

ONE TEAM. ONE SPIRIT.

FOCUS ON OUR FUTURE



TECHNOLOGIES FOR A CLEANER PLANET



ONE TEAM. ONE SPIRIT.

FOCUS ON OUR FUTURE



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01 Miba ACTIVELY SHAPING THE FUTURE

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IMPRINT

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TECHNOLOGIES FOR A CLEANER PLANET

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Miba for ENERGY GENERATION

How we contribute to the efficient generation of sustainable, clean energy with our wide product portfolio.



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Miba for ENERGY TRANSMISSION

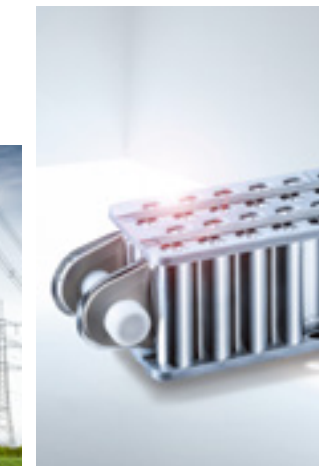
How with our technologies we ensure that energy reliably reaches the places it is needed.



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Miba for ENERGY STORAGE

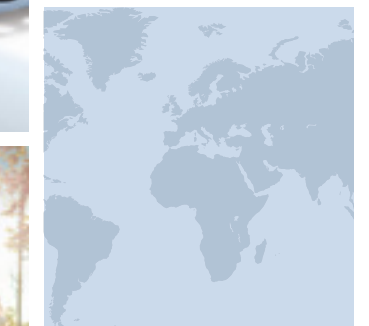
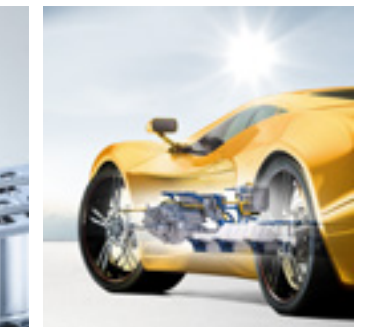
How we are meeting the requirements of an electrified world with our well thought-out storage solutions.



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How we are enabling the production of drivetrains that are even more efficient, quiet and eco-friendly with our forward-looking ideas.



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INNOVATIVE SPIRIT

is part of Miba's DNA

How we closely cooperate with our customers to find the right answers to the questions of the future.

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Miba Spirit

How we are supporting and growing, and in this way creating fertile ground for innovative ideas and shared growth.

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How we are laying the foundations for our future with sustained growth and financial independence.

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COMPANY HIGHLIGHTS

February 2022

Creation of the MINTality Foundation

On the initiative of Therese Niss, the MINTality Foundation is created by 12 Austrian companies and advocacy groups. It will support girls and young women on their path to a career in the MINT area.



April 2022

Strong presence at the Vienna Motor Symposium

At the major industry congress, F. Peter Mitterbauer delivers a keynote address about Miba's extensive product range for electric drives.



July 2022

VOLTstation® – environment-friendly energy storage

On construction sites, at events, in disaster responses or at remote chalets: whatever the location, the VOLTstation® developed by Miba Battery Systems delivers a reliable and emission-free energy supply.



September 2022



Opening of the VOLTfactory #01

Just a few months after Miba acquired a majority shareholding, Miba Battery Systems opens Austria's most advanced battery production plant covering an area of 3,900 m² in Bad Leonfelden.

November 2022



Peter Mitterbauer turns 80

On November 14, 2022, Peter Mitterbauer celebrated his 80th birthday. As the head of the company he decisively shaped Miba's internationalization and growth for three decades.

January 2023



Global investments in wind, the market of the future

To be able to contribute to the energy transformation in times of rising power consumption, Miba Gleitlager merges its international teams in the "Wind Gearbox" program, and further expands the production capacities in Austria and China for hydrodynamic bearings for wind turbines.

March 2022

USA expansion of smart grids

Intelligent diagnosis and control of power grids, thanks to Miba Power Electronics. Products from EBG help locate faults or overloads within just a few seconds, thus guaranteeing efficient and reliable energy transmission.



May 2022

Inauguration ceremony in Pune, India

Together with the Miba Management Board, the formal inauguration of a new, fully automated production line for sintered clutch segments takes place in Pune (India). It is Miba's first such facility outside Austria.



August 2022

20 years of EDMS Slovenia

The EDMS site in Šentjernej, Slovenia, celebrates its 20th birthday together with more than 250 guests – employees, families and neighbours.



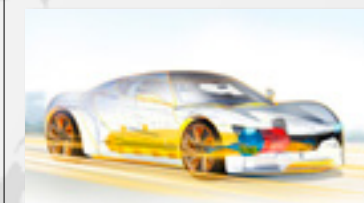
October 2022



Upper Austria Innovation Award

Miba wins the renowned Innovation Award from the Province of Upper Austria with its Power Safety Devices for eMobility-applications. The newly developed safety components protect vehicle occupants and rescuers in the event of accidents.

December 2022



Miba grows in the eMobility segment

China has become one of the most important markets for electromobility. The rapidly increasing demand for EVs in China, and thus for discharging and precharging resistors in their drivetrain, results in a massive expansion of our local production capacities at EBG China.

AWARDS

2022 | 23

FOR US, AWARDS
ARE AN INCENTIVE



AUSTRIA'S BEST MANAGED COMPANIES AWARD

from Deloitte und Raiffeisenlandesbank
Niederösterreich-Wien
Miba Group



RTX PLATINUM AWARD

from Pratt & Whitney
Miba Gleitlager Austria



BEST RECRUITERS AWARD

in silver for 2022/23 and 6th place in the sector ranking
Miba Group



UPPER AUSTRIA STATE PRIZE FOR INNOVATION

for power safety devices in eMobility applications
Miba AG



LEADING EMPLOYER 2022

Top 1% of employers in Austria
Miba Group



PEGASUS BUSINESS AWARD

in silver in the Flagships category
Miba Group



INDIA BUSINESS LEADERSHIP AWARD 2022

from IBC
Award as "India's most admired functionally-critical
components manufacturing company"
Miba Drivetec India

SCHAEFFLER

BEST LOCALISATION SUPPORT AWARD

from Schaeffler
Miba Drivetec India



SUPPLIER QUALITY AWARD 2022

from GE Power Conversion
Miba Industrial Bearings Brasil



DR. R.J. RATHI AWARD FOR GREEN INITIATIVES

from Maharashtra Chamber of Commerce
Miba Drivetec India



BGF GÜTESIEGEL

for workplace health promotion
Miba Group



INEO – EXEMPLARY APPRENTICE TRAINING 2022-2025

from the Austrian Economic Chamber
Miba Gleitlager Austria



SUPPLIER QUALITY AWARD 2021

from KTM
Miba Sinter Austria



INNOVATION CHALLENGE AWARD

from Google Cloud & Nagarro
Miba AG



eMOVE 360 AWARD

for the mobile energy store VOLTstation®
Miba Battery Systems

ACTIVELY SHAPING THE FUTURE

**WITH OUR MISSION, WE ARE
PROVIDING FOR A FUTURE
WORTH LIVING IN – FOR US,
THE NEXT GENERATIONS
AND FOR MIBA TO GROW.**

FOCUS ON THE FUTURE

“

“We proactively help to shape technological changes – in this way we want to grow as partners with our customers and employees.”

F. Peter Mitterbauer



dadies and gentlemen, dear employees,

In the past fiscal year 2022/23, Miba reached an important milestone. Our revenue passed the one-billion mark for the first time, increasing by almost 15 percent in comparison to the previous year to EUR 1.114 billion. We are proud of this. And it is especially pleasing that we achieved this success in a year of major challenges. The energy crisis in Europe, high inflation globally, supply bottlenecks and the war in Ukraine fundamentally changed our economic environment. And the long-term megatrends decarbonization, electrification and digitalization further gathered pace. Yet in times marked by such changes, achieving our milestones should never give us false security. Instead, it must be our mission and incentive to look towards the future even more clearly – an attitude that we have embodied at Miba all along.

CHANGES ARE OPPORTUNITIES

Therefore, we want to continue to focus on the many technological changes arising from decarbonization, electrification and digitalization. We regard these changes as opportunities. On the basis of our corporate mission “Technologies for a cleaner planet,” we want to develop and produce technologically demanding components for greater efficiency and sustainability along the entire energy value chain – for example, for wind turbines and hydropower plants, energy-efficient power grids, batteries and charging infrastructure, and for clean and environment-friendly drives for vehicles, ships, aircraft, and machinery for construction and agriculture. In this way we want to sustainably grow to an annual revenue of more than EUR 1.5 billion by 2027.

TAKING THE PATH TOGETHER

We want to take this path together with our customers, and proactively contribute our expertise as a solution provider for their technological challenges. Innovative spirit and technological leadership are essential foundations for this. So we are proud that following 2021, the figures from the Austrian Patent Office for 2022 again show that we are an innovation leader in Upper Austria, and once again we were one of the Top 3 companies with the most patent applications in Austria as a whole. I can assure you that in the future too, we will attach particular importance to maintaining an innovation-driven partnership with our customers.

THE RIGHT CLIMATE FOR IDEAS AND GLOBAL COOPERATION

For us, taking the path together also means focusing on our more than 7,500 employees. They are the people who move our company forward a little further every day, sustained by their knowledge, commitment and their many ideas. So for us it is only natural to offer a working environment that is shaped by flat hierarchies, openness to new ideas, global cooperation, and assistance in better reconciling family and working life. And this means that training and development are particularly important to us; in the past fiscal year alone we invested EUR 2.6 million in this area, and employed around 240 apprentices.

I invite you all – customers, employees, partners and friends of our company – to join with us in continuing to focus on the future and proactively shaping it. I thank you for your interest in Miba and your trust in us.

Yours

Peter Mitterbauer

F. Peter Mitterbauer
CEO Miba AG

GROWTH STRATEGY 2027

STAYING IN THE FAST LANE WITH "MIBA 100"

In 2027, Miba will celebrate its 100th birthday. The growth strategy "Miba 100" describes how the company wants to continue its sustainable and profitable growth, and how we are setting our course for the second century of the company's history.

The success story of the last ten years can be demonstrated with figures: in the last ten years our revenue has dou-

bled to more than EUR 1.1 billion. Today Miba employs 2,800 people in Austria – one quarter more than in 2013. Globally the company has grown from 4,300 to 7,500 employees, and from 21 to 29 production sites. What began in 2013 with the strategy "Miba 2020 – Dynamic Evolution" has been successfully continued since the beginning of 2021 with the growth strategy "Miba 100". With our focus on technologically critical components along the entire energy value chain, we are excellently positioned for the coming years. We want to grow to a revenue of EUR 1.5 billion – "Miba 100" offers us the guidance we need to achieve this goal.

A WORLD MORE WORTH LIVING IN: OUR CORPORATE MISSION

The basis and strong foundation of our new corporate strategy "Miba 100" is Miba's corporate mission "Technologies for a cleaner planet". With our technologies we want to make a contribution to a cleaner planet, and thus to a world that is even more worth living in. Our mission not only gives us direction, motivation and impetus; it also offers major growth opportunities – to 2027 and beyond. And we are working continuously on consuming fewer resources in production and administration, and generating a lower carbon footprint.

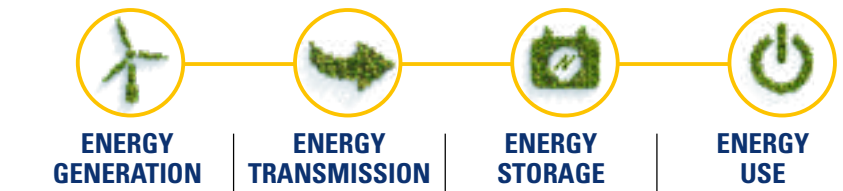
GROWTH ALONG THE ENTIRE ENERGY VALUE CHAIN

The strategy "Miba 100" describes how Miba wishes to utilize growth opportunities on the basis of our corporate mission. Our focus is on technologically demanding niches along the entire energy value chain. Miba technologies in our customers' applications will contribute to making the generation, transmission, storage and use of energy even more efficient, and thus more sustainable and more eco-friendly. Some examples: today Miba bearings, friction linings, power resistors and cooling technologies are already in use in a large number of wind turbines worldwide – and the market is growing rapidly and sustainably. Miba power electronics contribute to the transmission of energy in power grids with minimal losses, even over

Our corporate mission "Technologies for a cleaner planet" has been giving us direction and motivation since 2013. With our products and our careful handling of resources, we want to make a contribution to a cleaner planet.



OUR VISION: NO POWER WITHOUT MIBA TECHNOLOGY



We want to grow with products for applications in technologically demanding niches along the entire energy value chain. This is described in our vision

"No power without Miba technology" – details can be found on pages 16 – 17.

long distances – a characteristic that is becoming ever more important as the demand for electricity grows. Battery systems and battery components from Miba and the company Voltlabor, in which it has a shareholding, help to store energy efficiently – making them an important basis for electrification. And Miba makes an important contribution to the efficient use of energy with its products for vehicle drives, a broad eMobility product range in addition to Miba's components for clean, environment-friendly combustion engines. Our aspiration to be represented with products along the entire energy value chain is also described by the new Miba corporate vision: "No power without Miba technology."

GROWING ORGANICALLY AND THROUGH ACQUISITIONS

Our goal is to grow to an annual revenue of EUR 1.5 billion by 2027. To achieve this, we want to invest more than EUR 500 million by then. On the one hand this growth will come organically, from the existing business areas, and above all with new products in new markets. On the other hand, Miba also wants to achieve substantial growth through acquisitions. We are seeking companies in highly promising, technologically demanding niches along the energy value chain which are well established in the market and want to grow further together with us under our guidance. Here we are targeting markets where expertise in applications and close cooperation with

customers are pertinent for developing new solutions – and Miba stands for both of these in a highly special way.

THE SPIRIT OF INNOVATION IS PART OF OUR DNA

An essential requirement for our future success is the spirit of innovation which especially distinguishes Miba. It is in our DNA to be a solution provider

for our customers. In the future, too, we want to cooperate closely with them to actively develop and produce solutions for their challenging tasks. Our innovative strength, and our employees' expertise and commitment, mean that Miba will also continue to grow sustainably and healthily until 2027 and beyond, in the second century of our company's history.



We want Miba to grow like a tree, sustainably and healthily. With strong business areas which together constitute Miba's strength. Reinforced by our values and operating principles, the expertise of our 7,500 employees worldwide, and their passion for success.

OUR CLIMATE GOALS

ON THE WAY TO CO₂zero

Miba aims to become climate-neutral by 2040, and to halve our CO₂ emissions by 2030.

With “Technologies for a cleaner planet,” since 2013 Miba has had a corporate mission centered around sustainability, a cleaner planet and a world that is even more worth living in. We do not only want to contribute to this with our products, which provide for the sustainable generation, transmission, storage and use of energy. In our production and offices, too, we have been working continuously for many years on consuming fewer resources and producing a lower carbon footprint.

With the strategy “CO₂zero” Miba has defined the clear goal of achieving climate-neutral production by 2040. As the first milestone on this path, by 2030 we already want to have halved the CO₂ emissions from our own production – in other words, from our machines and equipment as well as from the energy we use. We also want to develop a plan for taking account of the carbon footprint from our supplier network, and reducing this too. All of this will constitute our contribution to achieving the United Nations and European Union climate goals.

CO₂zero

OUR AMBITION: CO₂ neutrality by 2040



FOCUS ON PRODUCTION PROCESSES AND ENERGY

Our activities here are focused on measures within the areas the experts refer to as Scope 1 and Scope 2 – so this primarily means reducing the CO₂ emissions that arise during our production activities and through the energy we use. As a company, we have a direct influence over both of these. Scope 3 applies to our supply chains, and here we want to develop measures jointly with our suppliers.

ALMOST 10,000 m² OF SOLAR PANELS INSTALLED

One major focus of our activities is on cleaner, more sustainable energy, which we generate by means of photovoltaic systems on the roofs of our production halls. To date we have installed almost 10,000 m² of solar panels: at our Upper Austrian sites in Laakirchen, Vorchdorf and Roitham around 1,600 megawatt hours of electricity is generated every year, on a roof area of around 8,000 square meters – equivalent to the requirement for 350 one-family houses. In addition, a 1,500-square-meter system on the factory halls of the Miba friction lining plant in Pune, India, generates around 390 megawatt hours a year, thus saving 230 tons of CO₂.

MIBA LIGHTHOUSE

CLEAR VALUES AND PRINCIPLES POINT THE WAY

MISSION
TECHNOLOGIES FOR
A CLEANER PLANET

VISION
NO POWER WITHOUT
MIBA TECHNOLOGY

PRINCIPLES



100% CUSTOMER FOCUS



INNOVATION



OPTIMAL PROCESSES



COOPERATION
AND LEADERSHIP



RESPONSIBILITY

VALUES

Technology leadership
Lifelong learning
Entrepreneurship
Passion for success

#MISSION:

TECHNOLOGIES FOR A CLEANER PLANET

#VISION:

NO POWER WITHOUT MIBA TECHNOLOGY

We aspire to product and technology leadership in demanding niches along the entire energy value chain. Miba technologies in our customers' applications contribute to making the generation, transmission, storage and use of energy even more efficient, and thus more sustainable and more environment-friendly.



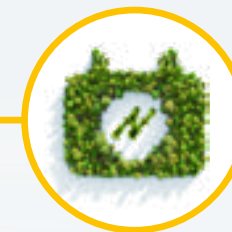
ENERGY GENERATION

WIND POWER
SOLAR ENERGY
HYDROPOWER
GAS AND DIESEL GENSETS, TURBINES
FUEL CELLS



ENERGY TRANSMISSION

EFFICIENT ENERGY TRANSMISSION
(e.g. high-voltage direct current (HVDC) transmission / medium voltage direct current (MVDC) transmission)
SMART GRIDS
(intelligent networking and control of power grids)
COMPRESSORS AND PUMPS
COMPONENTS FOR CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES



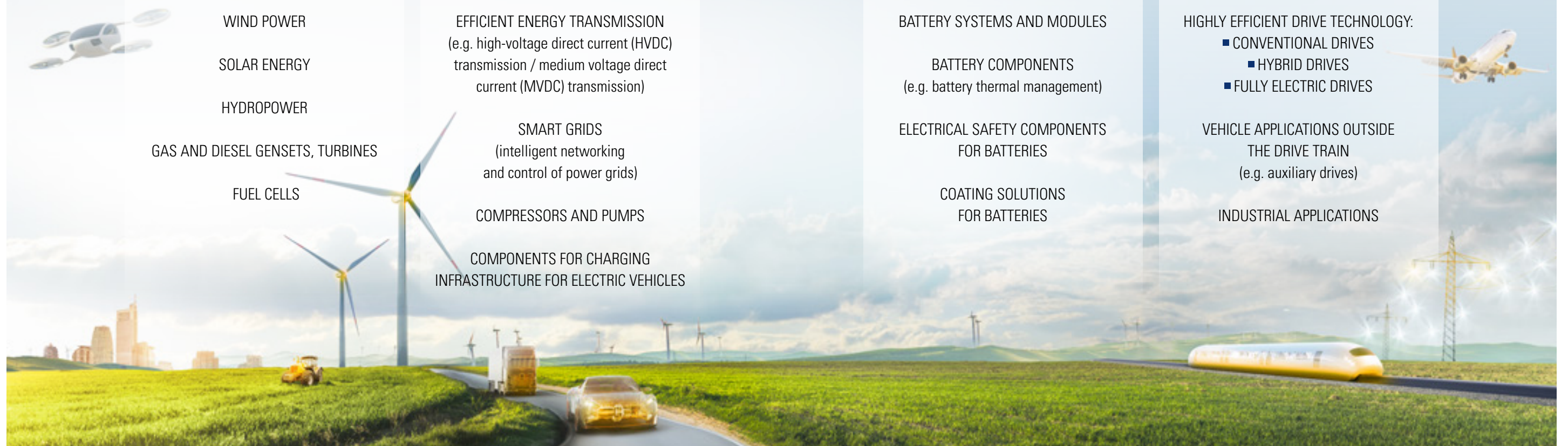
ENERGY STORAGE

BATTERY SYSTEMS AND MODULES
BATTERY COMPONENTS
(e.g. battery thermal management)
ELECTRICAL SAFETY COMPONENTS FOR BATTERIES
COATING SOLUTIONS FOR BATTERIES



ENERGY USE

HIGHLY EFFICIENT DRIVE TECHNOLOGY:
■ CONVENTIONAL DRIVES
■ HYBRID DRIVES
■ FULLY ELECTRIC DRIVES
VEHICLE APPLICATIONS OUTSIDE THE DRIVE TRAIN
(e.g. auxiliary drives)
INDUSTRIAL APPLICATIONS





SUSTAINABILITY IN ENERGY GENERATION

**OUR BEARINGS FOR WIND
TURBINES MAKE THE
ENERGY SUPPLY GREENER.**



#MibaPowerGeneration

ON THE UPSWING

GOOD PROGRESS IN DEVELOPING AND PRODUCING HIGHER-PERFORMING WIND TURBINES

The United Nations has set a clear goal: that our world should become climate-neutral by 2050. A major requirement for this is switching to sustainable, renewable energy. Wind power is a central building block of the clean energy supply of the future. Its importance is growing strongly, while the technological requirements for wind turbines are also increasing. In addition to our friction materials and power electronics components, bearing solutions from Miba are also being used to shape the energy transition.



Miba Gleitlager is one of the world's leading manufacturers of bearings for large engines, compressors and turbines. The hydrodynamic bearings produced by Miba enable significant increases in performance compared to conventional roller bearings. For the last ten years, teams have been engaged in the use of Miba bearings in wind turbine drives. Due to the increasingly growing demand for energy, existing wind parks are being expanded and new ones constructed – particularly in China, but also worldwide. To satisfy the high demand, we have further expanded not only our existing production facilities, but also procurement and other support functions.

CHINA AS AN IMPORTANT MARKET

As a company, we recognized early on that a high demand could be expected in China: pre-series productions and the first smaller series productions have been undertaken at the Laakirchen site for a number of years, and we have made investments so as to considerably increase our productivity. But the expansion of the production at the Miba Precision Components (MPCC) plant was also accelerated over the last year, and the first machines went into operation in spring 2023. "This will multiply our global capacities by the end of the fiscal year 2023/2024 – and the greatest share will be for the market in Asia, and especially China," says Max Manner, Vice President Marketing & Sales Miba Engine Bearings. In Europe the expansion of wind turbine systems is stagnating, as the approval processes take much

longer. Nevertheless, we expect continuous market growth in the next ten years. The proportion of plain bearings will increase compared to the traditional roller bearings. The expansion of the bearing business for wind turbines forms part of the corporate strategy "Miba 100": this describes how the Upper Austrian technology group intends to grow sustainably up to the company's 100th anniversary in 2027.

STRONG PARTNER FOR CUSTOMERS

The subject of sustainability in energy generation also tops the agenda at Miba Industrial Bearing. The starting point for Miba Industrial Bearing was the acquisition of four factories from the John Crane Group in 2018. With this purchase, the company entered a new, additional business area: the development and production of industrial bearings. During

the past year a consolidation took place: the factories in Europe were combined in Germany, in order to pool their competences and expertise for our customers. We plan to further upgrade the Osterode site and amalgamate competences there. We have entered into partnerships so that we can be a high-performing supplier not only in Europe, but also in Asia. "We are aiming for a significant market position for technical solutions and in communication with our customers. This means that proximity to our customers plays a central role for us, so that we understand their requirements and can look for solutions together with them. The latest developments, such as disrupted global supply chains, have shown how important it is to have our production where our main customers are," emphasizes Clemens Honeder, Managing Director Miba Industrial Bearings.



“WIND POWER

is a central building block for the clean energy provision of the future.”

Max Manner, Vice President Marketing & Sales Miba Engine Bearings



MIBA TECHNOLOGIES FOR ENERGY GENERATION

The use of sustainable, clean energy is our key to achieving the climate goals. We want to make a major contribution to this with our technologies in wind power, hydropower and solar systems. But gas-fired power stations also become more efficient and more environment-friendly when they use our products.



“We want to become the global
NUMBER 1
in the industrial bearing segment.
Our key to this is our employees,
with their expertise and many
years’ experience.”

Clemens Honeder,
Managing Director Miba Industrial Bearings

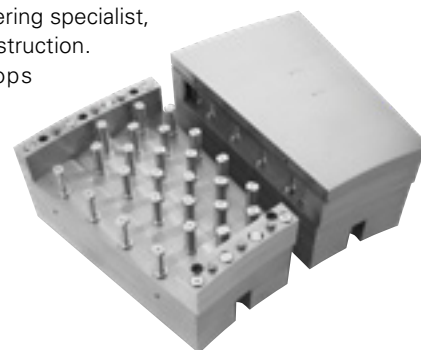


HYDROPOWER



MIBA HYDROBEARINGS IN HYDROELECTRIC POWER PLANTS

Miba's industrial bearings plant in Cataguases, Brazil, is one of the world's three largest suppliers of hydrobearings, in other words bearings for turbines in hydroelectric power plants. The Miba bearings technology is used in small (electricity production less than 30 megawatts), medium-sized (electricity production between 31 and 80 megawatts) and large hydropower plants (over 80 megawatts). As well as Miba Industrial Bearings, Miba Automation Systems, our engineering specialist, is also active in power plant construction. Thanks to MAS, which develops and produces CNC machines, turbine components can be produced more accurately and more efficiently.



WIND POWER

With a wide product range for wind power, we want to help shape this sustainable growth market.



Bearings as a key element in wind turbines

GEARBOX BEARINGS ENABLE THE CONSTRUCTION OF EVER MORE POWERFUL WIND TURBINES

Wind turbine classes are increasing rapidly. To accompany this development, hydrodynamic bearings are essential in the gearboxes of the turbines. In future, there will also no longer be sufficient installation space for the gearbox on the gondola of the more powerful wind turbines, especially in the onshore segment. The bearings that are currently in use cannot meet the requirements for such limited space. As well as a possible increase in power density, the reliability and costs of bearings are also essential aspects for reducing the electricity production costs and thus making wind power an economically attractive form of energy. Therefore manufacturers of wind turbine gearboxes are switching to the Miba bearing technology.



Wind turbines

BRAKING SAFELY WITH MIBA BRAKE PADS

When the wind blows too strongly, the rotors of the around 300-ton wind turbines have to be slowed down to prevent an energy overload and guarantee the safety of the turbine. The safest method of doing this is using brakes with friction linings, such as those offered by Miba.

Miba sintered friction linings are characterized by stable friction values and improved wear resistance, which can be attributed to the use of high-quality materials and state-of-the-art production processes.



EBG power resistors

EFFICIENCY AND DURABILITY

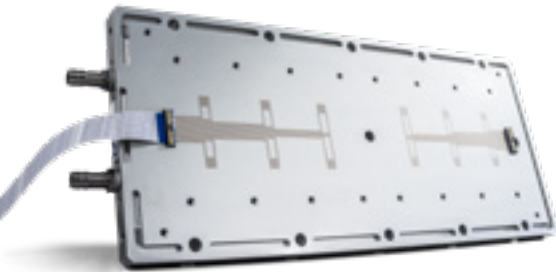
Power resistors are used so that wind turbines work efficiently and durably. Around 90 percent of all wind turbine manufacturers rely on power resistors from the Miba company EBG Resistors. Installed in the turbines, they ensure that the power and voltage are limited,

the harmonic waves are delimited, or as resistance sensors they help to improve the grid quality. What's more: through our efficient cooling solutions from DAU, not only the resistors but also the inverters are becoming smaller, and require less installation space.



Cooling technology from DAU

DIGITALIZED THERMAL MANAGEMENT



The installation spaces for the power electronics in wind turbine switching cabinets are becoming ever more compact and smaller. The cooling technology from the Miba company DAU is used here to achieve the optimal cooling, by ensuring that the function-critical electronic parts are always kept at the right temperature and are thus protected.

To enable precision planning of maintenance cycles, in future our cooling technology will be digitized. This will not only save money for the users, but will also prevent damage and unnecessary maintenance tasks – in this way contributing to greater sustainability and a lower carbon footprint.

Optimal welded joints

MILLING MACHINES FOR THE CONSTRUCTION OF OFFSHORE WIND TURBINE TOWERS

Offshore wind turbines are anchored to the seabed by means of foundation structures up to 100 meters deep, which consist of steel tubes around 30 meters in length. These massive components have to be welded onto one another before installation. It is precisely here that Miba Automation Systems (MAS) comes into play. Using the longitudinal and cir-

cumferential seam milling machines designed and built by MAS, the tubular elements for offshore wind towers can be worked on ultra-precisely offshore, thus creating an optimal welded joint. Miba is the technological market leader in this segment, and has already sold a large number of such systems in recent years.



Simple replacement of roller bearings

NEW CONCEPT FOR MAIN SHAFT BEARINGS REDUCES MAINTENANCE COSTS

Miba is working on new roller-bearing based solutions for the main shafts of wind turbines. The core of the innovation is a bearing that is divided into segments, which offers the possibility of replacing the current roller bearing solutions without major adjustments to the drive train. The use of plain bearings

with the same performance essentially allows for smaller drive trains than with roller bearings. In future this can reduce the costs for wind turbines. When servicing is required, the solution developed by Miba offers the major advantage that the individual segments are easy to replace directly on the tower. The expensive cranes that are currently used when replacing roller bearings are no longer required. In particular the rapid development of increasingly high-powered, and thus also taller, wind towers, and the strong growth in the offshore segment make the Miba main shaft bearing an attractive solution. Our customers benefit from substantial cost savings through a more efficient main shaft design and the simplified maintenance of the main shaft bearing. In addition, the increased availability of the wind turbine due to shorter service-related downtimes has a positive impact on the costs over the entire lifecycle of a turbine.



SOLAR PANELS

Expertise in solar power



Power resistors in thick film technologies from EBG can be found in the power inverters of almost all solar power systems from well-known manufacturers. Here they enable the best ratio between the component size and its performance – especially in comparison to wire resistors, as the EBG technology enables a larger number of resistors to be installed in a single housing. In addition, the heat sinks and heat pipes from the Miba company DAU protect the electronic components in solar installations from overheating. The application of new technologies has made it possible to increase the efficiency and power density even further.



GAS-FIRED POWER PLANTS

More efficient gas-fired power plants via bearings



Miba bearings are used in compressors, gear units and turbines in gas-fired power stations. They help to operate the installations more efficiently and effectively. Further benefits of the Miba bearing technology are a longer service life and less wear.





MIBA FOR ENERGY TRANSMISSION

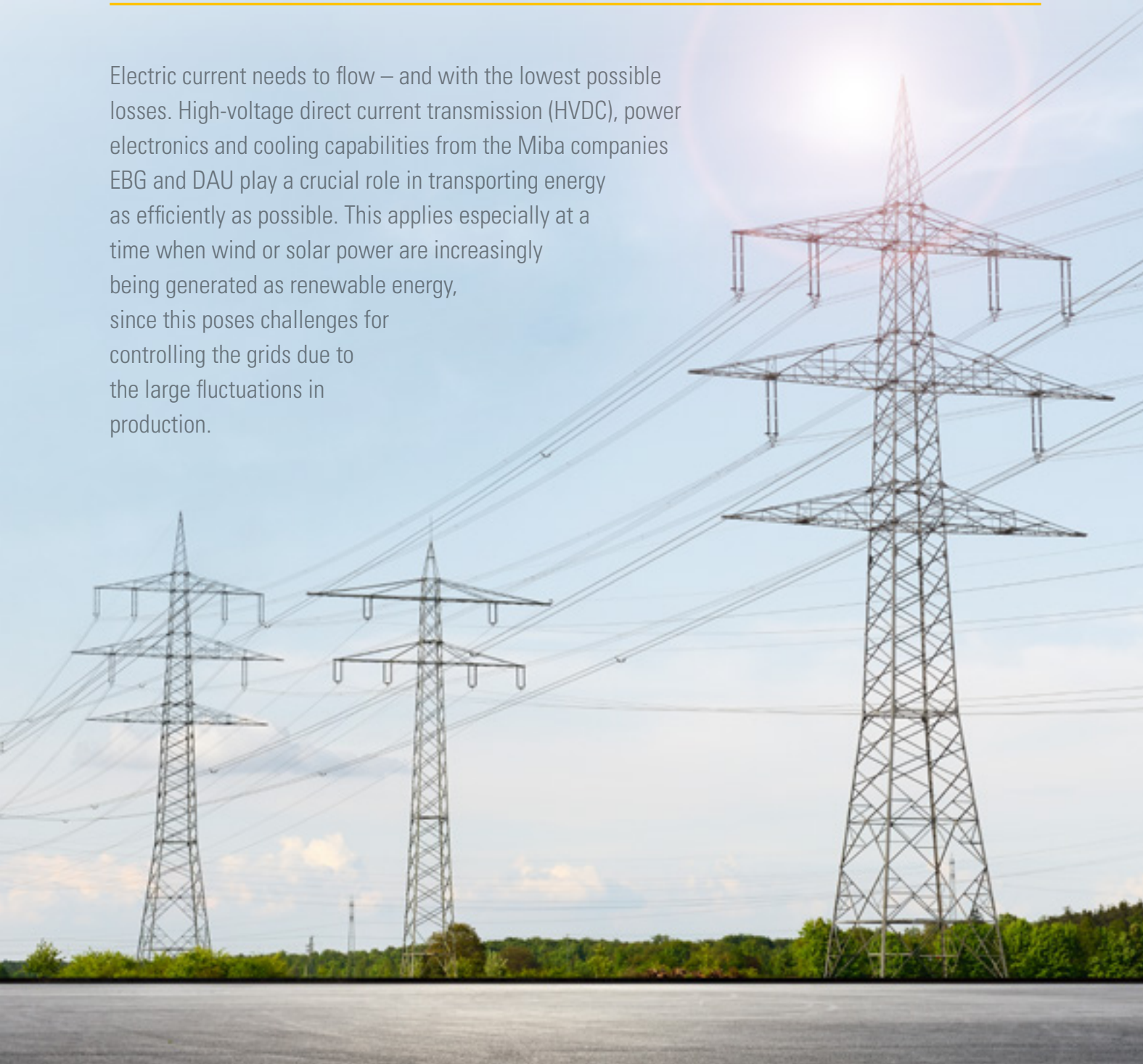
**OUR EXPERTISE MAKES
THE ENERGY SUPPLY MORE
EFFICIENT AND STABLE.**



EFFICIENT FROM PRODUCER TO CONSUMER

ENERGY TRANSMISSION

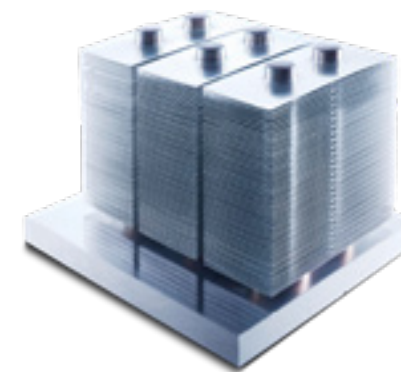
Electric current needs to flow – and with the lowest possible losses. High-voltage direct current transmission (HVDC), power electronics and cooling capabilities from the Miba companies EBG and DAU play a crucial role in transporting energy as efficiently as possible. This applies especially at a time when wind or solar power are increasingly being generated as renewable energy, since this poses challenges for controlling the grids due to the large fluctuations in production.



Smart grids

KEEPING THE GRID UNDER CONTROL

Control of the grids, efficient energy transmission, rapid location of problems and thus an increase in the reliability of supply: at Miba we are making an important contribution to all of these with our technologies.



The challenges for the control and thus the stability of the power grids are growing year on year, because on the generation side the production of electricity is becoming ever more decentralized. Major (nuclear) power plants have been decommissioned, and wind turbines and photovoltaic systems are taking over an increasingly growing share of the volume of electricity produced. In Austria renewable energies account for around a 42 percent share of the electricity generation, with hydropower and biomass being the main suppliers, while in Germany for example, which also obtains almost half of its electricity from renewable sources, wind power and photovoltaic occupy first place. Above all the expansion of solar



and wind power has substantially gained momentum, but because the supply of sun and wind from nature is irregular, this also makes electricity production more volatile. On the other hand, more and more electricity consumers are becoming connected to the grid; the most important examples are heat pumps to supersede fossil heating technologies, and electric vehicles to reduce the transport sector's carbon footprint. And of course the electricity must be transmitted as efficiently as possible to prevent energy losses.

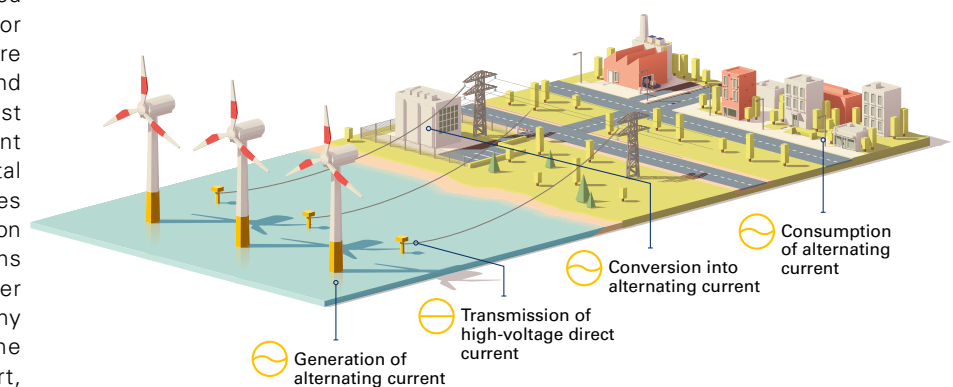
HVDC – high-voltage direct current transmission technology

TRANSPORTING ELECTRICITY OVER LONG DISTANCES

In many cases, electricity is generated in flat coastal regions, but is then needed in towns and industries hundreds of kilometers away. Nowadays high-voltage direct current transmission cables (HVDC) are used for this, and exhibit much fewer losses than classic high-voltage lines. The open sea is not an insurmountable obstacle for this, and even offshore wind parks are increasingly being connected to land via this HVDC technology. The largest HVDC project for Miba in the current year will be its participation in a total of five major 500-kilovolt power lines in the eastern Chinese industrial region of Huádong. Miba's cooling solutions for power electronics and our power resistors have been in use for many years to keep energy losses to the absolute minimum during transport,

because as major components for the HVDC technology they help to prevent transmission losses. What is more: Miba technology can also be found in the deep-sea cables that are laid in the oceans to connect continents, for exam-

ple between Japan, the USA and the countries of south-east Asia. Repeaters are required here at regular intervals to amplify the signal in the high-speed fiber optic cable. Here our resistors are installed at great depth.



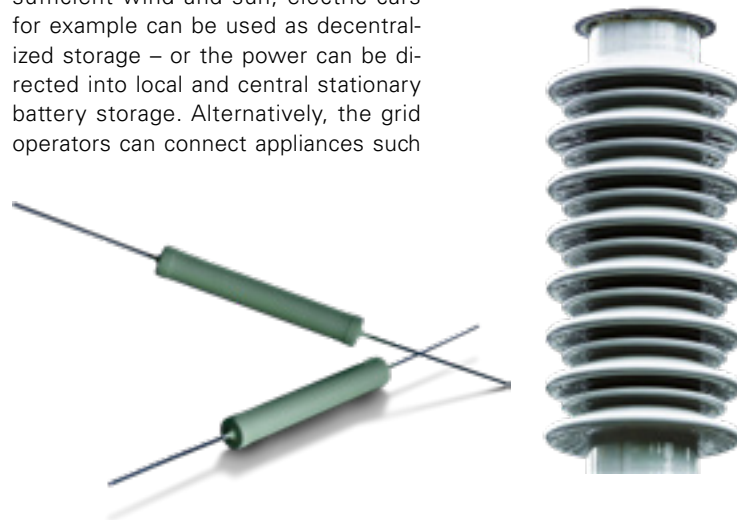
Power electronics SMART POWER GRIDS



However, Miba technology is also increasingly being used to realize smart grids. Smart grids are intelligent energy grids in which all parts of the energy systems are monitored and controlled digitally to guarantee the maximum stability, reliability and efficiency. EBG high voltage resistors are used in smart grids to measure the voltages in the cable, and thus detect local blackouts or malfunctions quickly and locally. This safeguards the stability of the entire grid, and faults can be rectified systematically and rapidly. Smart grids enable precise central monitoring and control of the overhead lines, for instance in very extensive regions of the USA. In this way line connections that are down can very rapidly be located and restored to operation again. EBG power resistors score with their compact construction, precision and long-term stability. This makes the grids more efficient and means that power outages are more likely to be prevented. The increasing dynamism of electricity generation requires the expansion of the grid, while the large number of de-

centralized power sources necessitates automated monitoring of the facilities in real time, as this is the only way of identifying faulty or inefficient statuses in the grid at an early stage. The precise control enables higher utilization of limited resources such as storage or the grids themselves – which makes overall operation even more reliable and stable. During phases when electricity is in short supply, the existing infrastructure has to be optimized and efficiently exploited. When a lot of power is generated at times when there is sufficient wind and sun, electric cars for example can be used as decentralized storage – or the power can be directed into local and central stationary battery storage. Alternatively, the grid operators can connect appliances such

as heat pumps or wallboxes for electric cars to the grid to stabilize it at times of high power availability – which offers the benefit of lower prices for the customers. A prerequisite for smart grids working is the optimal networking and control at both high-voltage and medium-voltage level, and the key to this is the decentralization of the energy supply.



“The costs of energy generation in offshore wind parks have fallen by around a third in the past five years. This has increased the importance of HDVC technology for connecting these systems to the mainland and for power lines over long distances.”

Jens Kuschel,
General Manager Miba Energy Holding

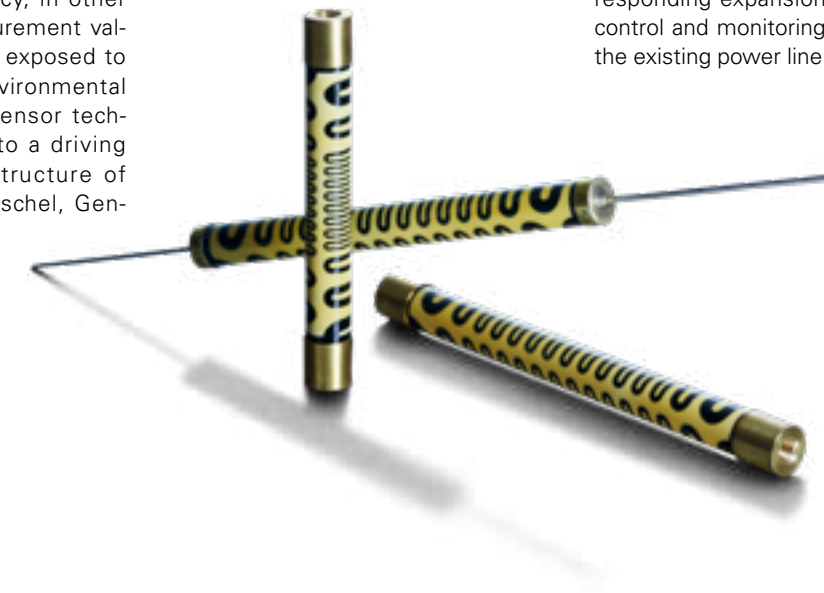


Precision resistors SENSORS ARE A GROWTH MARKET

EBG precision resistors have been used for a number of years during the switchover to digital monitoring and control of power lines. These applications offer long-term stability and measurement accuracy, in other words reproducible measurement values, even if the sensor is exposed to continuously changing environmental influences. “Smart-grid sensor technology has developed into a driving force for the grid infrastructure of the future,” says Jens Kuschel, Gen-

eral Manager Miba Energy Holding. The integration of sensor technology has made the existing power grid system fitter and improved its efficiency, versatility and reliability. “On the basis

of these factors, this year the global market for smart grid technology is expected to reach around USD 4 billion. In the North American region in particular, where the grids are weak, the corresponding expansion of sensor-based control and monitoring greatly improves the existing power line network.”



Safe and efficient HPC CHARGING FOR ELECTRIC VEHICLES

EBG's power resistors provide an important protective function in the charging infrastructure of electric vehicles. They are installed in fast and ultra-fast chargers in the power range from 150 to 350 kilowatts, where they ensure that higher power levels are safely dissipated. This enables the power electronics to function smoothly even in the event of a breakdown.





MIBA FOR ENERGY STORAGE

WITH OUR PIONEERING SPIRIT,
WE ARE ENSURING THAT
ENERGY IS BECOMING MOBILE
AND AVAILABLE EVERYWHERE.



#MibaBatteries

EFFICIENT TECHNOLOGY FOR BATTERY STORAGE

THE NEED FOR SOLUTIONS FOR SUSTAINABLE ENERGY STORAGE IS GROWING GLOBALLY.

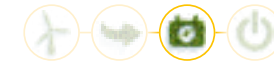
Batteries are a mainstay not only for the electrification of mobility, but also for intermediate storage of solar and wind power. Miba Battery Systems is the supplier for innovative battery systems and components.



The interplay that has been in place between the Austrian battery experts VOLTLABOR and Miba since 2019 has brought a new player into the market for battery systems and their components: Miba Battery Systems (MBS) is the name of the business division which is tackling the challenges posed by the hugely increasing need for energy storage worldwide.

Electromobility is booming. Cars, buses and boats, motorcycles and light commercial vehicles, agricultural machinery, self-driving forklifts in production, drones and even snowcats – classic diesel or gasoline engines are being replaced ever more frequently by electric drives. Miba has held a shareholding in VOLTLABOR since 2019, and last year acquired the majority of the company –

and in fall 2022 opened the Miba VOLT-factory #01 in Bad Leonfelden. The new production site is Miba's first battery plant worldwide, and develops and produces batteries. In an area of 3,900 square meters, the plant has an annual production capacity of 500 megawatt hours. This is a storage capacity that is sufficient to equip around 10,000 compact and mid-sized cars with a traction battery – or 50,000 houses with a 10-kWh battery so that the solar power generated can also be used at night, and thus provide a high degree of self-sufficiency in PV electricity. >>



“Batteries as a storage medium for energy are a major pillar and an optimal addition to Miba's product range.”



“We are well positioned with our technologically leading products, and we are seeing an acceleration in the electrification of a wide variety of areas. This leads to a **GREAT POTENTIAL** for our products on the global market.”

Stefan Gaigg, Managing Director Miba Battery Systems

VOLTfactory #01 OPENED

VOLTfactory #01 is the leading battery production plant in Austria in terms of technology. It is the first supplier world-wide to have developed a special laser contacting process for welding battery round-cell systems. The battery systems are produced on a fully automated production line. Self-driving robots support production and logistics, and in future Artificial Intelligence will be used for monitoring the quality. The modular structure of the battery systems means that customer-specific requirements can be implemented very rapidly. "This technology leadership is the basis for a strong market demand and for the high growth of our battery business," says Miba CEO F. Peter Mitterbauer. "So our objective is to expand worldwide and construct further VOLTfactory sites. The Bad Leonfelden site is the pilot and showcase factory for this." As Miba has already been represented in six states in the USA since 2001 and employs more than 900 people there, a VOLTfactory is also planned in the USA. Here Miba Battery Systems will be able to utilize the global distribution and production network and the expertise of the whole of the Miba Group.



Opening of Miba VOLTfactory #01 in fall 2022 in Bad Leonfelden.



The battery systems manufactured in Bad Leonfelden are an optimal addition to Miba's electrification strategy. Miba has already invested around EUR 80 million in electromobility as a market of the future since 2019, and has

developed an extensive product range. The significance of Miba Battery Systems is also evidenced by the company's inclusion in the European "EuBatIn" program in early 2021. The aim of this European Commission IPCEI (Important Project of Common European Interest) is to establish competitive European battery production. Miba's battery specialists are working on the program together with companies such as BMW, Rimac, Fiat, Northvolt, AVL and Varta. During a two-year qualification process, Miba's technologies underwent an in-depth audit, and there was also a rigorous evaluation of its business model and growth prospects. Eventually the company's potential was confirmed at EU level. Acceptance onto the initiative will act as an additional push for growth in order to establish the MBS technologies on the market even more rapidly.

FLEXcooler® FLEXIBLE BATTERY COOLER

With its flexible shape, the FLEXcooler® developed by Miba adapts perfectly to the battery cells. This makes it the first liquid cooling system on the market that optimally absorbs and dissipates heat due to the close connection between battery cells and cooling. The advantages are on the one hand its low weight, and on the other hand the fact that gap fillers, materials used to fill the space between the battery cell and the cooling system, are no longer needed. The Miba FLEXcooler® can be used for prismatic, cylindrical and pouch battery cells.



VOLTstation® COMPACT AND MOBILE ENERGY STORAGE



The Miba VOLTstation® is an environment-friendly alternative to diesel generators. It is an energy storage device for both stationary and mobile use, which provides power quietly and with no emissions – for example on construction sites. With its modular and compact design, the VOLTstation® is easy to transport and simple to operate by means of a touch screen.

TERRA Platform FOR THE HIGHEST QUALITY REQUIREMENTS

The TERRA Platform from Miba Battery System (MBS) offers customized battery solutions for on-road and off-highway vehicles. Through its modular approach, the battery offers different interconnection options, and can be expanded for larger battery systems by scaling up the battery packs with serial/partial interconnection. The TERRA Platform was devel-

oped in accordance with automotive standards with the highest quality requirements (FMEA, APQP, PPAP, R@R), which ensures the traceability of the installed components.





MOBILITY OF THE FUTURE

TECHNOLOGIES FOR CLEAN DRIVES: WELL-PLACED IN A BOOMING MARKET.





#MibaeMobility

ACTIVELY HELPING TO SHAPE THE GROWTH MARKET ELECTROMOBILITY

WITH MIBA eMOBILITY WE ARE WELL SET UP FOR THE CURRENT AND FUTURE CHALLENGES IN THE ELECTROMOBILITY MARKET.

By 2025 Miba will have invested more than EUR 100 million in the development and expansion of this business area. The worldwide sales of electric cars increased hugely in 2022. 10.5 million new electric cars were delivered, an increase of 55 percent compared to 2021.

Around one in four new cars in the European Union has a connector for charging the drive battery. This proportion is also increasingly moving from plug-in hybrids (PHEV) to fully electric cars (battery electric vehicles, BEV). Miba has always had the goal of growing in its existing business, and utilizing new opportunities alongside this; this is also the case with electromobility. To grow further in this new, additional business area, Miba eMobility GmbH (MeM) moved

into a prestigious building in Vorchdorf. The "MeM building" was formally opened in April 2022 with an address by F. Peter Mitterbauer. Miba eMobility now welcomes employees and other partners to this area of 515 square meters. The office building accommodates up to 50 employees, and since July last year the adjoining 2,050 m² production hall has been used for the production of prototypes and preparation for series production in the eMobility business.

MeM IS EXPANDING FURTHER

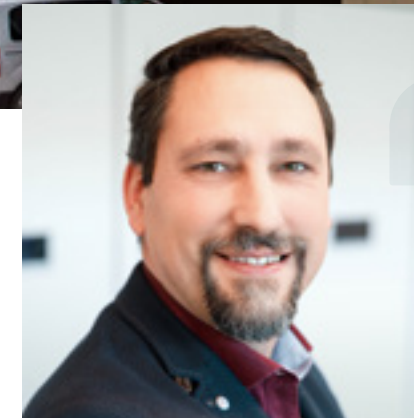
Miba eMobility is growing constantly: additional production capacities are being created through the use and conversion of space at Miba Sinter in Vorchdorf. In future, Power Safety Devices (PSD) for eMobility will be produced entirely in these production halls. The number of employees is also set to grow further. Miba is looking for people who are interested in eMobility to develop the business together: electrical engineers, mechatronics technicians, software developers and specialists in software design and test engineering are just as welcome as employees wishing to

develop their expertise in the eMobility area. "For people who are passionate about mobility and drive technology, these are hugely exciting times filled with innovation and dynamism," according to the Miba eMobility team. "All the well-known manufacturers worldwide are now looking for partners with which they can develop the best solutions for their demanding challenges and put them into series production. With our expertise we want to develop new technologies that are meaningful for our customers and create real added value – and also contribute to emission-free mobility."

WORLDWIDE EXPANSION

Europe wants to reduce its dependency on Asian battery manufacturers, so numerous factories are currently being developed. The battery business is the ideal addition to Miba's product range. With technologies for the generation, transmission, storage and use of energy, the company wants to grow its current turnover to EUR 1.5 billion by 2027. This also applies to the expansion in China, which has become one of the most important markets for electromobility. The strongly increasing demand for EVs in China, and along with this also for discharging and precharging resistors in

their drives, is bringing about a massive expansion of the local production capacities. Miba is also just completing a new production site near the Chinese city of Shenzhen, at which high-power resistors for electric cars will be produced. With the construction of a further new plant in Suzhou near Shanghai, the company wants to create further production capacities to supply the Chinese electric car market. Globally Miba is investing in personnel resources, research and development, additional production lines for both purely electric and hybrid electric vehicles, and in the expansion of existing production sites.



"We are **RIGHT AT THE FOREFRONT** of the mobility offensive. And because we are so well-placed worldwide, we can offer our customers solutions that support them in their innovations and help them make their business more sustainable and more efficient."

Werner Pessenhofer, Miba eMobility Business Unit Lead

Safety systems for electric vehicles MIBA RECEIVES STATE PRIZE FOR INNOVATION



In 2022 the two Miba components POWERcloser® and POWERfuse® were awarded the Upper Austrian State Prize for Innovation

Miba received the Upper Austria State Prize for Innovation in the large company category for its innovative safety components in eMobility applications. The POWERcloser® and POWERfuse® components developed by the family-owned company are used in battery-powered and fuel-cell powered electric vehicles, where they guarantee the protection of the electrical system as well as the safety of the occupants and the rescue services. Miba has these two technological innovations to thank for being selected as the most innovative company in Upper Austria in 2022. After receiving the award for the Miba FLEXcooler in 2019 and winning the Jury Prize for its sputter technology in 2020, once again Miba's outstanding research and development work has been honored. Almost one in four patents registered nationally is from Upper Austria – the federal province stands for a wealth of ideas, and is home to the most innovative company in the country. With 32 new patent registrations, Miba came out top in Upper Austria for the third time since 2021. The Laakirchen technology group was also among the Top 3 of the Austrian rankings.



MIBA INNOVATIONS DELIVER SAFETY

In the event of an accident or a technical fault in a vehicle's electrical system, it is essential to switch off the current rapidly and safely dissipate the electric energy. This protects not only the vehicle battery and fuel cells, but also the occupants and the rescue services taking care of them. A group of specialists in the Miba eMobility team developed the Miba POWERfuse® and the Miba POWERcloser® for this purpose. These solutions isolate the battery or fuel cell from the vehicle electronics within just a few milliseconds by means of a pyrotechnic explosion, and safely dissipate the residual energy from the fuel cells.

MIBA STANDS FOR THE SPIRIT OF INNOVATION

Innovations such as the POWERfuse® and POWERcloser® are examples of the way in which Miba is contributing to safe, environment-friendly mobility with its products, entirely in line with its corporate mission "Technologies for a cleaner planet". Miba wants to develop solutions to make the production, transmission, storage and use of energy even more efficient – and thus make a contribution to a cleaner planet.

lfr: Stephan Kubinger (Upper Austria Economic Chamber – Industry Department), Regional Minister Markus Achleitner, Gerhard Stempfer and F. Peter Mitterbauer (Miba AG), State Governor Thomas Stelzer



© Max Mayrhofer

TECHNOLOGIES FOR THE MOBILITY OF THE FUTURE

GROWING PRODUCT RANGE

As an innovative partner with decades of automotive experience, we are proactively helping to shape the market around the mobility of the future. In close cooperation with our customers, we are thus creating new solutions for eMobility. Today Miba already offers a wide range of technologies – for pure electric driving and for hybrid drives.





Expansion of production in Europe ONE MILLION DISCHARGE RESISTORS A YEAR

Power or discharge resistors ensure that when an electric vehicle is parked or has a fault, the electric voltage in the system is dissipated immediately and safely. Resistors of this kind from the Miba company EBG Resistors have been in use for a number of years, particularly by Chinese manufacturers. With an investment of EUR 2 million, EBG is now also utilizing the market opportunities in Europe and has assembled new production facilities in Styria. The investment was triggered by a large order for one of the major electric car platforms in Europe. More than a

millions discharge resistors a year can be manufactured with the new production facilities in Kirchbach and St. Stefan, which correspond to the automotive manufacturers' latest requirements and are IATE-certified. Thus, for example, every discharge resistor produced is digitally traceable, from the material and its installation in the vehicle to its use. This delivers huge benefits, as it means the product quality can be optimally monitored and evaluated in the long term, and thus continuously improved. Big Data applications are also being used.



The Miba power electronics specialist EBG has invested EUR 2 million in Styria, in production facilities for power resistors in electric vehicles.



Miba is a pioneer in development and production HAIRPIN TECHNOLOGY INCREASES THE EFFECTIVENESS OF ELECTRIC MOTORS

The density of the winding of electric motor stators in electric motors can be increased by using hairpin or flat wire technology. Through the higher copper fill factor, higher electric motor efficiency can be achieved. As an example: conventional electric motors have a copper fill factor of up to 45 per cent – with Miba technology, this increases to up to

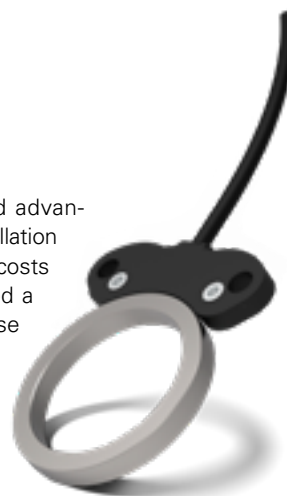
70 per cent. As we are one of the few suppliers to develop our production lines in-house, we can synchronize the development of both our products and processes, such as the adaptive twisting for our lap-winding design or our inline quality monitoring. Our modular system concept enables the utmost flexibility and productivity of our systems.

High-precision sensing ROTARY ENCODERS IN HIGH-SPEED ELECTRIC MOTORS

The High Precision Sensing business unit deals, among other things, with coating-based solutions and magnet-based measurement technology in the field of eMobility, concentrating largely on magnetic rotary encoder systems. The polymer-based magnetic rings currently used in the market as signal transmitters (pulse wheels) have disadvantages in

terms of their precision, as well as the stability of the temperature and the solvent, and can therefore only be used to a limited extent in electric motors and high-speed systems. The Miba solution: these disadvantages can be overcome by the use of pulse wheels with hard-magnetic Cobalt-Samarium layers. Temperatures above 200 °C, rotation speeds of more

than 30,000 rpm, and advantages in terms of installation space and integration costs have already generated a large, positive response from customers during the prototype phase. Production began in March 2023.



First series order for axial flux motors DRIVE FOR HYDRAULIC SYSTEMS

A Miba axial flux system is going to be used in commercial vehicles. The start of series production is planned for the second quarter of 2024, and the customer is a well-known supplier of such vehicles. The initial investment of EUR 2.4 million in the series plant will not only cover the production capacity re-

quirements for the first project, but will also be available for further customer orders. An electric motor is an electrohydraulic unit characterized by its disc-shaped design, high torque density and quiet running behaviour. Together with our customers, thanks to our axial flux motor we can successfully reduce the



emissions in modern rear-axle steering systems for commercial vehicles, while at the same time saving installation space and weight. The electrohydraulic system driven by the Miba eMotor actively contributes to reducing fuel consumption, and can also reduce the tire wear of trucks when cornering.

Miba friction technology for 2-speed transmissions EFFICIENCY AND PERFORMANCE

On the whole, fully electric drives (BEV) do not contain a classic-type transmission. Most vehicles operate with a constant 1-gear transmission ratio. To date, models with a 2-speed drive axle are the exception, but these friction systems will play a more important role in future; this is because 2-speed drives are the solution to the conflict of objectives between performance (maximum speed) and efficiency (consumption, and thus range). Miba Friction Group is working

together with other industry partners on a 2-speed eAxle. Miba technologies are available for transmission designs without oil cooling, which can be realized exclusively with the sintered friction material technology PCC (Pro Control Compound), as well as for designs that use oil cooling. The oil technology that is required differs significantly from the oils already in use today, due to incompatibilities of individual formulation components and the reduced lubricity.



We are in close cooperation with well-known oil and additive manufacturers so that we are able to offer superior solutions here as well.

Safety systems for batteries and fuel cells EMERGENCY STOP SWITCH FOR HIGH VOLTAGE

The Miba POWERcloser® is an electrical safety switch which functions as a high-voltage capable stop switch when triggered by a pyrotechnic actuator. In the event of an accident or any other fault that causes a short-circuit, it auto-

matically and reliably closes the electric circuits. This prevents the outbreak of fire and ensures that the vehicle is safe for the occupants and the emergency responders.



43rd INTERNATIONAL VIENNA MOTOR SYMPOSIUM 2022

TECHNOLOGIES FOR A CLEANER PLANET

At the International Motor Symposium in Vienna, F. Peter Mitterbauer presented Miba's wide product range in the ePowertrain segment to the over 900 international participants.

The traditional convention of drive technology experts took place at the Vienna Hofburg again for the first time after a two-year break due to coronavirus. Most of the 72 speakers addressed topics relating to the energy turnaround, thus proving that the Symposium was not a meeting of traditionalists with

energy storage. Different technological approaches to achieving the shared goal were first addressed by representatives of industry and science during a podium discussion.

THINKING AHEAD FOR THE MOBILITY AND ENERGY TURNAROUND

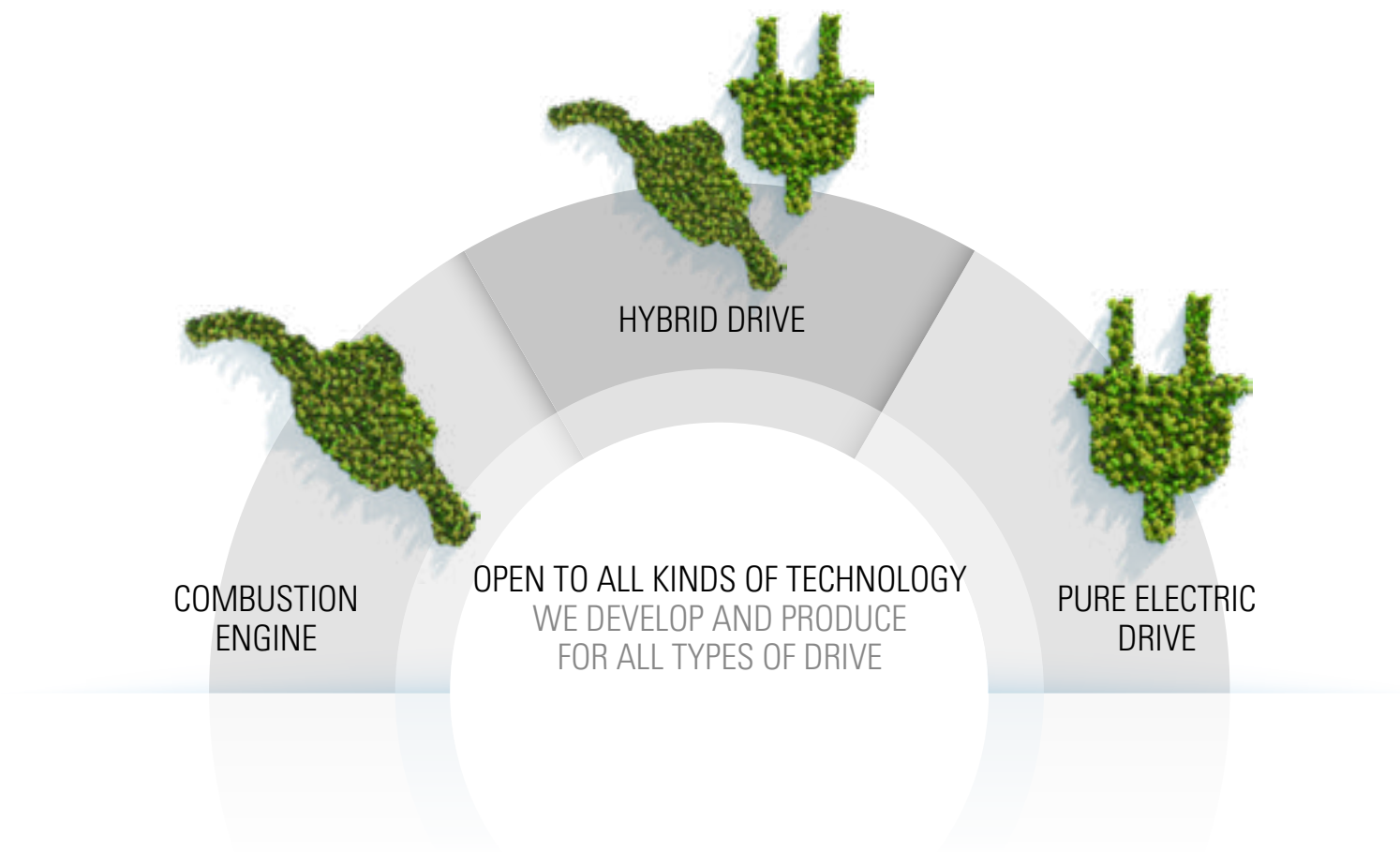
F. Peter Mitterbauer led the opening session of the Vienna Motor Symposium together with a group of other top-ranking business leaders. His guiding principle: "Challenges are solved not by announcements, but by engineers. Driven by our corporate mission "Technologies for a cleaner planet," at Miba we want to actively shape the future of mobility," said Mitterbauer. In so doing, Miba is also undergoing transformation. On the one hand conventional drives are being further optimized, and on the other hand the company has been working for seven years on the development and

production of important components for electrified drives, in particular for battery systems, electric motors and electric drives. Like many of his Board colleagues at the Symposium, Mitterbauer is calling on the legislator to be more open to all forms of technology.

The International Vienna Motor Symposium 2023 will focus on the coexistence of different drive systems and energy sources: from 26 to 28 April more than 80 high-level experts from science, the automotive industry and the supplier industry will familiarize the over 1,000 expected participants from more than 25 countries with a wide range of technological and strategic innovations from the automotive sector. The energy turnaround and its consequences for the automobile industry will be key areas of the Motor Symposium.



a nostalgia for old technologies. The program of the two-day presentation marathon for vehicle drive developers was dominated by hydrogen, synthetic fuels, battery and fuel-cell technology. As well as F. Peter Mitterbauer, the presenters at the plenary session packed with high-ranking attendees also included Luca de Meo and Philippe Brunet (Renault S.A.), Wolf-Henning Scheider (ZF Group), Markus Schäfer (Daimler AG), Andreas Gorbach (Daimler Truck AG), Frank Hiller (Deutz AG) and Thomas Ulbrich (Volkswagen AG). As always, the core program comprised groundbreaking presentations focusing on reducing carbon and exhaust gas emissions. The drive systems ranged from new combustion engines and the phased electrification of the drivetrain to electric vehicles using a battery or hydrogen as their



DRIVE CONCEPTS

SOLUTIONS FOR THE MOBILITY OF TOMORROW

The mobility of the future needs to be clean and efficient. To achieve this goal, we are seeking the best solutions. And we are open to all kinds of technology.

We are sure that in future, every drive technology will make a contribution to clean, sustainable mobility – whether it is pure electric driving, hybrid drives or classic combustion engines. We see major growth opportunities in electrification, therefore today we are already

developing and producing a series of solutions for pure electric driving and for hybrid drives, in other words a combination of an electric motor and a combustion engine. Alongside this, we are working on the further optimization of conventional drive technology, because

we also still see further development potential in the combustion engine. We are doing all of this with one goal: to make powertrains even more efficient, eco-friendlier and quieter.

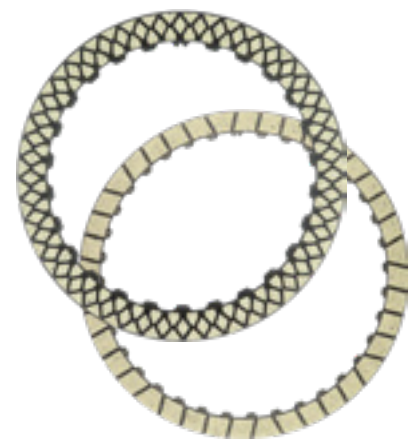
Used in combustion and electric vehicles MORE EFFICIENT MOTORS VIA SINTER TECHNOLOGY

Compared to other manufacturing processes, powder metallurgy solutions from the Miba Sinter Group allow the maximum utilization of the material used. This results in a lower weight being achieved for combustion engines – reducing fuel consumption and making them even more environment-friendly. In addition, our powder-metallurgical

solutions score over conventional production methods because they produce less waste and consume fewer raw materials. Our comprehensive expertise from the conventional powertrain can also be carried over to applications in eMobility. Our knowledge of NVH (noise, vibration, harshness) and gearing can thus be used for eAxe compo-



nents such as planetary gears or high-strength actuators, for parking brakes or clutch packs.



Lower consumption, lower use of resources MULTI-PAD-DESIGN FOR TRANSMISSIONS

The crystalline structure on Miba friction materials is referred to as multi-pad design; this design is used on friction materials for hybrid and dual-clutch transmissions, where it reduces drag losses, and thus fuel consumption. Furthermore, the design also enables the oil quantity to be distributed more precisely in the clutches. The advantages are improved performance, reduced oil volume, and savings in terms of raw materials.

Making aircraft more eco-friendly QUIET, MORE ECONOMICAL TURBINES THANKS TO SPUTTER TECHNOLOGY

15 per cent less fuel consumption, 20 per cent less noise and 15 per cent lower CO₂ emissions – the sputter technology developed by Miba contributes to all of these. The gears in the gear-boxes of aircraft turbines are coated using Miba's sputter process, and the bearing function integrated via the coat-

ing requires less installation space and achieves higher efficiency. This makes the turbine more efficient, more environment-friendly and quieter. According to the pilots, the effect is so great that they no longer hear the turbine above a speed of 100 kph; they can only see that it is in operation by looking at their



instruments. Gears coated with Miba sputter technology are now installed in the turbines of more than half of all new medium-sized aircraft (single-aisle aircraft) worldwide.



Friction materials for brakes and clutches MIBA PRODUCTS REDUCE INSTALLATION SPACE AND WEIGHT

Friction materials are important elements in clutches and brakes, where they ensure efficient and optimized power transmission. Miba Friction Group's friction material technology is used in tractors, construction machinery, trucks, cars, aircraft and wind turbines. Their use saves installation space and reduces weight, whatever the end application.

Stepless torque apportionment DRY MULTI-DISK CLUTCHES FROM MIBA FRICTION GROUP PROTECT THE ENVIRONMENT

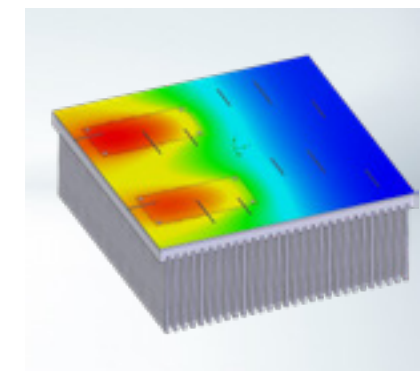
Multi-disk clutches play an essential role in vehicle drives. Every drivetrain includes gear wheels that transfer torque from one level to the next by means of "positive engagement"; when the vehicle is driven around a bend, the torque is transferred only to a fixed position. In the case of a multi-disk clutch, this can also be done with "slip". This makes it

easier to apportion the torque, in a continuously variable manner. In contrast to the wet, i.e. oil-lubricated, multi-disk clutch, the dry multi-disk clutch entirely dispenses with oil and is also distinguished by its higher efficiency. Another advantage of a dry system is the higher torque density that is achievable, which in turn saves energy.

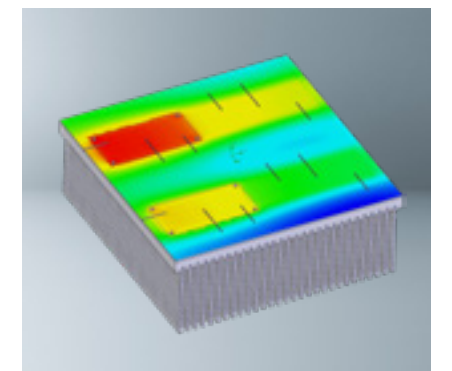


Air-cooling concept EFFICIENT POWER SUPPLY

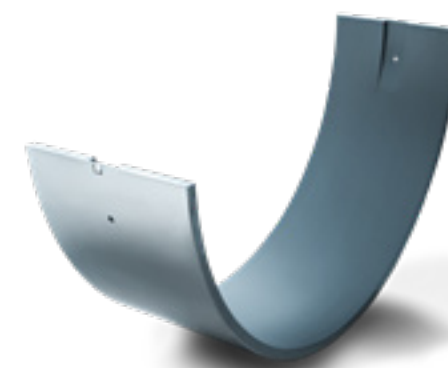
An air-cooling system for semiconductor shells (such as IGBTs) developed jointly by our Styrian company DAU and Miba Sinter Group creates a permanently vacuum-tight "working space" for the heat pipe thanks to the vacuum soldering process used. This delivers many benefits, such as minimized heat transfer resistance and thus better thermal conductivity, an improvement in thermal properties of up to 25 per cent, and a 50 per cent reduction in the need for components.



Thermal distribution without vacuum chamber



Thermal distribution with vacuum chamber



Eco-friendly new additive LEAD-FREE BEARINGS

Miba has developed a lead-free alloy that uses a new additive to replace the lubricating properties of lead. The lead-free bearing is characterized by high strength, and at the same time has the robustness of leaded bronze. The lead-free product protects not only the environment, but also the health of our employees in production.

High-speed trains BRAKING SAFELY EVEN AT 400 kph

Miba's high-performance friction materials are used in the braking systems of high-speed trains. Even at speeds of around 400 kph, they are distinguished by their robustness, weather resistance and noise insulation – thus ensuring safe, quiet trains.





INNOVATIVE SPIRIT IS PART OF MIBA'S DNA

**WE THINK IN SOLUTIONS. FROM THE
IDEA TO THE IMPLEMENTATION,
ONE THING IS CENTRAL: THE OPTIMAL
BENEFIT FOR OUR CUSTOMERS.**

#InnovationIsPeople

IT IS PEOPLE THAT DRIVE OUR INNOVATION

Miba products aim to make the generation, transmission, storage and use of energy more efficient, and thus more sustainable and climate-friendly.

BUT DEVELOPING PIONEERING INNOVATIONS REQUIRES ONE THING IN PARTICULAR: PEOPLE WITH VISIONS.

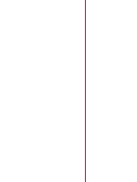
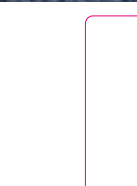
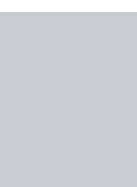
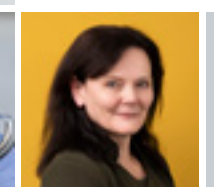
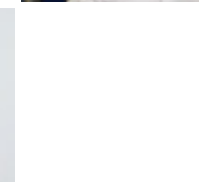
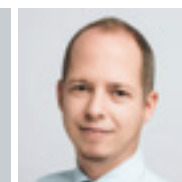
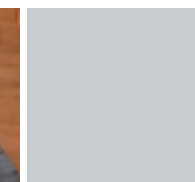
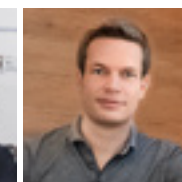
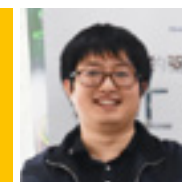
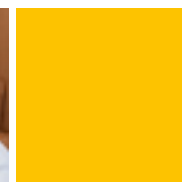
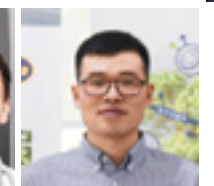
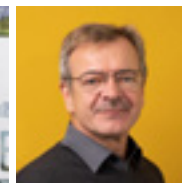
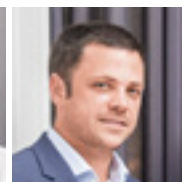
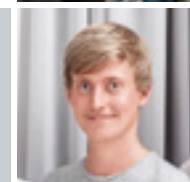
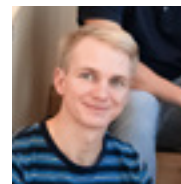
Standing still means going backwards. This is the essence of Miba's success for many years, working in close cooperation with its customers to develop disruptive innovations that contribute to making our planet cleaner and more worth living in. The innovation process is never finished: we are never satisfied with what we have achieved, but work permanently on developing our technologies further. In doing so, we concentrate on the development of technologies for end applications for the sustainable generation, transmission, storage and use of energy – entirely in accordance with our corporate mission "Technologies for a cleaner planet." Every day our constant aspiration for outstanding innovative achievements gives us the incentive to further expand our product and technology leadership in technologically demanding niches along the entire energy value chain, and safeguard this for the future. This success is sustained by an international research and development team

of just under 300 smart minds. In addition, in the last year Miba invested EUR 44 million in research and development to achieve this goal.

INNOVATION IS ABOUT PEOPLE

Innovation has always been at the heart of our DNA. But there is one thing that is more crucial to Miba's innovative strength than anything else: the wide-ranging expertise and commitment of the international Miba team. It is our employees who propel each other towards top performances with their wealth of ideas and drive, and in so doing always keep their eye on one thing: the benefit for our customers. We firmly believe that innovation is the result of intensive collaboration. So the close consultation with our international customers, but also the intensive

exchange of ideas within the company and with university research institutions, is essential to create the fertile ground for innovations.



"Miba can look back on trailblazing INNOVATIONS."

My team's task is to utilize new opportunities in the megatrends of decarbonization and energy efficiency, and further expand our innovative strength."

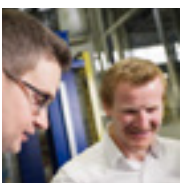
Edoardo Pietro Morra, Vice President Innovation and Technology Miba



GLOBAL EXCHANGE OF IDEAS

The right corporate culture is an essential prerequisite for an innovative spirit and a wealth of ideas. Our flat hierarchies encourage our employees to contribute their ideas and break new ground. And this is increasingly happening globally. The globalization of Miba's business model means that development activities are increasingly coming from other locations – such as

Slovakia, the USA, China and Brazil. And even if the development activities are still mainly centered in our parent factories in Austria and in our dedicated eMobility center in Vorchdorf (Austria), the trend is still moving towards globalization. With our innovations we want to help our customers solve their challenges and achieve their goals. And our rule of thumb is always "nothing is impossible".



INNOVATION IN MOTION

**Top 3 for new patent applications:
MIBA IS UPPER AUSTRIA INNOVATION
LEADER ONCE AGAIN**

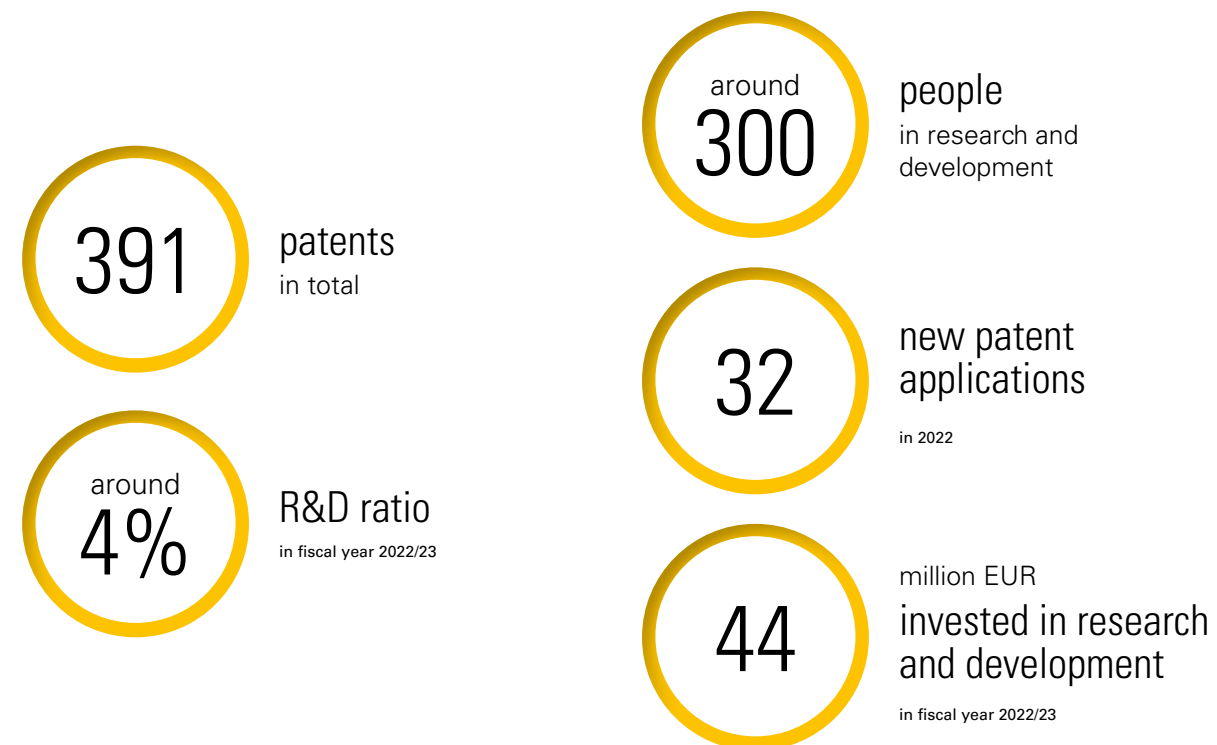


Every year the Austrian Patent Office ascertains which companies have registered the greatest number of new patents. With 32 new patent applications, the Laakirchen technology group is once again the innovation leader in Upper Austria, for the second time in succession since 2021.

In 2022 Miba was also ranked among the Top 3 companies for new patent applications in Austria as a whole, as it had already been in 2021.



RESEARCH AND DEVELOPMENT IN FIGURES



**For efficient and reliable wind turbines
NEW BEARING CONCEPT**

Bearings are becoming increasingly important in wind turbines, as they enable wind turbines to be more compact, more reliable, more efficient, and cheaper to maintain. An interdisciplinary team at Miba has been working for around five years on an innovative bearing solution for the main shaft bearing, in close cooperation with customers, research institutions and internal stakeholders. Miba's many years of experience in the engine mount and

industrial bearing areas has been amalgamated to develop a solution that is optimal in terms of both functional and system costs. The concept has already won over major wind turbine manufacturers, with whom Miba is now working on implementing corresponding projects. Main shaft bearings for wind turbines are an expansion of the portfolio. Miba bearings in gearboxes have already been successfully used as a serial product for several years.



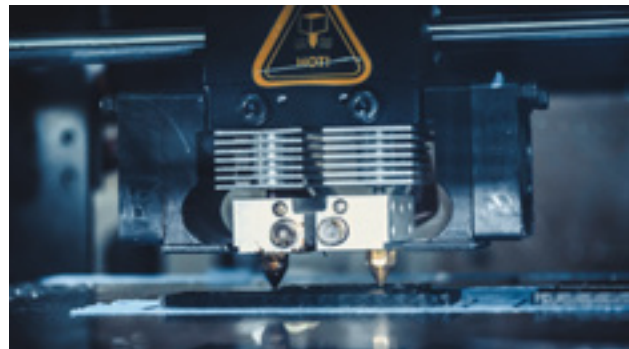
"The development of ever more powerful wind turbines means that innovative, robust solutions that are easy to maintain and repair are required especially for the drivetrain. Our goal is to work with Miba and a relevant market player to advance the market-readiness of bearings used as main shaft bearings. As well as Miba's high level of expertise in bearings, we also value their solution-focused, open access."

Alf Trede, CEO bewind GmbH

Unprecedented possibilities ACCELERATED INNOVATION PROCESS WITH 3D-PRINTED PARTS

Additive manufacturing is a promising technology for the rapid manufacture of complex components. In 2022 the first equipment for printing plastic components was installed at Miba Sinter Austria. Since it was put into operation, numerous customers have been supplied – particularly internally. The applications range from inspection samples at different stages of development or the first small-series components to functional clutch packs. The benefits of the in-house 3D-printing are the immediate availability of the components, the confidentiality of development activities, and the cost and time advantages. Technologies for the industrial 3D-printing of metals are also being evaluated. The sinter-based 3D printing technology Cold Metal Fusion (CMF) is promising here, and has been used and developed at the MSA Innovation Center since mid-2022. Here for the first time pure

metal powder is not being welded, but instead an injection-molded part is printed from metal-filled plastic powder, and then sintered. As a result, low-energy lasers from cheaper plastic printers can be used. Miba is also a strategic member of the Cold Metal Fusion Alliance, a group of industry-leading companies which offer products and services along the CMF process chain.



"In-house 3Dprinting offers many advantages for our development work: short communication channels, rapidly available components, the best possible protection of our expertise, and low costs. So we are committed to working together with Miba Sinter Austria."

Miba eMobility GmbH

Sustainable coating solutions for electric bike drive units CLEANER AND QUIETER

The Miba development team is also a specialist in innovative coating solutions. Targeted coatings are developed for all areas along the energy value chain to achieve the utmost functionality. The maximum useful life, precise coating systems and the highest process stability enable the customers' increasing requirements to be met. Above all, the reduction of CO₂ and nitric oxides and the optimization of noise emissions top the agenda for the research and development activities, and thus make a substantial contribution to sustainability. One example is the SpaceAdaptocoat technology, which enables a measurable reduction in the noise of electric bike drive units. With this technology, a coating that self-adjusts during operation is applied between two gearwheels. This

produces a very precise play between the gearwheels, which has a positive impact on the noise behavior of electric-bike drive units: while the measurable noise reduction achieved is only -5 dB, there is also a clear reduction in the noise level perceived subjectively by the riders themselves. The benefits of the technology take effect particularly in light of the requirement to achieve further increases in power at the same time as striving for smaller installation spaces and lighter components. The Adaptocoat® coating from Miba has been patented for this.



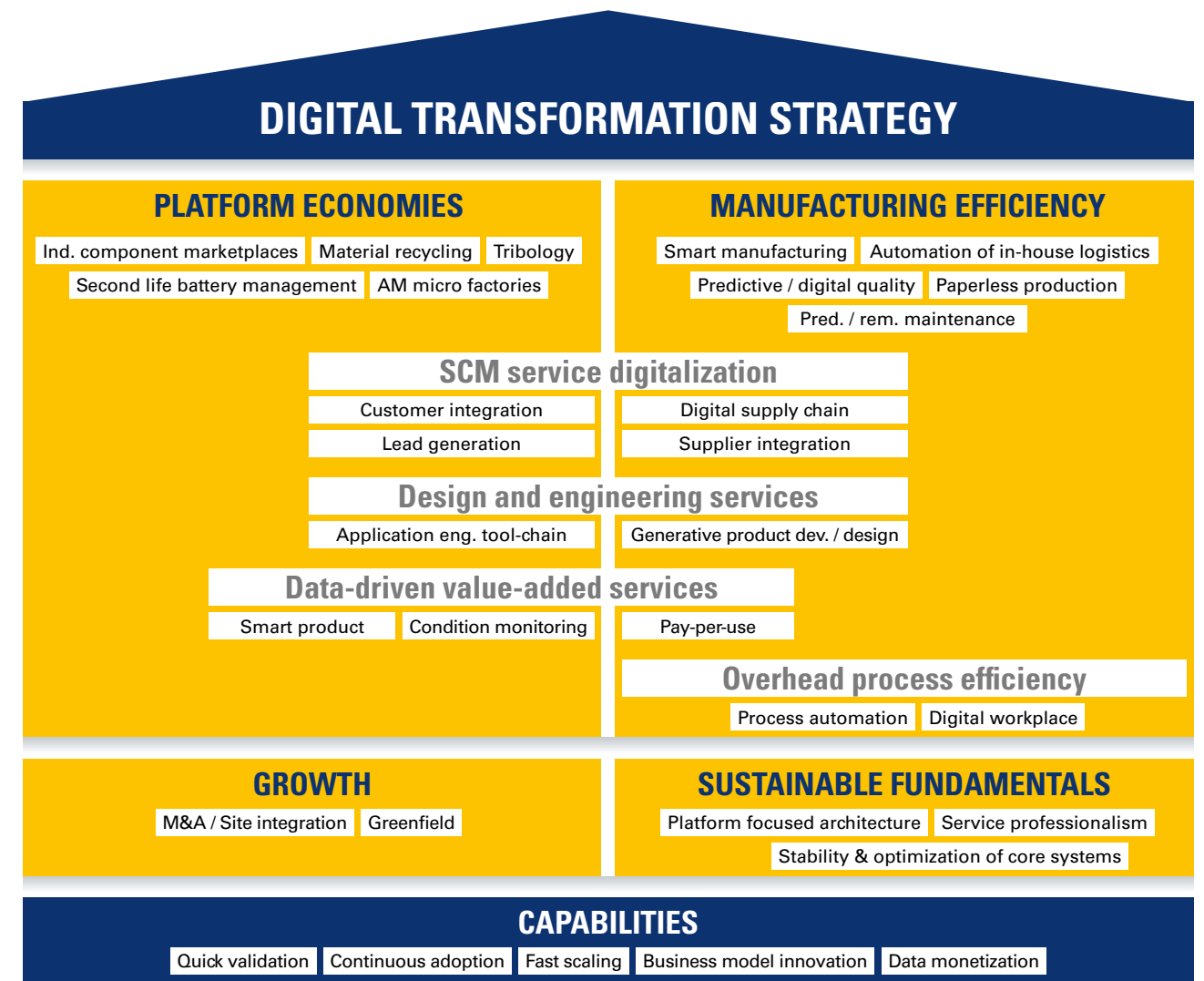
"Coating the gearwheels enables us to improve the noise behaviour by up to 5 dB and thus gain a significant advantage over our competitors."

Ampryo, partner company of Miba



DIGITALIZATION@MIBA

We want to become the digital industry leader in niches along the entire energy value chain by digitalizing our key processes and products and developing digital business models.



MIBA HOUSE OF DIGITALIZATION

The digital transformation offers us a multiplicity of opportunities. We want to create true added value for our customers with digital products and services, and we want to become even more quality-focused and efficient by digitalizing our processes and using the

power of networked data. The Miba House of Digitalization describes the areas in which our company wants to utilize the opportunities arising from digitalization, and it also shows what the requirements for this are. To inspire and support Miba in the digital transformation, and push ahead with digital ideas,

we have further expanded the activities of the Digital Innovation Hub based in Munich.



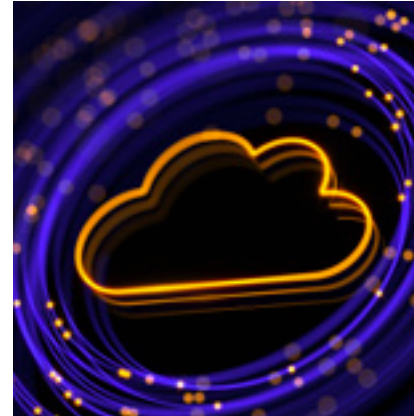
Product configurators and digital twins

DIGITAL ADDED VALUE FOR OUR CUSTOMERS

The digital revolution has fundamentally changed the way in which companies interact with their customers. In an increasingly competition-oriented sector, it is becoming ever more important to stand out from the competition and offer innovative solutions. To meet this requirement and offer our customers a unique purchasing experience, in recent months we decided to digitalize our customer interface. This was not simply a matter of following the latest technological trend; instead we initially realized pilot projects to evaluate which technologies were best suited to meeting our customers' needs. For us it became evident that product configurators and digital twins are the most effective technologies for achieving our goal. These would give our customers the ability to design their ideal products individually and view them in realistic 3D, which would make the joint development process simpler and more efficient.

DESIGN THINKING FOR IDENTIFYING CUSTOMER NEEDS

To successfully develop our digitalization strategy, we are relying on international teams of IT specialists and engineers who work on projects using design thinking methods. Through the cooperation between experts from different countries, we can develop and implement innovative ideas that optimally correspond to our customers' needs. Although pilot projects have already been completed, we regard the digitalization of our customer interface as an ongoing process. We will continue to invest in the development of our technologies and expand our team of IT specialists and engineers, so that we can delight our customers with our solutions in the future too. The past fiscal year also represented an important milestone for Miba from an IT and digitalization perspective, as we were able to successfully stand out from the competition by means of targeted pro-



jects. The digitalization of our customer interface created an innovative solution for our customers which will contribute to increasing their satisfaction in the long term. We are certain that the continuation of our comprehensive digitalization strategy will be the key to success in a constantly changing industry in the future too.



Actively using the opportunities of the digital age

SMART PRODUCTS AND INNOVATIVE CLOUD SOLUTIONS

In the fiscal year 2022/23, Miba's digitalization strategy made significant progress within the framework of the new corporate strategy Miba 100. Miba's global IT team in particular worked intensively on the areas of potential that had already been identified, namely manufacturing efficiency, design and engineering services and data-driven value added services, and developed new, practical application areas in which digitalization contributes to the company's long-term success. Digital solutions are extending the product USP of Miba's innovations. The internal Manufacturing Execution System (MES) platform and the Industrial Internet of Things (IIoT) platform have been further developed,

and the first customers have access to new, progressive online product configurators. Within the framework of the digitalization of the development environment, for example, the Digital Engine Configurator was successfully transferred to use. It enables a major optimization in development work with customers, and thus substantially contributes to shortening project durations.

SENSOR TECHNOLOGY FOR OPTIMAL CUSTOMER BENEFITS

As well as our bearings equipped with sensors, which continuously measure data on their condition and thus provide important information on the ideal time for maintenance, intelligent high-power

resistors are a promising application. These resistors monitor and optimize their own functioning, and also collect important information for the whole of the system electronics. The implementation of smart products also lends itself to our Miba FLEXcooler®, a thermal management system for batteries that becomes a smart system through the use of sensors. These sensors collect important information about the temperature distribution in the battery, and enable the functioning to be controlled and optimized during operation. On the basis of these temperature data, we are developing new digital offerings, such as early service warnings and Cloud-based evaluations of the battery data.

Minimizing our carbon footprint

ONLINE TOOL FOR OUR DEVELOPMENT PROCESS

To produce CO₂-neutrally by 2040, reduction of carbon becomes an integral part of the R&D process. This includes both the selection of raw materials used and the consideration of the effects of different process routes. In cooperation with the University of Applied Sciences Upper Austria at the Josef Ressel Center, the Application Engineering Tool (AET) was developed, in which friction systems can be processed together

with the customer and the functional and economic aspects can be presented. In the meantime, it has become the benchmark in the industry. Based on this, a web application has now also been developed, which enables our customers to directly access online design. Within a few minutes, FRED (Friction Engineering Designer) delivers the key figures that make technology decisions easier and more transparent.

This is another building block for competitive differentiation, short time-to-market times and stable networking with our customers' R&D departments.



Smart Bearing project

AWARD FOR SMART BEARING

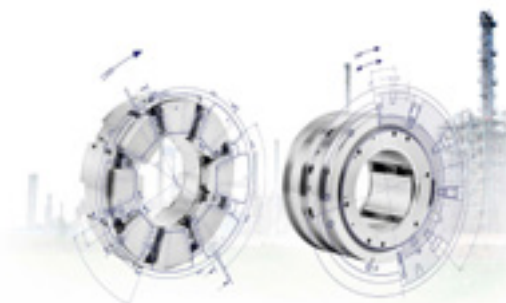
We work continuously on the development of smart components to make our products even more efficient, reliable and functional for customers. An excellent example of this is the Smart Bearing project. This involves a smart bearing equipped with sensors which can transmit data to the Cloud with no external energy supply, and can use Artificial Intelligence to generate recommendations for actions to control the device. This project has won an innovation award from Google und Nagarro, and represents exceptional cooperation between the Miba IT Digitalization team and the specialist department at Miba Gleitlager. The Miba smart bearing monitoring system equipped with radio transmission, energy harvesting and sensor technology is meeting with

great interest from development partners and engine manufacturers. There are already exciting projects underway for further applications.



Online product configuration with the bearing calculator

THE RIGHT BEARING FOR EVERY REQUIREMENT



Miba's industrial bearing division is also backing the potential of online product configuration. In the past year it has worked intensively on expanding its digital services and thus offering customers even more options. During the course of this, the bearing calculator has been used to construct new con-

figurations for radial and axial tilting pad bearings which will help our customers find the perfect bearing for their individual requirements. We are convinced that these tools will support our customers in saving time and money, and improving the performance of their applications.



CORPORATE CULTURE – SUPPORTING AND GROWING
OUR INSPIRING WORKING
ENVIRONMENT CREATES A SPACE
FOR FORWARD-LOOKING IDEAS.

#MibaSpirit

PEOPLE – ORGANIZATION – CULTURE

THE BASIS FOR INNOVATION

Our employees' skills, experience and personal commitment are the source of our innovative strength, and are therefore of major importance for our claim to technology leadership.

Miba has always made large investments in training and development, and in future will focus even more on the development of our employees. On the one hand, we will continue to back programs tailored to our employees' needs. As well as the Miba Leadership Academy (MLA) – our global development program for specialists and managers – our apprentice training and customized basic training courses for different specialist areas are also very important here. On the other hand, we are intensively tackling the impact of the increasingly complex world of work. Therefore since the last fiscal year we have strongly focused on the long-term strategic and dynamic de-

velopment of our critical skills. The breeding ground for our expertise is formed by specific technical/specialist and digital competences; these have to be sustained by a profile of social and personal skills that are focused on transformation.

EMBEDDED IN THE MIBA EMPLOYEE DEVELOPMENT CYCLE

Today, targeted and systematic personal development of this kind is a crucial competitive factor. Therefore by means of the Employee Development Cycle, which itself is currently being further developed, Miba will ensure that each and every employee is given the opportunity of deploying their own talents and strengths. The center of this annual cycle consists of highlighting potential development and career paths, with the aim of challenging and encouraging employees with the right role for them. By implementing a modern **performance and talent management tool** in combination with a learning management system, Miba is increasingly using the opportunities and possibilities

of digitalization in the HR area too. In this way, we will gain the freedom to fully devote ourselves to the quality of our working relationship, while still establishing transparent and efficient processes. However, we are not just investing in the digital infrastructure, but also dealing with the requirements for learning spaces / environments of the future, in the aim of designing new spaces for learning and development accordingly.



EUR
2.6

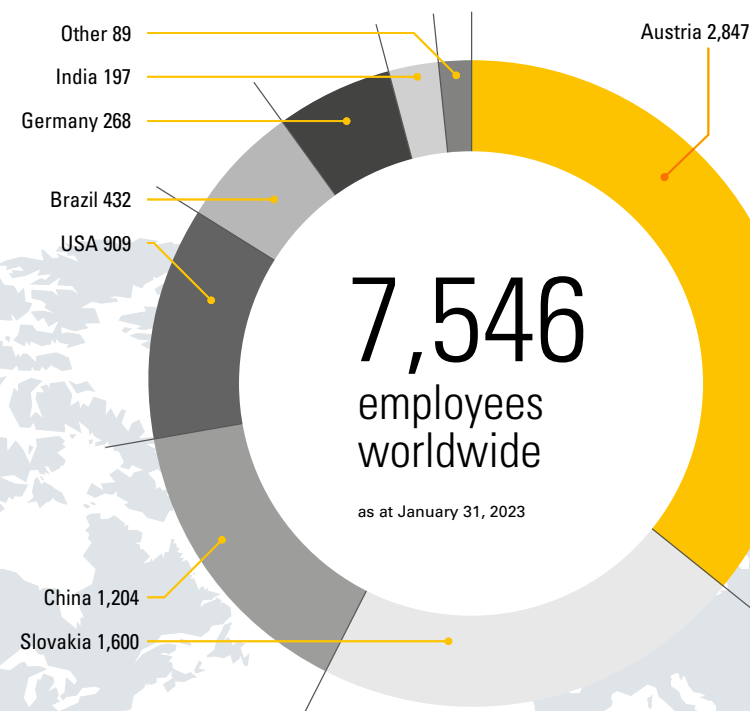
million
invested in training
and developing
our employees

Fiscal year 2022/23





Miba employees by country



Pursuing major goals together SUSTAINED BY A POSITIVE LEADERSHIP CULTURE

By focusing on the development of our employees, our managers take on an important role and responsibility. They are the bearers of our coaching-oriented leadership style, which we have already embodied in the past and will systematically take to the next level over the coming years with elements

of positive leadership. We are further developing our corporate culture by making feedback an inherent part of it, and by ensuring that our managers consistently focus on the strengths of every individual, because we regard it as a management task to activate their positive energy and thus support their

intrinsic motivation. Together we place long-term success above short-term gains and individual benefits. In this way we are able to grow as individuals, as teams and as a company, and not just survive in this fast-moving world, but shine.



A place where innovative spirit meets awareness of tradition THE MIBA FORUM

Since 2017 the Miba Forum has been a headquarters, customer center, learning center and innovation center all in one – a place for meeting and working together.



More than
25

different countries

Our world of work is changing: Working from home and other new ways of working are becoming the new normality. Yet even in these circumstances, the Miba Forum can still claim to be more than just a place for working. The open architectural concept and the many spatial options for dialogue are intended to encourage creativity, productivity and innovation. Employees from more than 25 countries have their workplace here. In an area of more than 4,000 square meters there are office areas, meeting and training rooms, spaces for intensive teamwork, and peaceful havens for individual work. Spacious cafe areas encourage interpersonal interaction. The Miba Forum aims to offer an appropriate working environment for every task.

Architecturally the Miba Forum represents the symbiosis of innovation and tradition. Its form is inspired by the square farmyards that are prevalent in Upper Austria, so it combines Miba's regional roots and origin with our innovative spirit and global presence.

A promise for the future APPRENTICES ARE OUR EXPERTS OF TOMORROW

Apprentice training has traditionally been very close to Miba's heart. As well as the classic apprenticeship, we also offer numerous other training models that ensure the training we offer always keeps pace with the times.

The customized in-house apprentice training program is one of the secrets of Miba's success – with training content tailored precisely to the apprentices' needs and an extensive range of additional qualifications, young specialists are prepared for the technical challenges of the future. The most popular apprentice professions are process, metal, electrical and surface technology, as well as mechatronics. The training incorporates state-of-the-art learning and simulation programs, as well as robots. But that's not all: as well as a solid specialist training, we also offer our apprentices language

courses, internships abroad, training on interpersonal skills and outdoor training courses. Exchanges between the apprentices from different locations are also fostered during events and seminars.

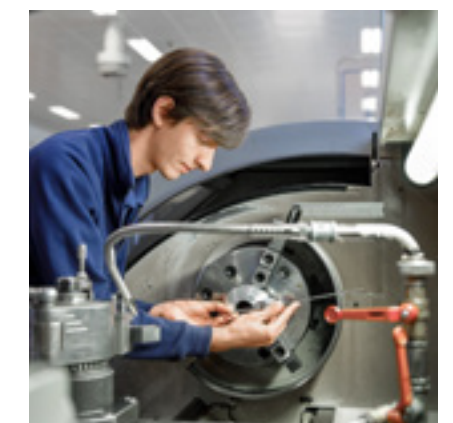
APPRENTICESHIP PLUS SCHOOL-LEAVING EXAMINATION

Apprenticeships are offered both in Austria and in other countries, where they take place in a form adapted to the regional requirements. In Austria the apprentices also have the option of supplementing their apprenticeship with a school-leaving certificate

(Matura) in cooperation with the KTLA (Kremstaler Technische Lehrakademie).

SECOND-CHANCE APPRENTICESHIPS

Miba also attaches importance to "second-chance apprenticeships" for metalworkers – a customized training for employees who are working in production or a related area and wish to gain a higher qualification. After a two-year break due to coronavirus, the program started up again in the fall with a group of 13 people.



MIBA OFFERS THE FOLLOWING APPRENTICE PROFESSIONS IN AUSTRIA:

- Buyer
- Chemical laboratory technician
- Electrical engineer
- Industrial clerk
- Mechatronics technician
- Metal technician
- Office clerk
- Operational logistics clerk
- Process technician
- Surface technician



ALREADY THINKING ABOUT TOMORROW TODAY

**TOGETHER WE ACCEPT
RESPONSIBILITY FOR OUR
EMPLOYEES, THE ENVIRONMENT
AND FUTURE GENERATIONS.**

#BecauseWeCare

RESPONSIBILITY

FOR OUR EMPLOYEES

Nothing is as crucial for Miba's success as the expertise and commitment of its employees. With initiatives for safety at work and for reconciling work and family life, we want to ensure that they are healthy and motivated when they come to work and they get back home again safely.

A healthy mind in a healthy body

WORLDWIDE ACTIVITIES FOR HEALTH AND FITNESS



The coronavirus pandemic has been with us for several years and has demanded a high degree of flexibility from us. We were able to manage the challenges posed by the pandemic with extensive preventive measures, repeated testing and vaccination campaigns at our sites, and not least thanks to our employees' considerate behavior. But with our motto "healthy people – healthy company", activities to protect and maintain our employees' health and fitness continue to be one of the central work priorities at Miba. We want not only to offer our employees a stable environment in a family-owned company with a long-term perspective, but also to provide them with a safe and healthy working environment in which they can contribute their specialist and personal skills to the best of their ability. So we regularly train our employees on avoiding potential hazards and accidents at work, ensure that all areas are particularly clean and tidy, and take care to design workplac-

es ergonomically. Altogether, these enabled us once again to reduce the accident frequency compared to the previous fiscal year. Meanwhile the preventive company healthcare programs developed in Austria and worldwide were further intensified. One of these is "MiMi – Miba for employees – Employees for Miba." This combines fitness and health promotion programs at the Miba sites in Upper Austria, and was again awarded the BGF Seal of Quality for the years 2021 to 2023. Individual Miba sites also put in place targeted measures for long-term health promotion. At the Miba Sinter plants in Vorchdorf and Dolný Kubín, for example several exoskeletons are available to lessen the physical strain on employees undertaking tasks that are especially demanding physically. Several sites also offer preventive occupational health examinations, physiotherapy units and facilities for occupational psychology care. And Miba supports communities in which employees meet up to enjoy sports activities together.



Systematic measures for reconciling

WORK AND FAMILY LIFE

We are totally convinced that women and men should have equal career opportunities, and we regard the ability to combine family and work as a central element of this. Therefore Miba offers its employees not only flexible working hours, but also professional childcare facilities in the immediate proximity of the workplace.

For the youngest Miba generation

MIBA CRECHE

24

childcare places
available at the Miba
creche in Laakirchen

120

children
have attended the creche
since 2014

To help parents especially when they return to professional life after their parental leave, since 2014 Miba has provided a company creche together with the Oberösterreichische Hilfswerk. It is housed in Margarethe Mitterbauer Haus, directly on the Laakirchen site, and was renovated before it opened. The functional fittings both indoors and outdoors enable the premises to be flexibly adapted to the needs of the children attending. A highlight of the creche is a dedicated movement area, which together with the garden and playground ensures there is always

plenty of space for letting off steam. In this way the creche also plays a part in enabling lifelong learning, one of Miba's core values, to start at an early age.



kids in Motion Miba

Through targeted development and learning incentives the children are provided with an understanding of technology, language and music in a fun way. Joint mealtimes and a daily routine also promote good eating habits and self-confidence right from the start. Up to 24 children can be looked after, divided into two groups, and more than 120 children have already attended the creche since it was opened.

Three weeks of fun, games and action

SUMMERY VACATION PROGRAM

Due to the long school vacation in Austria, the summer months in particular pose a childcare challenge for parents every year. To counteract this, in summer 2022 Miba organized a three-week vacation program for employees' children for the eighth time in succession. With 110 participants, more children were cared for than in any previous year. The children were divided into different age groups ranging from four to 14, and enjoyed a fun way

of approaching technical and scientific topics. For this purpose the Miba Forum in Laakirchen was transformed into a space for workshops, experiments and exciting group activities.



110

children
aged between four and 14
attended the Miba vacation
program in 2022

RESPONSIBILITY

FOR SOCIETY

For young people, a good education is the key to a successful future and greater equality of opportunities in the labor market.

This is why Miba is intensively involved in social projects in the education sector that also extend beyond the company borders.



Education sponsorship

FOSTERING CAREER OPPORTUNITIES IN MINT PROFESSIONS

Miba's focus in its education sponsorship lies on supporting projects, initiatives and institutions in the MINT area, through which more young people are becoming enthusiastic about math, IT, the natural sciences and technology, and girls in particular are increasingly being encouraged in these disciplines.



MINTality FOUNDATION

In April 2022 on the initiative of Miba together with 11 Austrian companies and advocacy groups, the MINTality Foundation was created, to support girls and young women on their path to a career in the MINT area – because this area in particular offers outstanding job opportunities and exciting career prospects. Miba is a member of the Supervisory Board, and thus assumes an active role in the organization of all the Foundation's activities. The first major project, which focuses on networking between pupils from selected MINT secondary schools and companies, is currently being planned, and will be piloted in the school year 2023/24.



© Josef Farda

MINT PROJECTS AT SCHOOLS AND UNIVERSITIES

Also in the aim of supporting girls and young women in MINT disciplines, last fiscal year Miba was a partner together with Montanuniversität Leoben in "Girls only", a funding program by the Austrian Federal Chancellery for the empowerment of girls and women in education, working life and society focusing on math, IT, natural sciences and technology. Since 2022 Miba has also been a supporter of the Fempowermint Women Students Network at the Hagenberg Campus of the University of Applied Sciences Upper Austria,

and is supporting the MINT Girls Challenge, as it did last year. Encouraging interest in MINT is also the focus of a special school project which Miba supported in the immediate geographical surroundings of its Upper Austrian sites: At BG/BRG Gmunden an outdoor class was designed and implemented. Through this project, many MINT teaching hours at different school levels became practical sessions, as a result of which during the planning of their new learning environment, the pupils came into contact with architecture, construction, IT and many other natural science disciplines.

"Through our engagement in the education area, we want to open up new worlds to children and prepare young people optimally for the world of work. In this way we are also shaping the future, and thus making a contribution to society."

Therese Niss,
Board member of Mitterbauer Beteiligungs AG
and initiator of the MINTality Foundation

teach for austria

FOR GREATER EQUALITY OF OPPORTUNITIES

Equal opportunities in the education system – that is the goal of "Teach for Austria". The initiative's focus is directed towards schools in disadvantaged areas. University graduates become temporary teachers there, and thus offer additional support.



MECHATRONICS APPRENTICESHIP ALONGSIDE UPPER SECONDARY SCHOOL

This initiative enables school students to complete a fully-fledged mechatronics apprenticeship in parallel to their upper secondary schooling. The training takes place every 14 days and finishes with an apprenticeship certificate shortly after the secondary school leaving exam. In addition, a holiday work placement and management courses are mandatory.



TALENT PROGRAM OF VIENNA UNIVERSITY OF TECHNOLOGY

The talent program of Vienna University of Technology offers students a platform for getting to know successful companies, contacting them, and in this way developing a professional network. Students receive support for this from the university's Career Center.



AEROSPACE TEAM GRAZ

With the Aerospace Team Graz, Miba supports an interdisciplinary team of students at Graz University of Technology. Together they are working on developing a space rocket to participate in international competitions such as the European Rocketry Challenge.



SCHOLARSHIPS FOR COMMITTED SCHOOL STUDENTS WITH A MIGRATION BACKGROUND

The integration of committed young people with a migration background – and especially a refugee background – is very important to Miba. For this reason we support the START initiative, which awards scholarships primarily for language courses and further education programs.



SCIENCE HANDS-ON

The KinderUni Upper Austria offers exciting workshops and excursions for 5- to 15-year-olds during the summer vacation. The children acquire new insights into science, technology, art and culture. We support the program as a general sponsor.



LEGO LEAGUE

The aim of the Lego League project is to foster enjoyment of IT and robotics at secondary schools. Teams have to solve tricky tasks with their Lego robots. Miba provides support by sponsoring the secondary school in Ohlsdorf.



PROJEKT ALPHA – HELP WITH READING DISORDERS

Under this initiative, volunteer reading coaches accompany and support children with reading disorders as a supplement to their school education. We support the project for the districts of Gmunden and Vöcklabruck, and once a year we welcome the reading coaches to the Miba Forum.



HIGH-QUALITY ADDITIONAL TRAINING FOR STUDENTS

The Delta Akademie at Montanuniversität Leoben is an additional program for selected students. The central idea is to support their career prospects and determine their potential for companies as responsible young managers.



SOCIAL RESPONSIBILITY

Initiatives for the good of people and the environment



MIBA CHRISTMAS CHARITY – DONATION TO ARGE STREUOBST

Instead of Christmas gifts for our customers, every year since 2008 we have supported an important social project in a Miba region. This year in line with "Technologies for a cleaner planet" Miba donated EUR 10,000 to the voluntary consortium ARGE Streuobst, thus showing its commitment to protecting the environment and biodiversity. This initiative is devoted to preserving the nature and biodiversity of the Upper Austrian meadow orchard tree stock, which in recent years has been severely jeopardized by hail and other extreme events.

KAKIHE – RUNNING FOR WATER WELL CONSTRUCTION IN CAMBODIA

Miba is a partner of the KAKIHE Association founded by two employees, which campaigns for the supply of drinking water in Cambodia. Every year, it organizes the Five Bridges Run along the Traun, whose participants traditionally also include many Miba runners. The revenue from the start fees is used to finance the construction of drinking-water wells and other important supply projects.

ELIJAH – SUPPORT FOR ROMA FAMILIES IN ROMANIA

For several years Miba has been supporting the projects of Father Georg Sporschill SJ, including the ELIJAH Association. This offers the families and children of Roma residents in Romania direct and sustainable help in improving their living circumstances. The Association runs social centers, music schools and various education projects to offer the people better future prospects.



SPONSORSHIP OF ART AND CULTURE

Art and music enhance our daily lives – so we support and promote traditional culture initiatives in Austria and the USA



SALZKAMMERGUT FESTWOCHEN GMUNDEN

Miba was founded in the Salzammergut more than 90 years ago, and the center of Miba's international activity is still located here. We employ more than 2,600 people in the surrounding area. Especially as a family-owned business with such strong regional roots, we consider it important to support

and promote special cultural initiatives such as these festival weeks. As part of the partnership, our employees are also given the opportunity of attending events during the festival weeks free of charge.



SALZBURG FESTIVAL



Miba supports the die Salzburg Festival, which looks back on a history spanning over 100 years and is today regarded as one of the world's most important festivals of

classical music and the performing arts. With opera, theatre and concerts it offers a wide artistic program, for which renowned artists from all over the world are invited to Salzburg.



WIENER KONZERTHAUS

VIENNA KONZERTHAUS

In addition to its range of classical offerings, the traditional Vienna Konzerthaus is also a venue for festivals and contemporary music, and a stage for

international jazz. In this way it offers an extensive program for all tastes. It also places great emphasis on supporting young musicians.



THE CLEVELAND ORCHESTRA

CLEVELAND ORCHESTRA

The Cleveland Orchestra is one of the five largest and most important symphony orchestras in the USA – a country in which Miba is already represented with seven production sites and

employs more than 900 people – the best possible reason for us to actively support the traditional orchestra.



RESPONSIBILITY FOR THE ENVIRONMENT

THROUGH SUSTAINABLE USE OF RESOURCES

The sustainable use of raw materials has been Miba's topmost priority for many years. During the past fiscal year too we were able to utilize substantial savings potential in our consumption of energy and resources, saving a total of 840 tons of CO₂ in the second half of the year.

"Technologies for a cleaner planet" – Miba's products make a substantial contribution to greater efficiency in its customers' end applications – and thus to reducing CO₂. But the company also faces huge challenges itself to reduce the consumption of energy and resources in its own production facilities

and offices. The goal is an ever-smaller carbon footprint, and a clear message: We want to halve our CO₂ emissions by 2030, and be climate-neutral by 2040. In the fiscal year 2022/23 we achieved a lot along this path.

The energy saved in the past fiscal year could lift the **PRATER GIANT FERRIS WHEEL ONTO EVEREST** 350 times a year

EFFICIENT ENERGY USE

On our way to COzero and climate-neutral production, the energy consumption in Miba's production facilities is permanently under scrutiny. The goal of our annual efficiency increase has now become even more ambitious, with a two-percent reduction in energy consumption at the top of the agenda. With 37 projects within the framework of COzero, in the second half of the fiscal year alone we achieved a reduction of

1.2 percent taken across all sites. Below the line 3,600 megawatt hours less electricity and gas was consumed – an amount of energy that would not only be sufficient to fully charge more than 46,000 mid-range electric cars with a 78-kWh battery once. It could also be used (purely in mathematical terms) to lift the giant Ferris wheel at Vienna's Prater to the summit of Mount Everest at an altitude of 8,848 meters – not just

once, but almost every day of the year. This amount of energy could also lift the more than 7,500 Miba employees (in their leisure time) from Lukla Airport ("the most dangerous airport in the world") the 5,988 meters to the summit of Everest – every one of them, once a day, 365 days a year.

The 1.4 million liters of water we saved in the past year could supply **23,300 SHOWERS** or fill 9,300 bathtubs with water

WATER CONSUMPTION REDUCED BY 1.4 MILLION LITERS

Water is a precious commodity. Which is why Miba attaches particular value to using water carefully. Last year another of our goals was to reduce our annual consumption by 0.2 percent –

which we far exceeded. Worldwide we saved 1.4 million liters of water, enough to fill more than 9,300 bathtubs or to shower 23,000 times (in the

quick 5-minute version). This would last a family of four for just under 16 years.

640 HOUSEHOLDS

of two people each could be supplied all year round with the electricity produced by the photovoltaic systems on Miba's production plants in Upper Austria

AN ENTIRE COURIER SERVICE FLEET

with close on 120 vehicles would be needed to remove the quantities of refuse we saved last year

157 FEWER TONS OF WASTE

had to be disposed of in the last fiscal year. This was more than double the savings goal that Miba had set itself. To remove this amount of waste, you would need more than 120 light commercial vehicles – transporters with a carrying capacity of around 1.3 tons. If the vehicles were lined up one after

another, they would extend for almost a kilometer. The more conscious use of resources not only prevents disposal costs and environmental pollution, but also leads to a higher recycling rate, as valuable resources can be fed back into the production process.

FOUR TIMES ROUND THE EARTH

– is the distance you could travel by car and emit the same amount of CO₂ as Miba saved last year by recycling sinter oil

21,000 LITERS OF OIL

was saved by Miba Sinter Austria last year by switching the production process and reusing the sinter oil. Below the line this equates to around 25 tons of CO₂ that is now not polluting the Earth as a greenhouse gas. The emissions would be similarly high if a mid-range diesel car consuming

5.8 l/100 km was to drive more than 160,000 kilometers, or around the world four times along the Equator. Or to put it another way: if you could use the oil for your vehicle's oil change, it would last for 4,000 service intervals of 20,000 km – or 80 million km. Something for very frequent drivers.



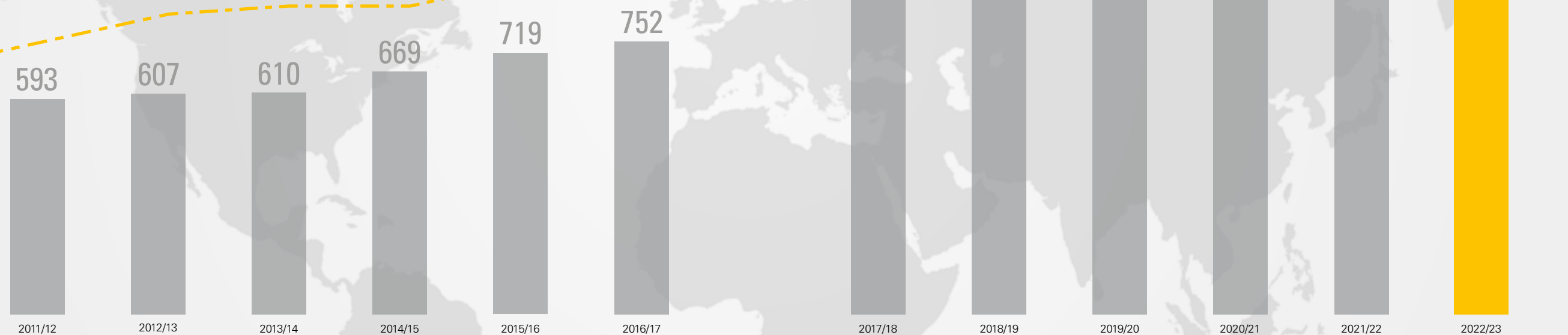


FACTS AND FIGURES

AS A FAMILY-OWNED COMPANY, WE ATTACH GREAT VALUE TO HAVING A SOUND FINANCIAL BASIS IN THE LONG TERM – IT GIVES US THE FREEDOM TO SHAPE THE FUTURE WITH OUR INNOVATIVE STRENGTH.

KEY FIGURES

FISCAL YEAR 2022/23



Revenue in EUR million



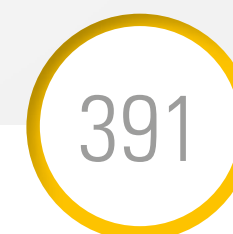
employees
(as at January 31, 2023)



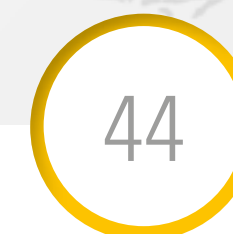
Investments in
property, plant
and equipment
in EUR million



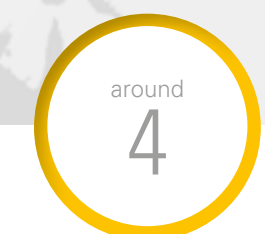
Equity ratio
in %



Patents held
by Miba



R&D expenditure
in EUR million



R&D ratio
in %

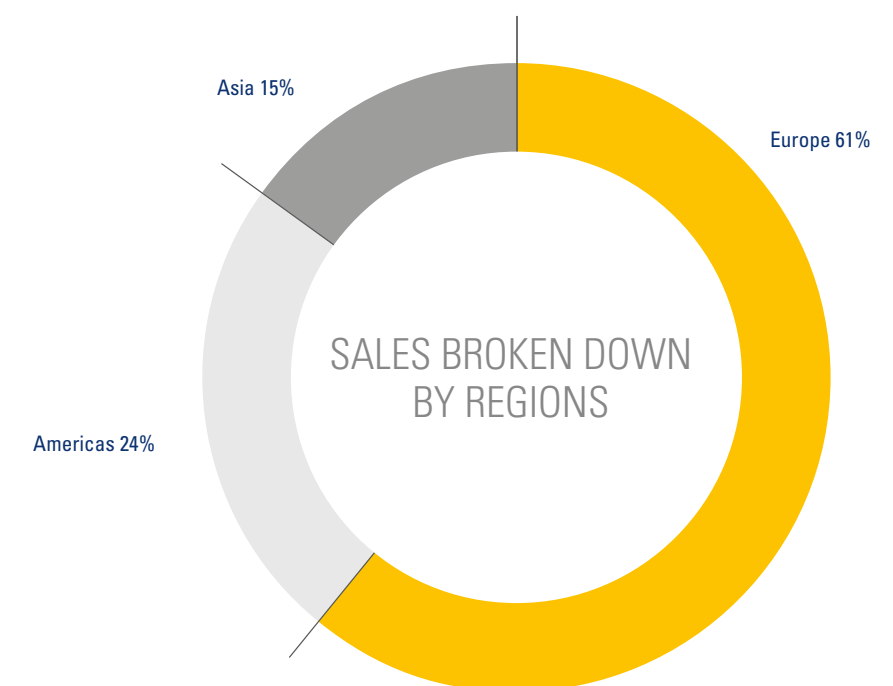
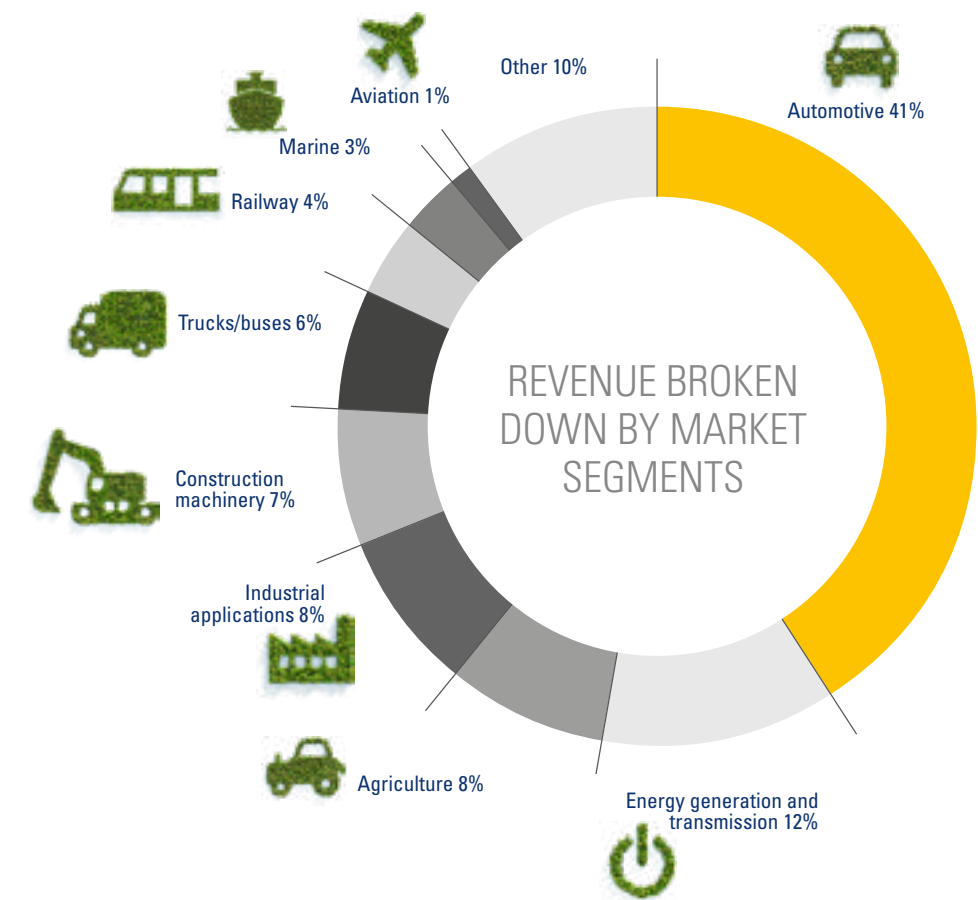
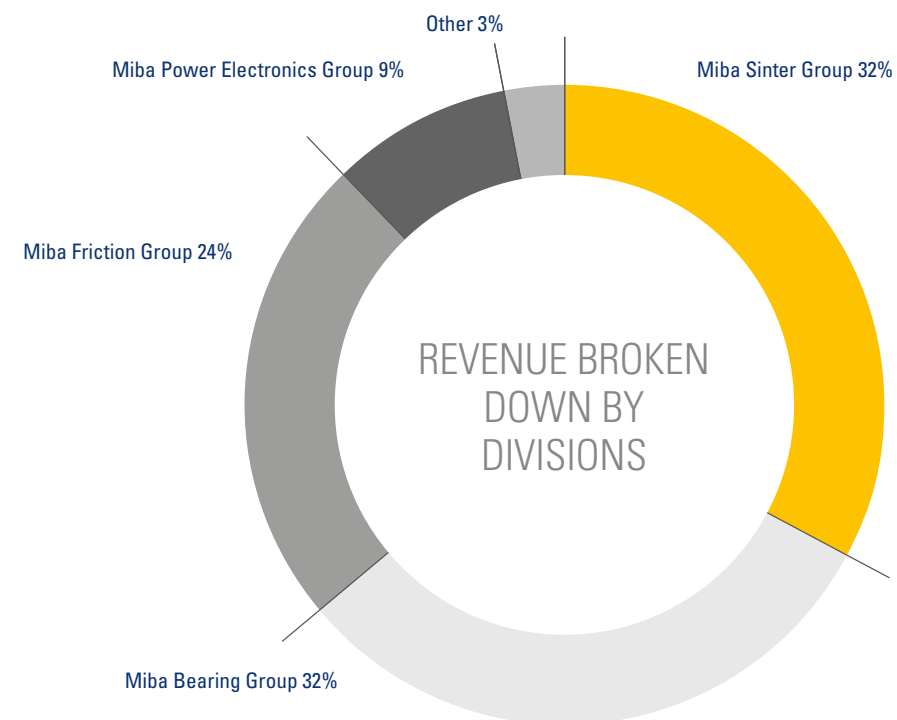
DEVELOPMENT OF MIBA'S BUSINESS

DEVELOPMENT OF THE MIBA GROUP



In the fiscal year 2022/23 the Miba Group generated revenue of EUR 1,114.2 million, an increase of EUR 143 million or around 14.7 percent compared to the previous year. Miba thus achieved an annual revenue of over EUR 1 billion for the first time in its company history. The last fiscal year also showed once again that with its broad product portfolio and focus on many regional markets, Miba is very well equipped for volatile developments. Despite the global economy

being influenced by geopolitical tensions and supply chain bottlenecks, Miba continued to be a reliable partner for its customers. In the past fiscal year Miba again made major investments in the company's future: we invested EUR 56 million in property, plant and equipment, EUR 44 million in research and development, and EUR 2.6 million in training and development.



DEVELOPMENT OF THE MAIN BUSINESS AREAS

The **MIBA SINTER GROUP** continued to clearly feel the effects of unstable supply chains and rising raw material prices in the global automotive industry during the last fiscal year. Thanks to targeted strategic measures, the Group was able to increase its revenue in comparison to the previous year despite these challenges, and position itself broadly for the future with the further expansion of its industrial division.

MIBA SINTER GROUP	2022/23
Sales revenue (EUR million)	361
Production sites (worldwide)	6
Employees (as at the reporting date January 31, 2023)	2,341

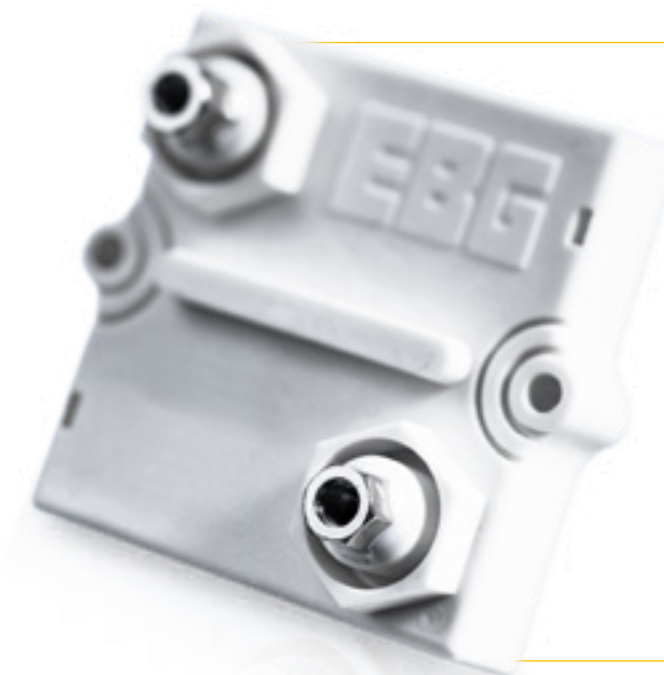
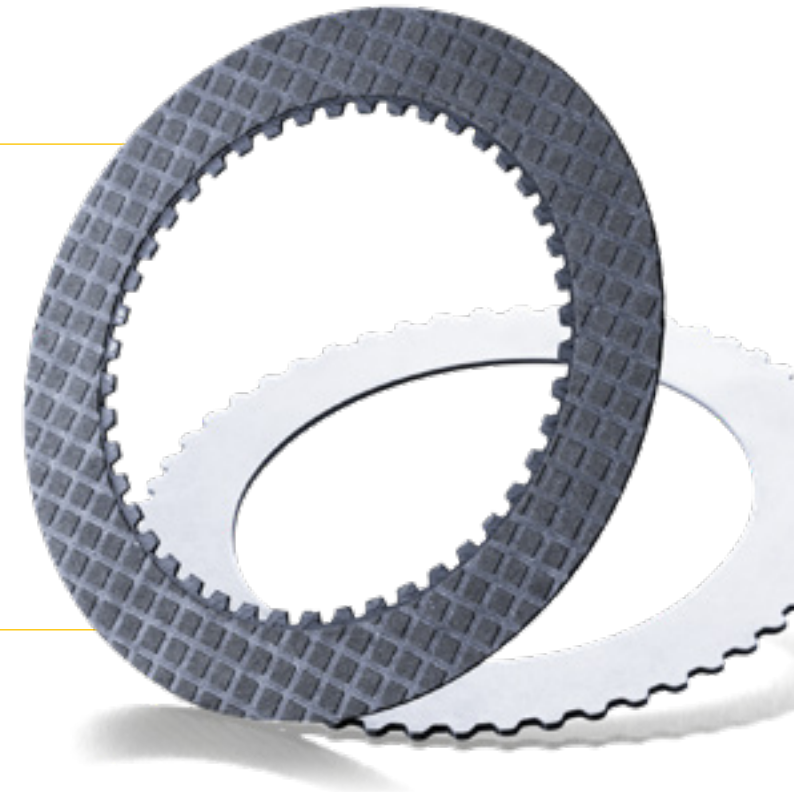


The **MIBA BEARING GROUP** comprises the business for engine and industrial bearings. The Group was also able to make good use of new business and growth opportunities in the last fiscal year. There were promising developments in the wind power area in particular, so the Group was even able to double its revenue in this area. Overall the Group again achieved a growth in sales in comparison to the previous year.

MIBA BEARING GROUP	2022/23
Sales revenue (EUR million)	362
Production sites (worldwide)	10
Employees (as at the reporting date January 31, 2023)	2,153

The **MIBA FRICTION GROUP** again recorded strong growth as it had done the previous year. This was substantially due to the continuing market demand in the off-highway segment – in other words, the business in components mainly for agricultural and construction machinery. This enabled the Group to markedly increase its sales in comparison to the previous year.

MIBA FRICTION GROUP	2022/23
Sales revenue (EUR million)	274
Production sites (worldwide)	6
Employees (as at the reporting date January 31, 2023)	1,656



The **MIBA POWER ELECTRONICS GROUP** also grew exceptionally strongly. All regions and business areas recorded high growth. In the area of power resistors the group is able to make very good use of the opportunities from eMobility – as well as EBG products already being used in large numbers in electric vehicles in China, they are now also being used for several important electric vehicle platforms in Europe. For this reason EUR 2 million was invested in new production facilities at the Miba sites in Styria, and a further expansion of the production capacities is planned.

MIBA POWER ELECTRONICS GROUP	2022/23
Sales revenue (EUR million)	98
Production sites (worldwide)	5
Employees (as at the reporting date January 31, 2023)	760

MANAGEMENT BOARD

MARTIN LIEBL
Management Board member Miba AG

Also responsible for: Miba Friction Group, New Business Development Decarbonization / eMobility Team, Strategic Unit Miba Automation Systems and Quality

MARKUS HOFER
CFO Miba AG

Also responsible for:
Finance and Controlling, IT/
Digitalization, Legal and Compliance

F. PETER MITTERBAUER
CEO Miba AG

Also responsible for: Miba Sinter Group, Miba Bearing Group, Miba Power Electronics Group, Communications, Human Capital, Strategy, Innovation and Technology, and Internal Audit

SUPERVISORY BOARD

DKFM. DR. WOLFGANG C. BERNDT
Chairman of the Supervisory Board

Independent, member of the Supervisory Board of Miba AG since June 27, 2008

DR. THERESE NISS

Deputy Chair

Independent, member of the Supervisory Board of Miba AG since July 17, 2018

PROF. KR ING. SIEGFRIED WOLF

Independent, member of the Supervisory Board of Miba AG since June 25, 2015

DR. MARTIN BRODEY

Independent, member of the Supervisory Board of Miba AG since July 14, 2022

DIPL. BW. ALFRED HEINZEL

Independent, member of the Supervisory Board of Miba AG until July 14, 2022

JOHANN FORSTNER

Delegated member

Member of the Supervisory Board of Miba AG since 2009

ELFRIEDE SCHÖBER

Delegated member

Member of the Supervisory Board of Miba AG since 2016,
member of the Financial Committee

DI DR. HC. MULT. PETER MITTERBAUER

Honorary Chairman

29 PRODUCTION SITES AND 7,500 EMPLOYEES WORLDWIDE

WE DEVELOP AND PRODUCE IN ALL THE MARKETS THAT ARE IMPORTANT TO OUR CUSTOMERS

As at: January 31, 2023, employee numbers rounded

MIBA BEARING GROUP

ENGINE BEARING BRANCH

Miba Gleitlager Austria
Laakirchen, Austria

Miba Bearings US
McConnelsville, OH, USA

**Miba Precision Components (China) –
Bearing Branch**
Suzhou, China

Miba Bearings Materials
Aurachkirchen, Austria

ABM Advanced Bearing Materials*
Greensburg, IN, USA

INDUSTRIAL BEARING BRANCH

**Miba Industrial Bearings
Germany Osterode**
Osterode, Germany

Miba Industrial Bearings U.S.
Grafton, WI, USA

Miba Industrial Bearings U.S.
Columbus, NE, USA

Miba Industrial Bearings U.S. (Houston)
Deer Park, TX, USA

Miba Industrial Bearings Brasil
Cataguases, Brazil

AMERICAS

1,400 employees
9 production sites

MIBA FRICTION GROUP

Miba Frictec
Roitham, Austria

Miba Steeltec
Vráble, Slovakia

Miba HydraMechanica
Sterling Heights, MI, USA

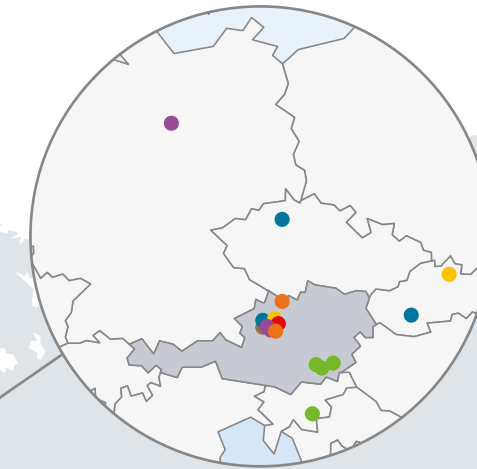
Miba Drivetec India
Pune, India

**Miba Precision Components (China) –
Friction Branch**
Suzhou, China

Fibertec Štětí
Štětí, Czech Republic

EUROPE

4,700 employees
14 production sites



ASIA

1,400 employees
6 production sites

MIBA STRATEGIC UNITS

STRATEGIC UNIT COATING

HighTech Coatings
Vorchdorf, Austria

Miba Coatings U.S.
McConnelsville, OH, USA

**Miba Precision Components (China) –
Coating Unit**
Suzhou, China

STRATEGIC UNIT AUTOMATION SYSTEMS

Miba Automation Systems
Aurachkirchen, Austria

STRATEGIC UNIT eMOBILITY

Miba eMobility GmbH
Vorchdorf, Austria

Miba Battery Systems
Bad Leonfelden, Austria

MIBA POWER ELECTRONICS GROUP

EBG Elektronische Bauelemente
Kirchbach, Austria
St. Stefan, Austria

DAU
Ligist, Austria

EBG China*
Qinqxi, China

EDMS
Šentjernej, Slovenia

MIBA SINTER GROUP

Miba Sinter Austria
Vorchdorf, Austria

Miba Sinter Slovakia
Dolný Kubín, Slovakia

Miba Sinter USA
McConnelsville, OH, USA

**Miba Precision Components (China) –
Sinter Branch**
Suzhou, China

Miba Sinter Brasil
Indaiatuba, Brazil

Sintercom India*
Pune, India

* Companies in which Miba has shareholdings:
Advanced Bearing Materials (75%),
Sintercom (26%),
EBG Qinqxi (55%)

PRODUCT PORTFOLIO

OUR TECHNOLOGIES FOR A CLEANER PLANET

SINTERED COMPONENTS

Miba's sintering technology is characterized by a complex design that integrates several functions in one component, high precision, strength, and low weight. Our powder metallurgical components are used in engines, transmissions and the electric steering systems of cars, where they make an important contribution to increasing efficiency and saving fuel. In addition, there are many uses for Miba sintered components in industrial applications, such as household appliances or air-conditioning equipment, leisure equipment (fitness equipment, eBikes), conveyor technology, medical technology and trucks.



BEARINGS

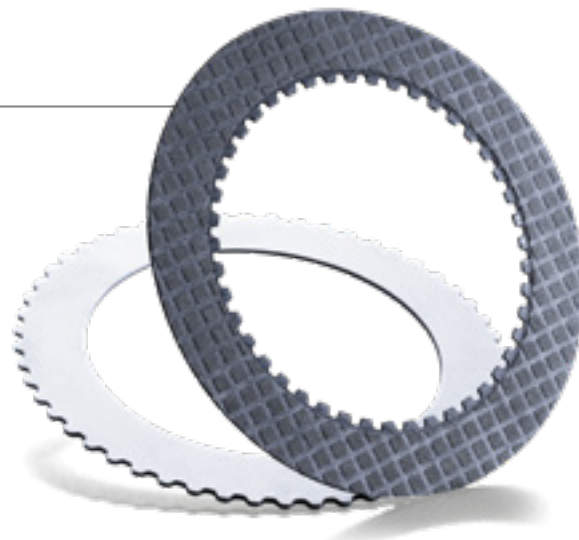
Engine bearings are components in internal combustion engines that play a role in determining the function and service life of the engine. They are used to support crankshafts and camshafts, minimize friction during operation, and protect the engine from damage or failure. Bearings from the Miba Bearing Group withstand higher ignition pressure and thus increase the engine efficiency. The bearings are used in the diesel and gas engines of ships, trucks, locomotives and in energy generation, for example in wind power.

Industrial bearings: these types of bearings are a crucial part for the performance of rotating equipment, and support both radial and axial loads. Industrial bearings are used in turbo-machinery such as compressors, gas and steam turbines, generators or pumps and are designed for the most demanding applications with high sliding speeds.



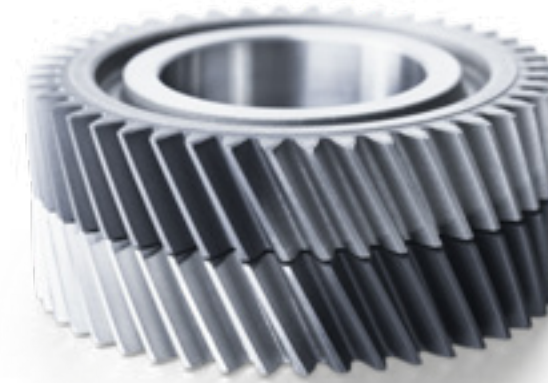
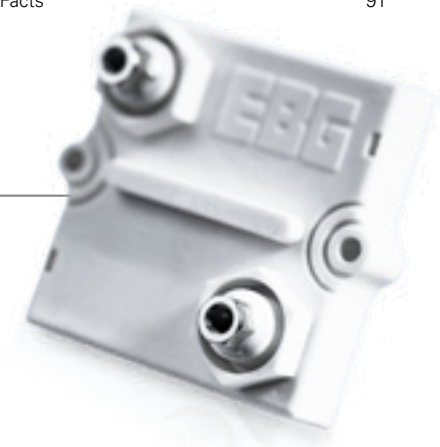
FRICTION MATERIALS

Friction materials are crucial to the performance of clutches and brakes, in which they are used to optimize speed and power. Components from the Miba Friction Group reduce both the weight and size of transmissions and axles. Miba friction materials are fitted in tractors, construction machinery, trucks, cars, high-speed trains, motorcycles, aircraft, and also in wind turbines.



POWER ELECTRONIC COMPONENTS

The Miba Power Electronics Group continuously works on solutions for power electronics that are tailored directly to the respective customer. DAU heat sinks and EBG resistors contribute to the efficient generation, transmission and use of electrical energy. In addition, EBG's power resistors are used in electric vehicles.



COATINGS

Miba develops customized coating solutions to enhance functional surfaces. The core technologies are polymer and anti-friction coatings, electroplated coatings and PVD coatings. Our coatings are distinguished by optimum functionality and maximum service life. They are used in components for engines and transmissions, as well as for industrial applications.

SPECIAL MACHINERY

Special machinery from Miba is used for high-precision and high-speed machining of small to very large components. Miba Automation Systems is a leader in robotics and automation, as well as in mobile and stationary special machinery. In addition, the wind power industry is one of the company's most important markets. The extensive product range also includes the design and development of prototypes, as well as the construction of production facilities for electric motor stators.



SOLUTIONS FOR eMOBILITY

We develop and produce a multitude of solutions for eMobility in close cooperation with our customers. In this way we aim to proactively help shape this future market. Miba technologies make electric vehicles more efficient, safer and more powerful.

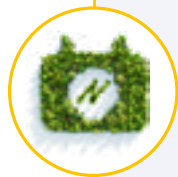
TECHNOLOGIES FOR A CLEANER PLANET



ENERGY GENERATION



ENERGY TRANSMISSION



ENERGY STORAGE



ENERGY USE

