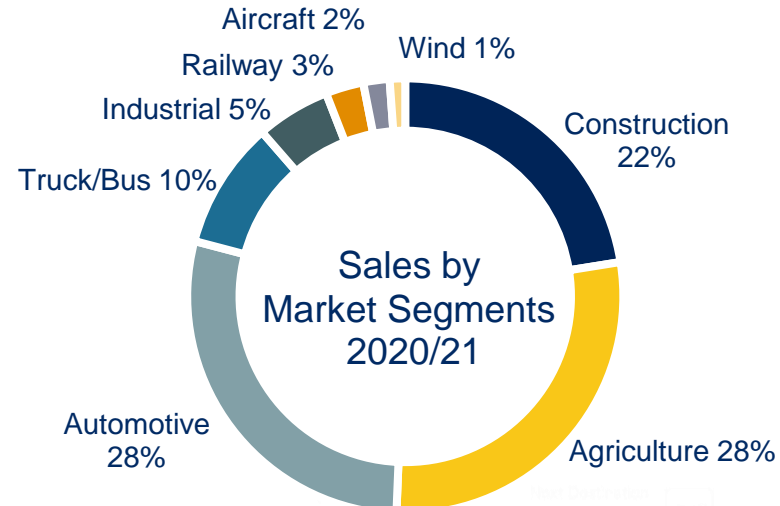
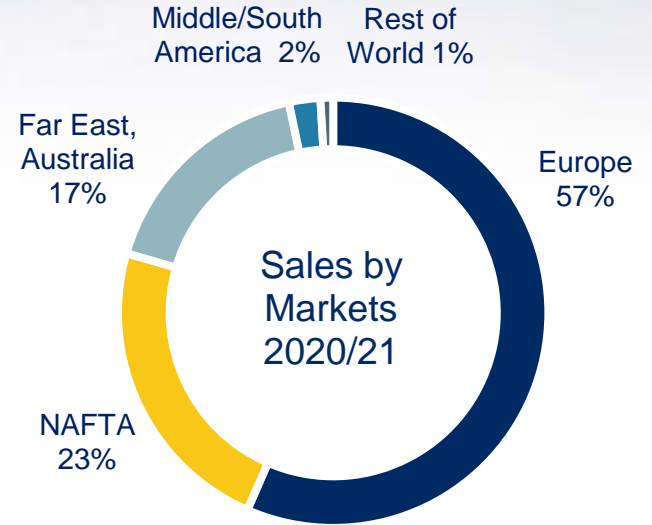
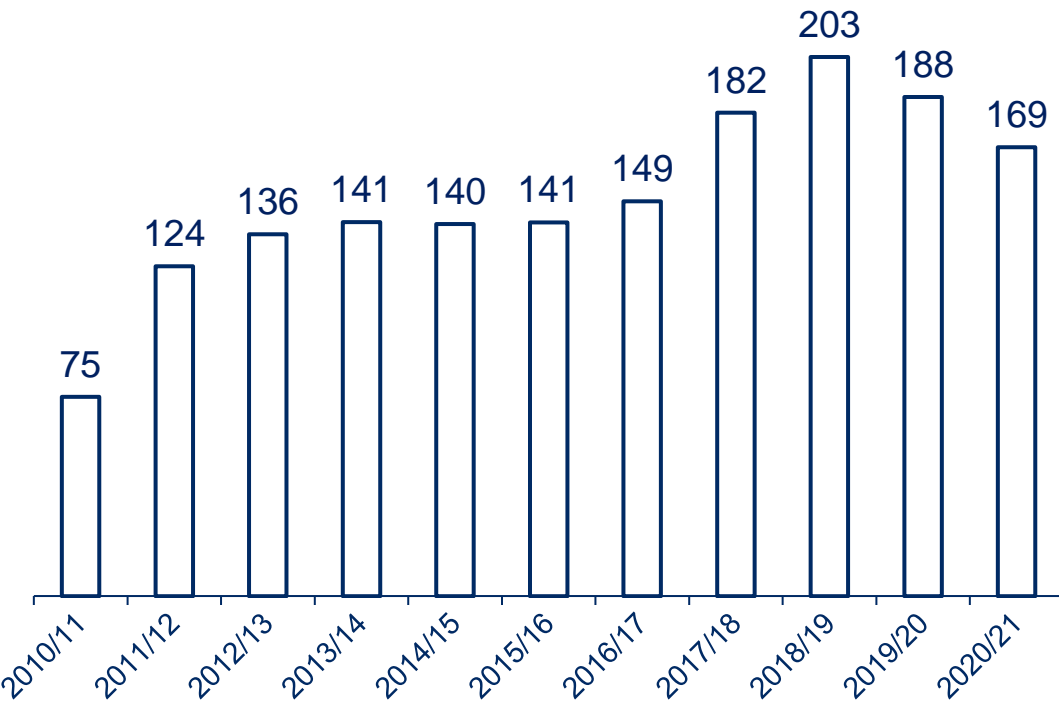


Revenues

Sustainable Growth driven by successful Business Development and Acquisition



Revenues Miba Friction Group in mEUR



Miba Friction Group

Global Footprint: „produce local to local“



Fricotec
Roitham, Austria

Steeltec
Vrable, Slovakia

MHC
Sterling Heights, USA

Drivetec
Pune, India

MPCC
Suzhou, China

Reaction
Discs



Core
Plates



Fiber
Composite



Sprinkled
Sinter



Molyb-
denum

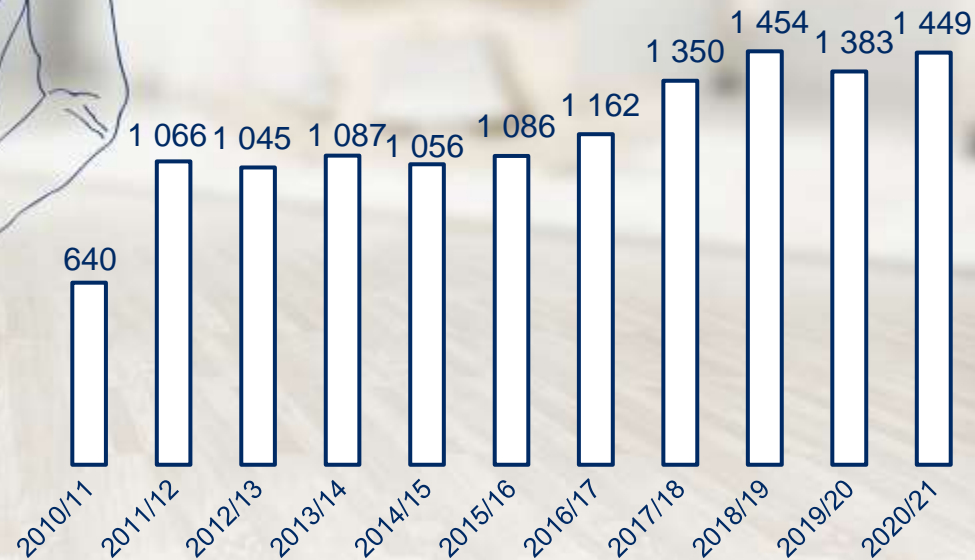
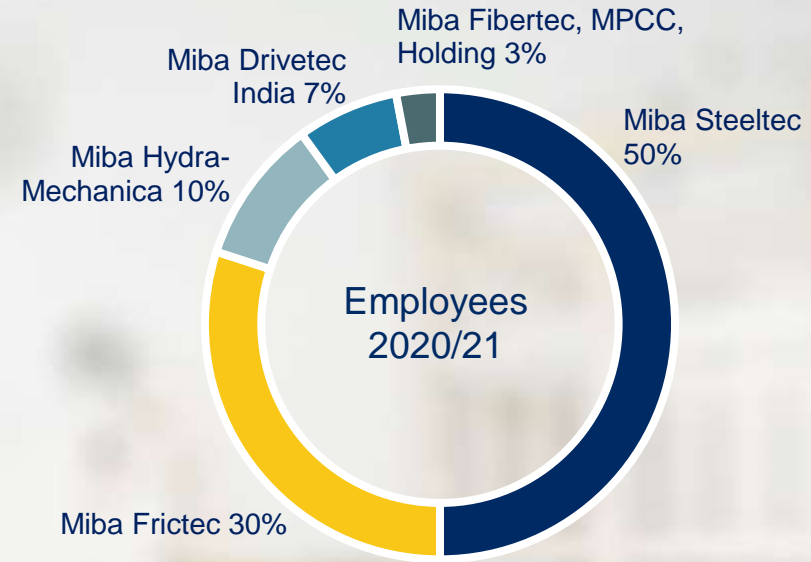


Sinter
Segments



Miba Friction Group is a global Employer

1,449 Employees around the World



23 Sites Worldwide

Miba's Global Network



- Sinter Group
- Bearing Group
- Friction Group
- New Technologies Group
- Coating Group
- Miba Automation Systems

Miba Friction Group



Employees: 442 (April 21)

Center of Excellence for:

- Sintered Friction Discs
- Fiber Composite Friction Discs
- Carbon Friction Discs
- Sintered Friction Buttons and Pads

Friction Group R&D Center

Quality Certificates

ISO 9001

ISO 14001

IATF 16949

Employees: 750 (April 21)

Center of Excellence for:

- Steel Core Plates
- Steel Mating Plates
- Fiber Composite Plates
- Molybdenum Plates
- Gas nitrated Plates

Quality Certificates

ISO 9001

ISO 14001

IATF 16949

Miba HydraMechanica Corp.

Sterling Heights, USA



Employees: 135 (April 21)

Center of Excellence for:

- Fiber Composite Friction Discs
- Special Products

Quality Certificates

ISO 9001

IATF 16949



Employees: 108 (April 21)

Center of Excellence for:

- Oil-immersed Fiber Composite Discs
- Steel Discs

Quality Certificates

ISO 9001

IATF 16949

100% Miba (WFOE) since 2011

Former Hoerbiger Drive Technology India Pvt. Ltd.



Employees: 20 (April 21)

Center of Excellence for:

- Fiber Composite Materials
- Special Papers

Quality Certificates

ISO 9001

Miba Precision Components (China)

Suzhou, China



Employees: 859 (April 21)

Friction Group: 15

100% Miba (WFOE)

Common Production of Miba Friction Group, Miba Sinter Group, Miba Bearing Group and Miba Coating Group

Quality Certificates

ISO 9001

IATF 16949



Investments in R&D

4.5 million Euro in 2020/21

Employees in R&D

38

International Network of Development Partners



Full value chain starting from raw material



Optimum Friction Solution



Flexible Production



Dry and Wet Sinter, Fiber-Composite, Carbon, Molybdenum, Steel



Application Engineering



Test Center

Verification and Validation

20 Test-Benches with a wide Range of Application Profiles

Friction

Wet and Dry



Special Focus

Drag loss
Noise Vibration Harshness
Cold temperature
Mechanical strength



System

Modular single and dual
Electrical drive benches



Vehicle

Functional feasibility



Strong Material Portfolio

World's broadest Material Portfolio



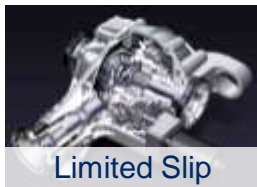
Fiber Based / Carbon

MF 724
MF 740

Sinter Bronze

Molybdenum

Steel



MC 631 MC 737
MC 636 MF 828
MC 644

MS 293 MS 443
MS 301 MS 445
MS 306 MS 448

MM 606

MDS 1005
MDS 1009
MDS 1010
MDS 1012

MC 737 MF 724
MF 701 MF 828
MF 721

MS 304 MS 443
MS 305 MS 445
MS 340 MS 448

MDS 1011
MDS 1014

MC 737 MF 811
MF 705 MF 828
MF 723

MS 302 MS 443
MS 304 MS 445
MS 340 MS 448

MDS 1011
MDS 1014

* Favorite Material Types of 30 total

Miba is an International Technology Partner providing innovative Solutions for Friction Materials with:

- Optimum Friction Coefficient Characteristics
- Minimal Mechanical Wear
- Minimal Generation of Noise (NVH)
- High-Energy Load Rating
- Excellent Oil Compatibility

Miba global Footprint is driven by “local to local”

Miba high-end Production Processes ensure competitive Products and consistent Product Quality



Austria

Miba Frictec GmbH

Peter-Mitterbauer-Str. 1
4661 Roitham, Österreich
T +43/76 13/90 20-0
F +43/76 13/90 20-4190
frictiongroup@miba.com

Slovakia

Miba Steeltec s.r.o.

Hlavná 48
952 01 Vrábľe, Slovakia
T +421/37/2301 575
miba.steeltec@miba.com

USA

Miba HydraMechanica Corp.

6625 Cobb Drive
Sterling Heights
Michigan 48312, USA
T +1/586 939 0620
sales@mibahmc.com

India

Miba Drivetec India Pvt. Ltd.

Gat No. 626 – 629 & 633 – 635
Koregaon Bhima, Nagar Road, Taluka
Shirur, Dist. Pune, Pin – 412 216
Maharashtra, India
T +91/21 37/617340
frictiongroup@miba.com

China

Miba Precision Components (China)

No. 530 Xing Long Str.,
Suzhou Industrial Park, Suzhou 215024,
Jiangsu Province, P.R. China
T +86/512/62 85-0900
info@cn.miba.com

Sales Office Germany

Miba Deutschland GmbH

Tannenberger Str. 3
86956 Schongau, Germany
T +49/8861/90910-0
frictiongroup@miba.com

Miba Friction Group

Peter-Mitterbauer-Straße 1

4661 Roitham, Austria

T +43 7613 9020 0

frictiongroup@miba.com