LIVING METALS

Change as a constant

Founded in 1916 in the state of Pennsylvania in the United States, **GTP in Towanda** is a company with a long tradition – and one of the country's few chemical tungsten recycling facilities.

Living and working away from home broadens one's horizon and promotes the international exchange of knowledge – an adventure that many Plansee Group employees embark on every year.

The Plansee Group sets standards in the **coating** of high-performance tools used for machining – in close cooperation with Ceratizit.

Editorial

Dear Reader,

“Change is the only constant” – is a quote attributed to Heraclitus and was proven to us yet again during the past year. This makes adaptability the key characteristic of a resilient company. In the face of climate and geopolitical challenges, we have now more than ever turned our attention to this trait, which we have embodied for more than 100 years. The foundation for this is not only our innovative strength and our focus on our tungsten and molybdenum materials, but above all the ambition and dedication of our employees, who are committed to our organization and our customers every day.

In this issue of *Living Metals*, we want to shine a light on their day-to-day work in a wide range of areas within the company. We visit our site in Towanda, which has a long history and many tenured employees, and which plays an important role in our sustainability program as well as in the tungsten supply chain. We also explore the question as to whether we need to redefine the value of our materials from a circular economy perspective. Following the publication of our first group-wide sustainability report, we also take a look back at the beginnings of our sustainability program.

Together with our training managers worldwide, we look even further back in time and recount what an apprenticeship means for young individuals and the Plansee Group as a company. We also delve into the topic of tool coatings and reveal how an extremely thin layer can often make a crucial difference. As a follow-up to the announcement of Ceratizit's minority stake in the platform provider Spanflug, Ramiro Bengochea and Markus Westermeier discuss goals and the collaboration.

In addition to a host of other topics, finally we turn to the world of culture together with our Chairman of the Executive Board, Karlheinz Wex, and present the Plansee Group's new group values.

We hope you enjoy reading this issue of *Living Metals*!

Your editorial team

Content

Brief and to the point

From dazzling coins to bright minds and powerful visions to printed powders: a brief excursion into the past year at the Plansee Group.

Beneath the surface

For more than 20 years, Plansee has repeatedly created new vibrant surfaces for the 25-euro silver-niobium coins for the Austrian Mint. The coin released in 2024 represents the edaphon, which encompasses the collectivity of soil-dwelling organisms. From climate and weather to minerals and roots, animals and fungal mycelia – only when this ecosystem is intact do the earth and its inhabitants above ground thrive. Niobium is a metal with a high melting point that is used, among others, in aerospace applications.

An oxide layer creates the multi-colored luster of the metal. The process which was developed to precisely control this oxide layer is utilized by Plansee and the Austrian Mint to create unique collectors' items.

The particular color effect depends on the thickness of the oxide layer. Each individual niobium coin center is manually inspected in Reutte after grinding to ensure maximum precision in terms of quality and to be able to implement the highly detailed motifs.

A year of anniversaries

Every location in the Plansee Group has its own history – and was either founded by the Group itself or integrated into the Group at some point as part of an acquisition. Like any extended family, the Plansee Group always has an anniversary to celebrate somewhere. In 2024, several sites celebrated milestone birthdays – below is a small selection of the celebrations:

In the summer, the GTP Tikomet site in Jyväskylä, Finland, celebrated its 30th anniversary. The company organized a varied program featuring a boat trip and a performance by the band “Coverretout” (more on page 40). In September, approximately 200 people attended a garden party in Saint-Pierre-en-Faucigny, France, to celebrate the 140th anniversary of Plansee Tungsten Alloys. Also in the fall, the employees from Plansee USA gathered in Franklin to mark the 85th anniversary of their company. The new sales and engineering office was officially opened at the event, and the employees took the opportunity to show their families the plant.

Plansee Japan's location in Esashi also reached a milestone: The site's 35th anniversary as well as the 50th anniversary of its predecessor were celebrated in Tokyo with a festive reception. Ceratizit UK & Ireland also celebrated 25 years.

Sustainable partnership

Ceratizit and Schaeffler, a supplier to the automotive and mechanical engineering industries, took their long-standing partnership to a new level in the summer of 2024: As a supplier of cutting tools and hard material solutions, Ceratizit was the first supplier in its category to sign a Sustainability Target Agreement with the company. The joint sustainability goals defined in this agreement are an important milestone for Schaeffler in its endeavor to achieve a climate-neutral supply chain.

Among other things, the information from the Product Carbon Footprint (PCF) of the Ceratizit tools used in production plays a crucial role for Schaeffler: The information provides Schaeffler with more transparency regarding the emissions in its supply chain (upstream Scope 3 emissions), enabling the supplier to calculate its own carbon footprint even more accurately.

From the shadows to champion

For his book “Leading Global Champions,” Raimund Steiner from the Swiss personnel consultancy Egon Zehnder spoke, among others, to the Chairman of the Executive Board of the Plansee Group, Karlheinz Wex. The book details the development of companies that have grown from hidden champions to global champions, and how management has handled the associated challenges.

In his interview, Karlheinz Wex tells the story of the Plansee Group and talks about the importance of focusing the individual sites as well as sustainability, crises, culture, and the orientation of the business areas. The book is published by Springer Gabler.

Precision meets innovation

In addition to conventional powder metallurgy technologies, Plansee and Ceratizit employ additive manufacturing to produce high-precision tools and components made of tungsten and molybdenum. This technology makes it possible to implement complex geometries that are difficult to achieve with traditional manufacturing methods. In addition to new designs, additive manufacturing also offers advantages in terms of sustainability, as it minimizes material waste, reduces energy consumption, and reintroduces almost 100 percent of metal waste and residues into the cycle.

Plansee's development department has been researching the complex implementation of this process, which is challenging due to the materials' demanding processing properties, for many years. Areas of application for additive manufacturing include medical technology, where printed structures provide targeted radiation shielding, or high-temperature systems, where a combination of radiation shielding and low flow resistance is required.

In November, Ceratizit was presented the Sustainability Award at Formnext, the world's leading trade fair for additive manufacturing technologies, for its newly developed process for binder- and sinter-based additive manufacturing of hard metals. The process can be used to print all conventional powder grades, including ultra-hard grades and grades based on upGRADE powders, which incorporate up to 99 % reprocessed material to achieve a particularly low carbon footprint.

Developing people and strengthening the company

In 2023, the “Agile Tribe,” a form of agile project management, was introduced at the Plansee Group. The various initiatives were launched to be able to respond to current challenges efficiently and purposefully. The interdisciplinary participants from different sites pool their expertise and work together on a project with a common focus. The first agile project was concluded after one year, and the results it produced provided great added value for the company.

In addition to business success, the program focuses on the personal development of the participants. Communication on an equal footing in a heterogeneous team, easily plannable subtasks at fixed two-week intervals, and success that is visible to all – these are the positive conclusions of the sponsors and the project team.

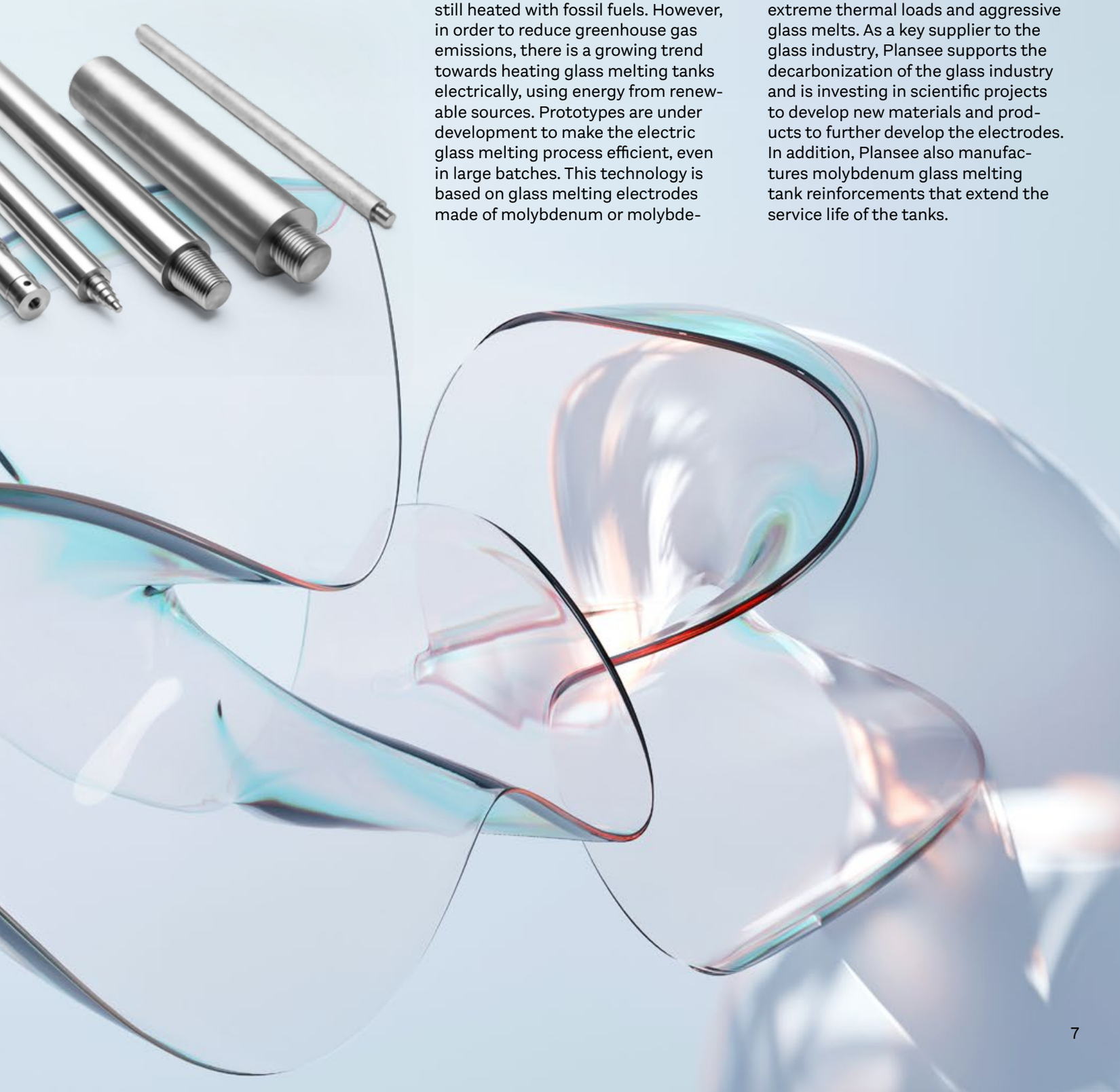
For more information go to

Plansee | Additive Manufacturing

Ceratizit | Additive Manufacturing

Electrifying prospects

Whether it is used for cosmetics, displays or windows – glass is an indispensable material. The melting process is an extremely energy-intensive part of its production. Today, most conventional glass furnaces are still heated with fossil fuels. However, in order to reduce greenhouse gas emissions, there is a growing trend towards heating glass melting tanks electrically, using energy from renewable sources. Prototypes are under development to make the electric glass melting process efficient, even in large batches. This technology is based on glass melting electrodes made of molybdenum or molybdenum alloys, which have been among Plansee's core products for decades and have so far been used primarily in smaller glass melting tanks for specialty glasses. Thanks to molybdenum, the electrodes can withstand the extreme thermal loads and aggressive glass melts. As a key supplier to the glass industry, Plansee supports the decarbonization of the glass industry and is investing in scientific projects to develop new materials and products to further develop the electrodes. In addition, Plansee also manufactures molybdenum glass melting tank reinforcements that extend the service life of the tanks.



Optics on a grand scale

What opticians deal with on a small scale is being built on a grand scale as part of Deutsche Bahn's major construction project “Stuttgart 21”. Twenty-seven skylights, or “light eyes”, are being constructed for the roof of the future Stuttgart Central Station. They will flood the underground platform hall with daylight. It is an aesthetic and architectural challenge that commands great machining precision. The components for the project are made of duplex steel, among others. This steel grade is considered difficult to machine and is the perfect fit for the machining experts at Ceratizit. A project team advised the customer and conducted feasibility studies with CAD simulations. In order to cover all the machining steps, Ceratizit provided the customer with a wide range of tools, including milling, drilling and threading tools, twist drills and indexable insert tools. To ensure a constant supply of tools for the extensive project, Ceratizit installed an extra-large “Tool-O-Mat”: an automated tool dispensing system that monitors stock levels around the clock and reorders missing tools in time.

Towanda

A site with history

GTP
Employees: approximately 470
Year Founded: 1916

Towanda
Population: 2,798 (2020)
Area: 1.12 square miles
Population Density: 2,434 people per square mile
Elevation: 731 feet

Anyone visiting the GTP campus, the headquarters of Global Tungsten & Powders LLC and PGF Americas Corp., can already tell from the fence just how much the company values its many tenured employees. Yet despite its rich history and tradition, GTP never loses sight of its environmental and social responsibilities.

Precision meets innovation

Entrepreneurial spirit, small-town charm and filaments: When you compare the history of origins of Plansee and GTP, you will find more than a few parallels. While Paul Schwarzkopf set up his metal factory in the picturesque area of Reutte in 1921 and began manufacturing products such as fine tungsten wires for incandescent bulbs, the story of GTP actually began a few years earlier: In 1916, Carl Patterson and his brother founded the Patterson Screen Company in Towanda, where they manufactured screens and, from 1943 on, tungsten filament wire for the lighting industry. Just over 90 years later, the paths of the two companies would cross.

Focus on tungsten

Today, GTP is still an American company with a long tradition, which has been producing a wide range of products for the domestic and global markets for many generations. GTP Powders supplies tungsten powder to industry worldwide. In addition to producing from tungsten ore, the company's expertise lies primarily in chemical recycling processes: GTP produces powders from scrap that match the quality of those made from ore concentrate. The GTP Parts division manufactures specialized components and products made of tungsten and molybdenum for the aerospace and defense industries. The Plansee Group Functions at the site combine Raw Material Procurement, HR, IT, Controlling, Finance, and Legal to support the operational business in the Americas.

The Plansee Group, with its combined expertise in the processing of tungsten and molybdenum, is the background force. Its founder, Paul Schwarzkopf, had also lived in the USA for many years and founded several companies there. GTP has been part of the Plansee Group since 2008. “GTP has the expertise to process tungsten ores and scrap into tungsten powder. This has secured the Group's backward integration and, with GTP, established a globally competitive tungsten supply chain,“ explains Jonathan Schaefer, Managing Director GTP Powders. ”This is just one reason why Towanda plays a crucial role in the Plansee Group's production network,” adds Walter Foley, Managing Director GTP Parts. The Plansee Group still sees great potential in the U.S. market: “Many of our American customers expect us to manufacture locally – and that is what we do,” says Walter Foley. To serve this market, it is important to attract skilled workers: For example, many students from engineering and technical schools complete internships at GTP. Most of the staff come from the region.

Walter Foley,
Managing Director
GTP Parts

Michelle Emick,
Head of HR Operations
Americas and President
of PGF Americas

In touch with the times

Sustainability plays a major role in the origin and manufacture of the products. “As a powder supplier that obtains a large proportion of its powder from scrap, we at GTP contribute to the high tungsten recycling rate of the Plansee Group,” emphasizes Jonathan Schaefer.

In 2013, GTP was the first tungsten processor worldwide to be certified as a “Conflict Free Smelter” and to source all of its tungsten ores from Western mines. However, the proportion of fresh tungsten ore used in powder production has fallen sharply in recent years. The remainder is scrap. The company therefore focuses mainly on recycling. The goal is to return even more end-of-life components and tools worldwide to the loop and to recycle them.*

The production processes required for this in Towanda, as well as the use of chemicals, are very energy-intensive. So far, natural gas, a readily available commodity in Pennsylvania, has been used as an energy source. “In order to reduce the carbon footprint of our site while remaining profitable, we are developing a sustainable concept for the location: We are exploring options to make greater use of renewable energies, to reduce the consumption of chemicals or to recycle them, to the extent this is technically feasible,” says Schaefer.

Jonathan Schaefer,
Managing Director
GTP Powders

Employer as family heritage

Towanda is located on the Susquehanna River in the northeastern part of the US state of Pennsylvania, which is ten times the size of Austria's Tyrol region. In 2020, Towanda had a population of around 2,800. Originally, GTP was in fact located in downtown Towanda, reflecting its close ties to the city. GTP is a major employer in Bradford County and supports local schools, festivals, science competitions, and non-profit organizations. “We not only donate money to non-profit organizations, but many of our employees also use their working hours to volunteer,” says Michelle Emick, Head of HR Operations Americas and President of PGF Americas.

“I believe what makes our site so special is not only our products and our long history, but above all the hard work of our employees – no matter what the task, they always give it all. I am very proud to work here,” says Emick.

Like Emick, many of her roughly 500 colleagues have not only been with the company for several decades, but are also part of several generations. “We are proud to offer our employees a workplace with a competitive and comprehensive benefits package,” she emphasizes. The appreciation is visible even before you enter the plant premises: A plaque is attached to the fence for every employee who has worked at GTP for more than 25 years. 35 percent of the employees have 25 years or more professional experience at the company.

Facts:

Part of the Plansee Group since 2008

GTP Parts is part of Plansee;
GTP Powders is part of Ceratizit

Produces APT (ammonium paratungstate), AMT (ammonium metatungstate), tungsten oxide, tungsten metal powder, tungsten carbide, ready-to-press powders, and semi-finished products made of tungsten and molybdenum

* More in the interview below.

From scrap to powder

The Plansee Group is committed to optimizing the recovery and consumption of its valuable metals. Tungsten is a core material for both Plansee and Ceratizit and is not only processed but also collected, sorted and recycled within the Plansee Group.

Interview with Lydia Miller, Global Tolling Manager at GTP's Towanda site in the USA, who acts as the link between the sales team, the customers, and the engineers.

"GTP in Towanda operates the Plansee Group's chemical recycling facility, one of only a few in the United States. Tungsten-containing hard and soft scrap is chemically converted into high-purity tungsten and tungsten composite powders."

Plansee manufactures products made of pure tungsten and tungsten composite materials, while Ceratizit specializes in hard metal blanks and tools. The Plansee Group also covers the upstream stages of the value chain, ranging from the reprocessing of raw materials to the processable powder. The demand for tungsten powder is covered with ore concentrate and, to a much larger degree, with recycled scrap and end-of-life products. In the past fiscal year, the Plansee Group's tungsten recycling rate* was 90 percent.

Processing scrap on behalf of a customer is known as tolling. Lydia Miller is Global Tolling Manager at GTP in Towanda, USA. She talks about the various methods and advantages of recycling as well as the future of circular business models.

How does tungsten recycling work?

L. Miller: Essentially, there are two different tungsten recycling processes, depending on the material's composition and purity. At our site in Finland and at Ceratizit Austria, hard metal scrap is thermally treated with metallic zinc to obtain a tungsten carbide/binder powder mixture that is used directly to produce ready-to-press hard metal powder.

GTP in Towanda operates the Plansee Group's chemical recycling facility, one of only a few in the United States. Tungsten-containing hard and soft scrap is chemically converted into high-purity tungsten and tungsten composite powders. The chemical treatment process for tungsten scrap is the same as for tungsten ore concentrate, and the two raw materials can be used equally as feedstock.

So there is no difference between tungsten powder from recycling processes and that from ore concentrate?

L. Miller: The quality of the products made from secondary raw materials is by no means inferior to that of conventionally manufactured products – in some cases, it is even better. For zinc recycling, the incoming scrap is cleaned and sorted. We are very meticulous because the input material determines the properties of the grade that we then further process in the Plansee Group or sell. In chemical recycling, the scrap undergoes the same process as the ore, yielding pure ammonium paratungstate (APT), regardless of the input material. We can use any type of unsorted scrap here, including sludges, because impurities are removed by the process.

Theoretically, tungsten powder can be obtained 100 percent from secondary raw materials. Moreover, from a technological point of view, tungsten can be reused almost indefinitely for tungsten products if it is kept within the cycle.

The Plansee Group's own production scrap likely only accounts for a small part of the material needed for recycling. Where do you acquire the rest?

L. Miller: All production-related tungsten scrap at Plansee and Ceratizit is recycled. In addition, we have already established various business models for the procurement and handling of tungsten scrap within the Plansee Group. Ceratizit systematically collects end-of-life tools through its subsidiary Stadler Metalle GmbH (based in Germany), which is Europe's largest buyer of tungsten-containing secondary raw materials.

My area of responsibility is what is known as “tolling”, which is a form of contract processing for scrap. Here, we collect scrap from our customers and in return grant them a corresponding credit, which they can then redeem to purchase powder from us. As Global Tolling Manager, I am the link between the sales team, the customers, and our engineers: We analyze the incoming scrap for alloying additives, impurities, etc., before I perform a cost analysis to calculate the credit. My role is a kind of “purchasing in sales”. Our efforts to expand the collection of end-of-life products are ongoing.

Aside from the environmental aspects, why is it so important for the Plansee Group to recycle tungsten??

L. Miller: Not only do we conserve natural resources, it also has economic advantages: A high recycling rate ensures a steady flow of material, making us less reliant on mines. With tolling, the contract processing of scrap, we also create another level of the circular economy: Customers keep coming back to us because they can utilize their credits to purchase powder.

How do you plan to expand the collection of scrap and end-of-life products??

L. Miller: We have already launched projects to improve our current processes and to develop new circular-oriented business models alongside existing ones to make it more attractive for our customers to return scrap. Currently, the focus of recycling is on Europe. We see a great opportunity in the US market and want to promote the concept of the circular economy there since it has many advantages, both ecologically and monetarily, as well as in terms of a secure business relationship.

“We plan to recover worn products from a variety of customer applications to a greater extent than we do today, which can either be recycled by us as scrap or reworked to be used a second time.”

We plan to recover worn products from a variety of customer applications to a greater extent than we do today, which can either be recycled by us as scrap or reworked to be used a second time. It does not matter whether they are end-of-life tools or components that have not yet been removed from use. There are areas where the recovery of tungsten products is easier than others, and vice versa, but we want to have a broad base to meet our raw material needs in the future with as much secondary material as possible.

Molybdenum

The Plansee Group's second core material is molybdenum, which Plansee uses to manufacture molybdenum metal semi-finished and finished products.

Plansee has launched several projects and initiatives for its products to recover as many molybdenum products as possible from the customer after use and to ensure that they are further utilized in line with the circular economy approach – whether by reusing, reworking or refurbishing them. This applies, for example, to coating materials (sputtering targets), where only a minor part of the material is used by the customer during the coating process. Customers can also return components for glass production or medical technology. These components are reprocessed and reused.

The recycling of pure molybdenum metal scrap has insignificant practical relevance due to its reuse as a highly valued steel alloying element. Plansee collects all scrap from its production and accepts all scrap that contains molybdenum, which is carefully separated, purified as needed and then passed on to the steel industry. Most molybdenum remains within the steel industry cycle, since the recycling of molybdenum-alloyed steel is an important part of the industry’s circular economy model.

Look for more information on molybdenum circularity in the next issue of *Living Metals*.

* The Plansee Group's tungsten recycling rate reflects the weight of all secondary tungsten units entering the production process per year, divided by the weight of all tungsten units entering the production process during the same period.

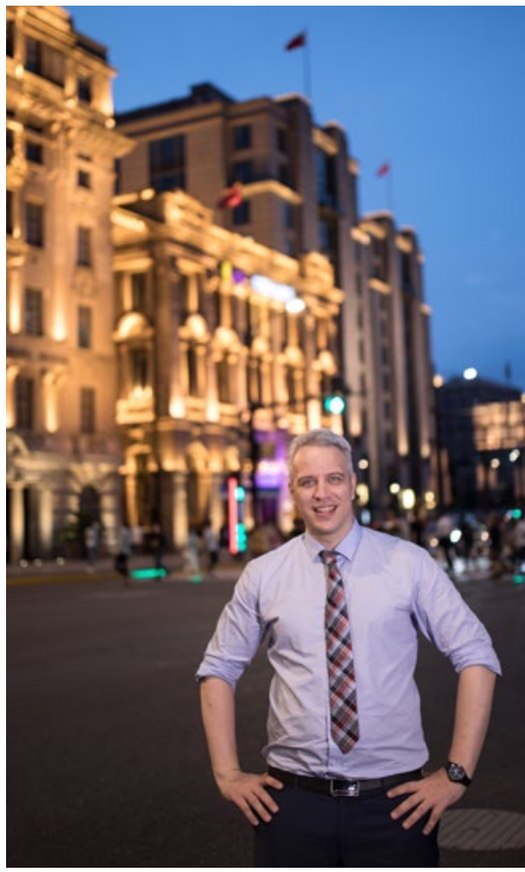
The adventure of a stay abroad

Be it France, as is shown here, the USA or Japan – employees are often drawn into the world from their home bases.

Whether it's for a short stay or as an expat for a longer period – living and working abroad broadens one's horizon. Every year, several employees of the Plansee Group embark on this adventure. They gain valuable experience, tap into new markets, and immerse themselves in other cultures – both at work and during their spare time.

The globetrotter Hennrik Schmidt

Position: Head of Innovation and Technology at Plansee USA
Sites: Reutte, Shanghai, Franklin



As a child, he lived in Indonesia and Namibia, and he spent part of his physics studies in Singapore: The fact that Hennrik Schmidt would one day work internationally is practically in his DNA. He started at Plansee in Reutte with the prospect of going to China in the foreseeable future. There, he worked as Project and Program Manager in the development department and supported the sales team in several Asian countries as an expert in coating technology and thin-film applications. After five years, he returned to Reutte to take up the position of Group Leader for the product development of semiconductors and thin-film technology, shortly before the COVID lockdown in Shanghai. But it wasn't long before his family's belongings were shipped off again: He now works as Head of Innovation and Technology at Plansee USA near Boston, where he will remain for at least two years.

You've only been in the US for a short time – what has been the biggest difference so far compared to China and Europe?

The people and the culture are very different, but so are the locations themselves. Shanghai is a metropolis, Franklin is a smaller town – with lots of nature, forests, generally a very rural region. Also, some German-speaking Europeans work at Plansee USA, whereas in Shanghai it's not so common.

Is there something you have learned?

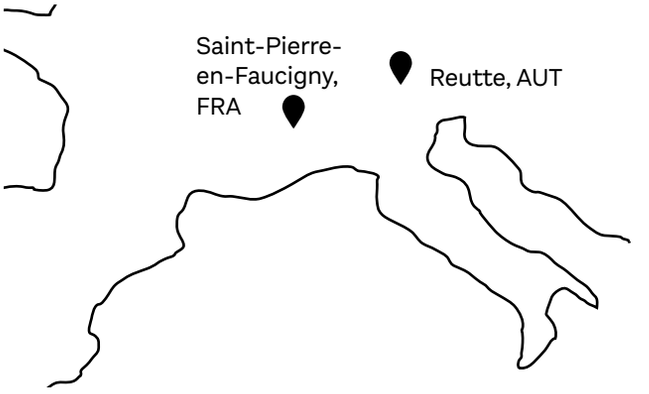
Intercultural cooperation as well as different perspectives and approaches to work. In China and Asia, things happen at a completely different pace. Projects, especially for customers, are implemented more quickly, everything is very flexible and agile. Since my time in Shanghai, I also try to keep my meetings short. [laughs] Additionally, I was able to travel a lot in China and visited every province; trains and flights are comparatively inexpensive there. I also plan to see as much of the country as possible in the USA.

What advice would you give colleagues who are about to go abroad or become expats?

Visit the country once or twice beforehand so that you really get an impression of where you're going. I had the opportunity to go on a 'look-and-see trip' in advance to choose a kindergarten, for example. And I would also advise them to talk to as many people as possible. The Global Mobility Team and the local HR department provided me with great support across the board for all organizational matters – from visas to hotels and rental cars to work permits. I also always had and still have a direct point of contact locally and was even able to attend a Chinese course in Shanghai.

The traveler
Lukas Koch

Position: Shift Supervisor in the cutting center at Plansee SE
Sites: Reutte, Saint-Pierre-en-Faucigny



From his training as Machining Technician to various posts in areas such as forming or equipment construction, and finally to Shift Supervisor in the cutting center, Lukas Koch has been loyal to the Plansee business area for 14 years. Approximately two years ago, he developed the desire to work in Japan for a while. However, in 2024 the HR department made him a different offer and – since he had already fulfilled his dream of visiting Japan on his personal time – just a few weeks later he found himself in France for three months at Plansee Tungsten Alloys. Thanks to the comprehensive support, a rental car, an apartment, and a work station were quickly prepared, ensuring an exciting time.

What was the region like?

The French town of Saint-Pierre-en-Faucigny is located in Savoy, near the Swiss border. The scenery resembles the Ausserfern region – if you love mountains, you will find many peaks here, and you can even visit Mont Blanc. Together with two Indian colleagues who had already been working there for a year, I went on many excursions on the weekends – such as to Geneva, Lyon, or Grenoble. It was a fascinating experience for me to feel the difference between visiting a place privately as a tourist and working and living there.

How did you experience your time at the French site?

I noticed immediately that, despite minor differences, I was still at Plansee. I received a very warm welcome: everyone was very attentive and happy to have my support with milling. Because the region is on the border, it is difficult to find skilled workers. Automation is also a big topic here. But because the region is very popular with tourists, I was able to communicate very well in English even though I don't speak French. My Indian colleagues had already translated the work instructions, which they were kind enough to let me use. But a language course would also have been possible.

Is there anything that would have made the stay even better?

Originally, I wanted to go to Saint-Pierre-en-Faucigny together with several colleagues – but in the end I was alone. The visit by the apprentices from the Lechbruck site in Germany was a wonderful experience. During their training, they include a one-month stay abroad in France or Switzerland.

The expat family Veronika & Martin Roelle

Position: Senior Expert Marketing at Ceratizit USA & Director of Controlling at GTP Towanda
Sites: Reutte, Towanda

Veronika and Martin Roelle have always enjoyed crossing borders: not just during their studies, when they spent time in Canada and Shanghai, but also as cross-border commuters who lived in Germany and commuted to work in Reutte in Austria. Once the question of whether the entire family would relocate to the United States for two to three years was raised, not only the parents but also the two teenage daughters were immediately on board. Thanks to the cross-location support provided by the Plansee Group and many helping hands at the new place of residence, they successfully mastered the move so that now all in the Roelle family can experience American life, work and school.

Moving abroad with your family is much more complicated than moving alone or as a couple – how did you manage it?

Relocating with school-age children is definitely not something to be underestimated. Before the move, we were all able to take a 'look-and-see trip' to Towanda and visit the school. That was definitely very helpful. From the moment we decided to move to the US, the months that followed were very turbulent. Everything was in a state of upheaval, and there was virtually no longer any routine, no normal daily life. But we received a lot of support – from the Global Mobility Team, the local HR department, and our new colleagues. The new school was also a great help. We were genuinely impressed by how open and helpful everyone is.

You not only changed your location, but also your areas of responsibility – what does this mean for you?

Martin: Although I'm still working in Controlling, a lot has changed. I'm now working for two business areas at once: Ceratizit and Plansee. Both work very closely together here in Towanda. Being a supplier of raw materials, the site additionally plays a special role within the Plansee Group and cannot really be compared to other sites. This environment makes it particularly exciting and has given me a new perspective on GTP Towanda. But my wife and I both at least stayed in the Plansee Group, in the same environment – for our children, it was a much bigger step.

Veronika: The change of location also meant a change within the group for me. In Reutte, I worked in marketing at Plansee. Now I'm part of the marketing team at Ceratizit, and I'm supporting the sales and marketing team of Hard Material Solutions in expanding our activities in North America. It's a very exciting and versatile role! My colleagues, the products and the markets – all of this is new to me, of course. But my network and my experience within the Plansee Group have helped me to adjust quickly.

What is your time in Towanda like and what are your plans for the future?

We have now settled into our daily routine quite well and feel very comfortable— both with our colleagues at the site and in the local area. Of course, we miss the mountains, but the area offers many other opportunities for outdoor activities. For example, the Finger Lakes are not far, a popular vacation region with nature parks and many waterfalls. And we plan to explore as much of the country as possible – for example, to spend a weekend in New York or Washington, D.C. and visit the famous national parks. In general, we can say that the time here is a true enrichment for us as a family, and none of us has regretted taking this step.

The venturous one
Balaji Ravi Rengarajan

Position: Head of Manufacturing at Plansee Japan
Sites: Reutte, Seon, Esashi

Balaji Ravi Rengarajan had already demonstrated courage and determination when he left his home in India to study in Germany. After having worked in Italy for some time, the engineer was drawn back to the German-speaking world. Instead of Germany, however, he ended up not far from the border, in the Austrian region of Ausserfern, where he started as Process and Quality Engineer in 2012 after a job interview that was conducted alternately in two languages. In the years that followed, he worked in various roles – including in Reutte, where he learned to appreciate rural life, and for a year for Plansee Powertech in Switzerland. In 2023, he transferred to Plansee Japan as Head of Manufacturing, where he is responsible for the entire operations area.

What have you learned at your various posts?

When I started in Reutte, I initially had trouble understanding the dialect, and in Japan it wasn't easy at first either because I only spoke English. But I have learned that language is not necessarily the central means for understanding each other well, but instead it's the topic: what is it about, what should we do, what is expected. Of course, we are talking about technically complex issues, but we can even bring these down to a simpler level. That's what I did in all my experiences abroad.

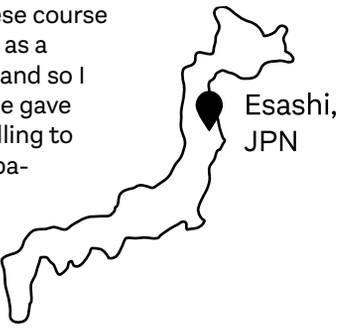
If there are language barriers, it is easier to talk about the why first, and then move on to the what and how. And finally, it helps that at Plansee – regardless of the location – we are always talking about tungsten and molybdenum.

What has surprised you the most?

In Japan, I lead our team of process engineers and support our local and global sales team from an operational and engineering perspective. But I have noticed that it doesn't really matter so much which site you work at: the processes are similar thanks to standardization and harmonization projects at various levels, and we are simply one great big family. I would also say that the approach to tasks varies slightly from culture to culture: In Europe, most questions are often clarified at the beginning of a task, while in Asia they are clarified continuously, during the process. But it is precisely these differences that make international cooperation so exciting.

What advice would you give colleagues who are considering taking a similar step?

Don't think about it too much, just focus on the next step and everything will fall into place. At the end of the day, you are still part of the Plansee Group. I have no regrets: Even the difficult parts make for a good story. What's more, the company has been very supportive. We were able to take a 'look-and-see trip' and visit my son's school in advance. And I'm now taking a Japanese course here – I actually learned the language as a young man in India, but I didn't use it and so I forgot it. [laughs] I'm glad that Plansee gave me this opportunity, and it's very fulfilling to know that I can add value to the company through my experiences.



The mentor
Carolina Schoeffel

Position: Customer Service Representative and Sales Assistant at Plansee SE
Sites: Reutte, Franklin

For the past five years, Carolina Schoeffel has been a reliable constant at Plansee in Reutte. In her position, she not only works as an assistant to the sales department, but is also a point of contact for customers. For years, she had been considering the idea of gaining experience abroad for a while, before an opportunity finally arose in the spring of 2024: She supported Plansee USA in Franklin for a few weeks. In addition to her usual tasks, she also conducted training courses there, thus helping to expedite the standardization of processes. But this experience was not the only thing that shaped her year – she also became active in the Sindbad project in collaboration with the company bearing the same name. For one year, she mentored – while abroad – a female student from Reutte during the student's orientation phase after her last year of compulsory schooling.

What was it like for you at the US site?

The Plansee Group provided me with a great deal of support in organizing my stay. I really enjoyed expediting the standardization processes there, exchanging ideas with colleagues in the USA, and personally cultivating relationships. We were also able to learn a lot from each other: I gave them input from Reutte and they in turn gave me insights into their processes. I also gained a great deal from that.

You were also a mentor for a student. How did you manage to reconcile your stay abroad and mentoring?

It worked very well! Of course, it was double the challenge for me at first. But I had disclosed the idea of a potential stay abroad from the very beginning and together with Sindbad they made it possible. My mentee's reaction was great, and nowadays there are many ways to stay in touch virtually. Before I left, we often met in Reutte to get to know each other in person, and then we regularly talked on the phone or in video chats. I think that if you go through the initial phase together and also take advantage of the mentoring trainings, you are well equipped to maintain a good relationship, even over a distance. I was very proud of my mentee when she received an offer from a secondary school early on.

What did you get out of these experiences for yourself?

Both during my time abroad and with Sindbad, I was able to give a lot, and I got even more out of it for myself. After my time in the US, I had a fresh new perspective on my workplace and a closer relationship with my colleagues overseas. I would advise anyone planning something like this: go with the flow – it is definitely a very exciting experience, and you realize just how much you can juggle. Being a mentor has also helped me get to know myself better and realize that every generation faces similar problems. It wasn't uncommon for me to think, "That's how I was back then, too." At Sindbad, you grow enormously as a person and support a teenager during their journey. This enriches both sides. Of course, you have to invest time, but it's worth it. I am grateful that the Plansee Group has made these two experiences possible so that I was able to look beyond my own horizon – I don't take it for granted.

Three cheers for the black gold

Imagine if we valued tungsten and molybdenum just as highly as gold. Imagine if we only ever touched these two refractory metals with white gloves or stored them in safes. We would polish them, admire them, and bequeath them.

Did you know that molybdenum and tungsten are already a skin-friendly alternative to alloyed gold or silver in the jewelry and watch industry? Like gold, tungsten and molybdenum are rare resources on our planet, and their special chemical, physical and mechanical properties, and in particular their combination of different properties, make these metals indispensable in many high-tech applications – for example in the aerospace industry, in medical technology, and electrical engineering.

Old gold jewelry is carefully placed in new hands or sold for good money. We must make a concerted effort to reuse not only gold, but also tungsten and molybdenum as much as possible.

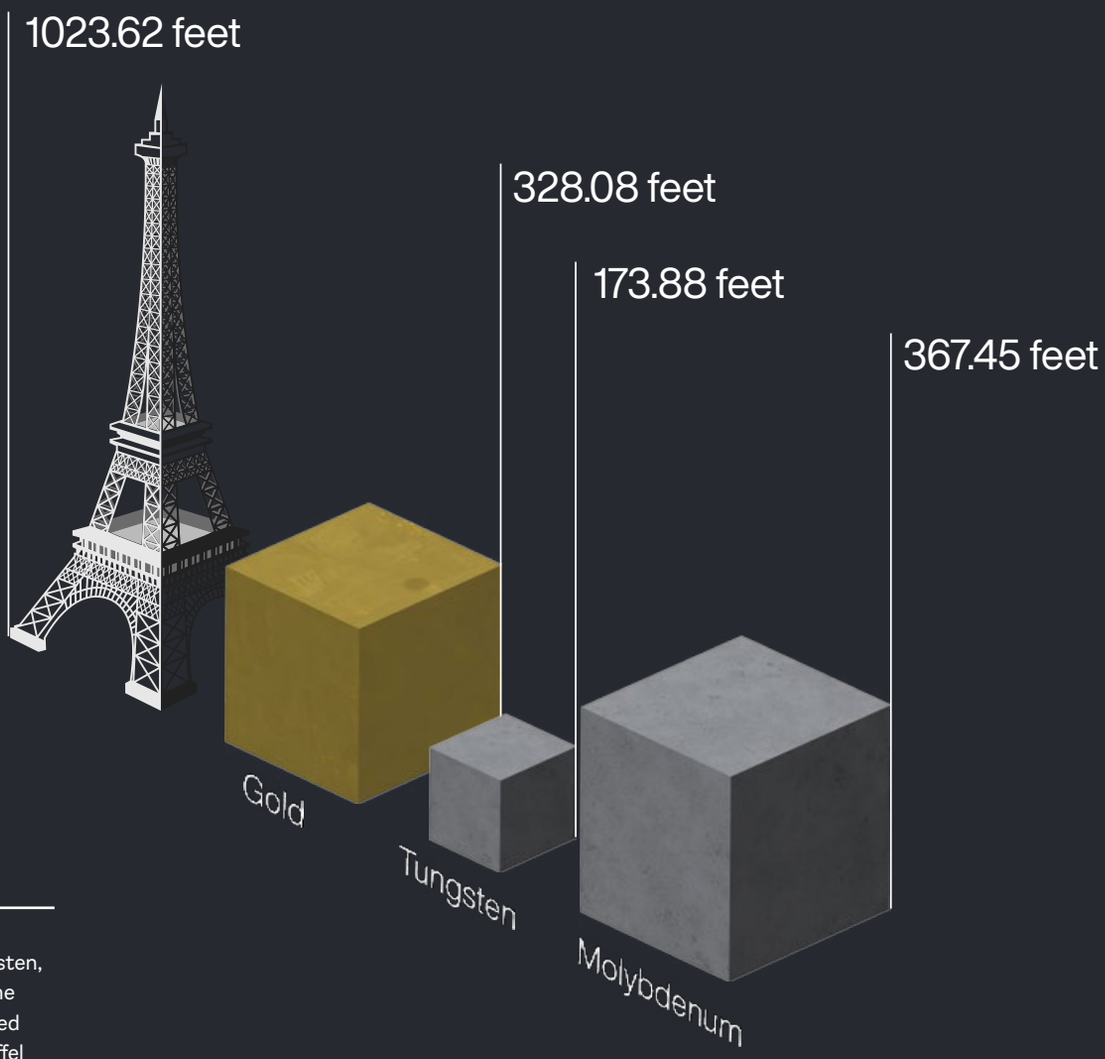
Just one example: Every smartphone contains around 30 milligrams (0.001 ounces) of gold. Not much, you might think. But 1.4 billion smartphones sold each year amount to a nice pile of gold. In addition, each device contains 70 milligrams (0.0026 ounces) of molybdenum and 900 milligrams (0.032 ounces) of tungsten. Many smartphones still end up in the trash. Other electronic devices and metal waste that also contain valuable molybdenum and tungsten share the same fate.

Let us appreciate this “black gold” even more. Let us work to communicate the value of end-of-life tools or disused components made of tungsten and molybdenum even better and do everything we can to ensure that these valuable metals are returned to the cycle.

Valuable materials:

The quantities of important metals in the earth's crust vary greatly: from iron, of which there is a great deal, to tungsten and molybdenum, which are 40,000 times less abundant, and gold, which is even rarer. For ore mining to be economically viable, deposits are only developed in locations where the elements occur particularly frequently, or about 100 times more concentrated than average. These factors influence the price of a metal.

In 2023, approximately 114 to 119 kilotons of tungsten were consumed worldwide, including 30 percent secondary raw materials. Demand for molybdenum was 285 kilotons, with approximately 25 percent being secondary raw materials. The consumption of gold is four kilotons per year.

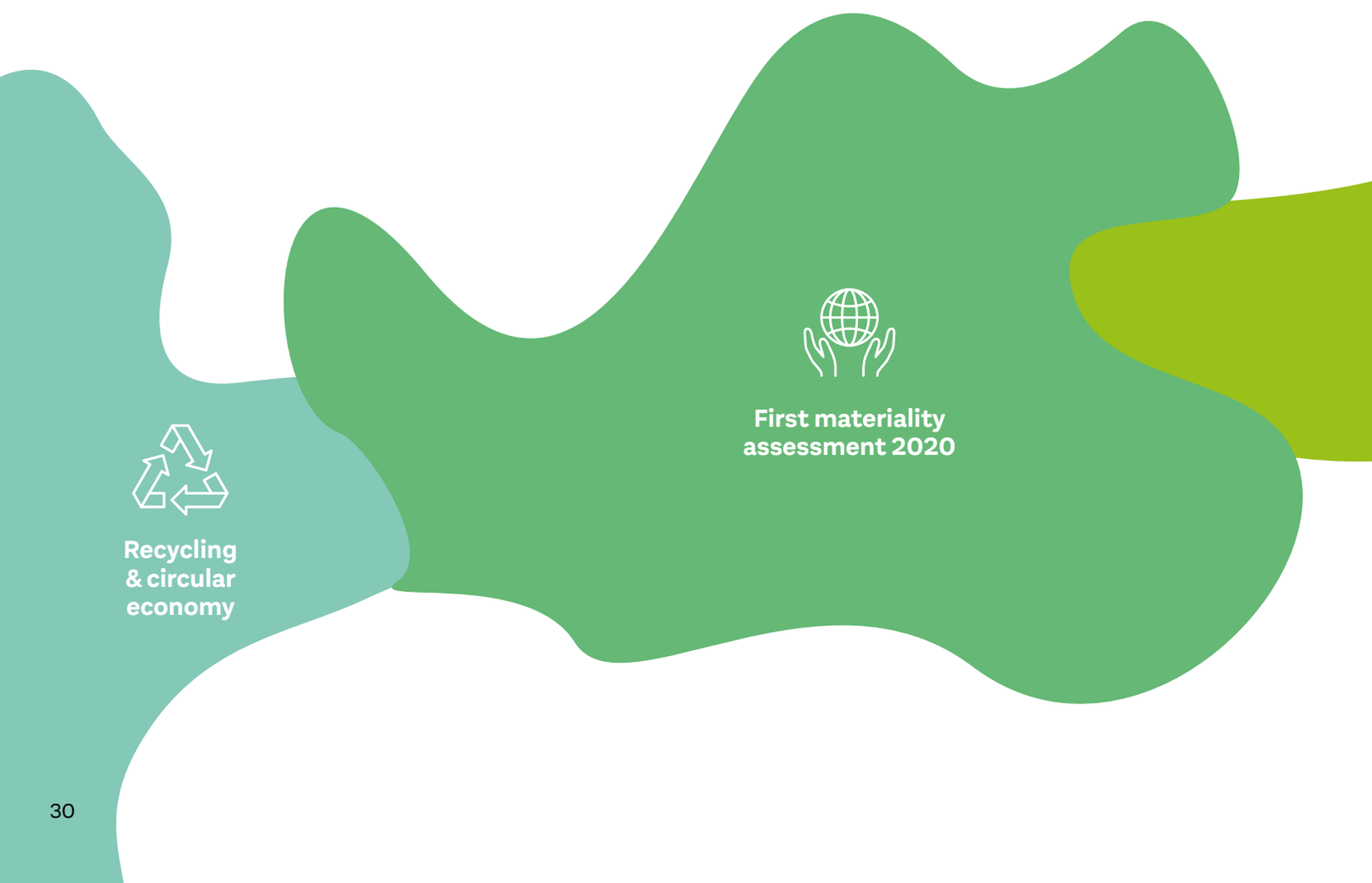


At a glance: the global deposits of gold, tungsten, and molybdenum in the form of cubes compared to the height of the Eiffel tower in Paris.

Precious resources on our planet: Tungsten and molybdenum are very rare.

Our sustainability journey

In the summer of 2024, the Plansee Group published its first sustainability report. Time to reflect on our journey so far. A personal summary.



We have to be honest: When we started our sustainability journey at the Plansee Group four years ago, the goal was not clearly defined. On the one hand, we were firmly convinced that, based on our history of well over 100 years, we must have done some things right when it comes to economic responsibility. And we were also convinced that we had never lost sight of our social and ecological commitment over the years. On the other hand, we had a lot of respect: Where should we start when it comes to drastically reducing greenhouse gas emissions? Aren't there topics that have not yet been on the agenda but are still important? Can we put into words and numbers what we are already doing and communicate it transparently?

The first step is always the hardest

The start of our sustainability journey was not easy: it meant stepping away from what was familiar. Exploring new, previously unfamiliar territory. It's a good thing that we had an experienced partner by our side for these first sustainability steps who, in a handful of workshops, showed us how well we at the Plansee Group are already prepared for our sustainability journey, and how we can bring about great changes by focusing on a few select goals and measures.

It quickly became clear that our sustainability journey would not only lead us to a more sustainable way of doing business, but also to an enhanced positioning of our group. Ceratizit has set the clear intention of becoming the most sustainable hard metal manufacturer in the industry. Its philosophy focuses on tools that are manufactured with an extremely low Product Carbon Footprint*, have a very long service life, and ensure fast and precise production at the customer's facility. Plansee is positioning itself even more strongly than before as a sustainable development and innovation partner to its customers. The motto: Long-lasting solutions made of the valuable metals tungsten and molybdenum help to reduce the Product Carbon Footprint* of many high-tech applications along the entire manufacturing chain. It is crucially important to both business areas to reuse and recycle their products and materials.

With care, transparency and ambition

When we look back on the first four years of our sustainability journey, we see what has helped us and will help us in the future to achieve our goals: Consistent with our values, we have taken the time to discuss what the most important areas of sustainability could be where action is needed, and how we can shape and further develop them, primarily by our own efforts.

In the process, we have found new impetus for the strategic development of the group. Key goals include reducing our greenhouse gas footprint, expanding our recycling activities, and – as always – continuing to aspire to be the best employer for our employees. All our goals will be gradually assigned measurable targets, metrics, and key measures.

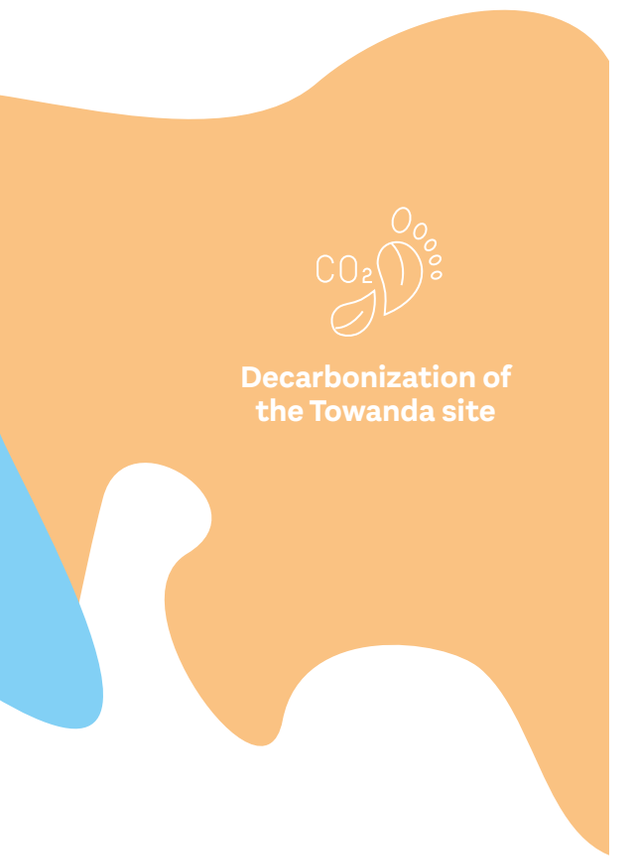
Hydrogen from electrolysis

Double materiality assessment 2024/25

“Consistent with our values, we have taken the time to discuss what the most important areas of sustainability could be where action is needed, and how we can shape and further develop them, primarily by our own efforts.”

We have created transparency in the group: Many colleagues worldwide have worked tirelessly on our greenhouse gas emissions balance, calculating, following up. The same applies to our generation of waste, our water consumption, and our specific energy consumption for products and product groups. All of this was a prerequisite for defining meaningful targets, measures, and investment priorities.

We have learned the language of sustainability. We now know what Scopes 1 to 3 are and how we can influence them. We have learned that social issues are just as important a dimension of sustainability as ecological aspects. And we have seen that governance – which traditionally has been an important element in the Plansee Group – needs to be formalized in many areas in order to make the vision we have of ourselves accessible and understandable to the outside world.



First successes, new goals

As a result, what was initially unimaginable became achievable within a very short time and both Plansee and Ceratizit were given the EcoVadis gold rating. This experience strengthens our self-confidence and our ability to master the coming challenges on our sustainability journey. And with this self-confidence, we see even more opportunities to develop our sustainability program in more detail and thereby set the course for becoming one of the most sustainable companies in our industry.

We have recognized that we are already on the right path by focusing on the four areas that encompass products, production, people and procurement, and that we now need to set further priorities within this framework.

Our current efforts are centered around reducing the greenhouse gas emissions of the entire group as much as possible by our own efforts. The next step will be to incorporate the supply chain. This is important because Scope 3 in particular accounts for 70 percent of the corporate carbon footprint.

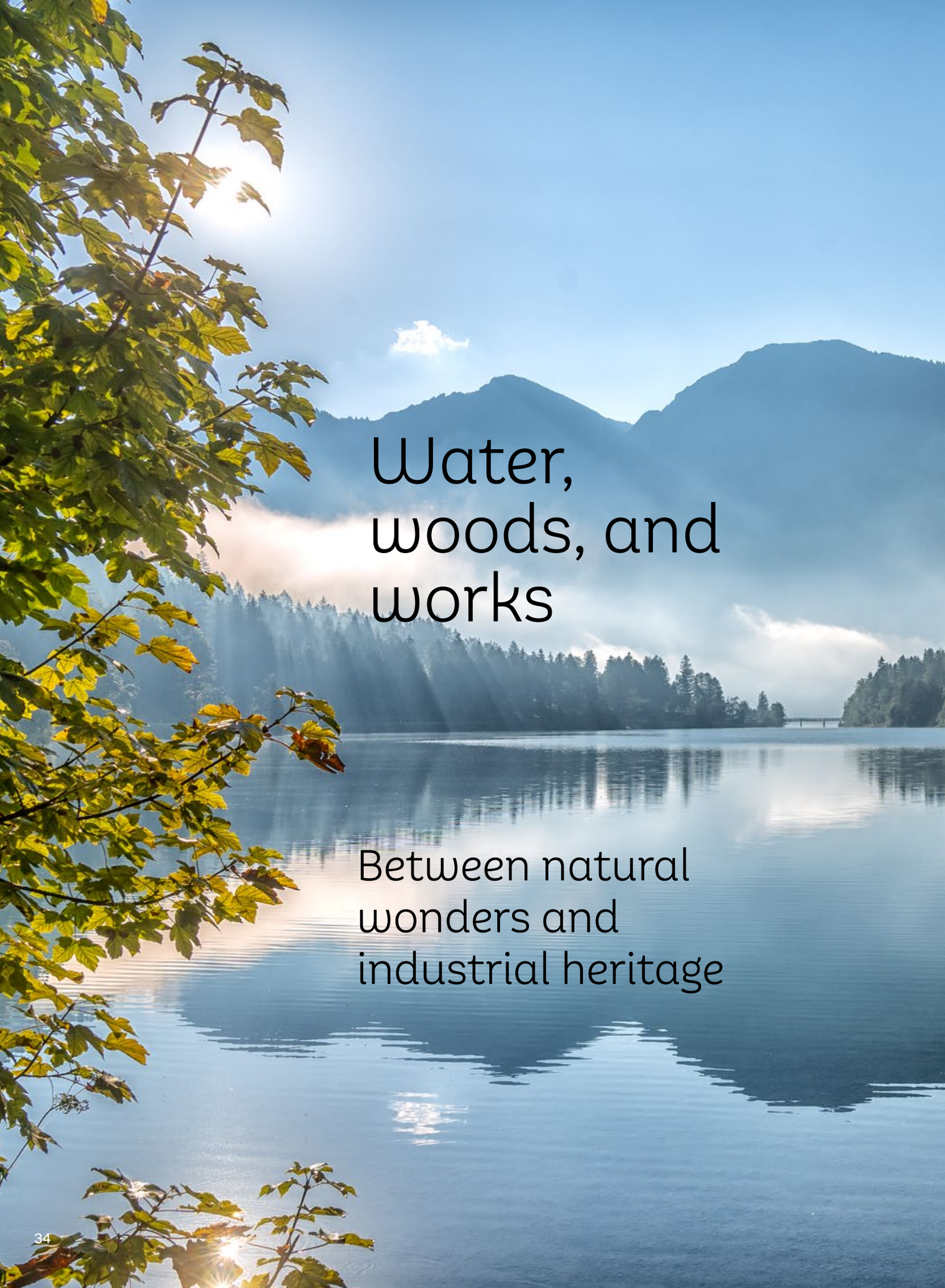
It was good that we did not just limit ourselves to the new EU legal requirements for sustainability targets and reporting. Had we only operated within this framework, we likely would not have become aware of many topics that now give us a real competitive advantage. Once again, it has been shown that we, as the Plansee Group, play to our true strength when we turn our attention to our strengths and take the time to find the path that suits us and our business purpose.

The Sustainability Report 2023 provides a comprehensive overview of the sustainability program as well as metrics and measures of the Plansee Group:

Visit
plansee.com/download

The next sustainability report will be published in July 2025.

* The Product Carbon Footprint (PCF) at Ceratizit and Plansee refers to the total amount of greenhouse gas emissions generated during the life cycle of a product – from the production of raw materials through manufacturing to the product leaving the factory.



Water, woods, and works

Between natural wonders and industrial heritage

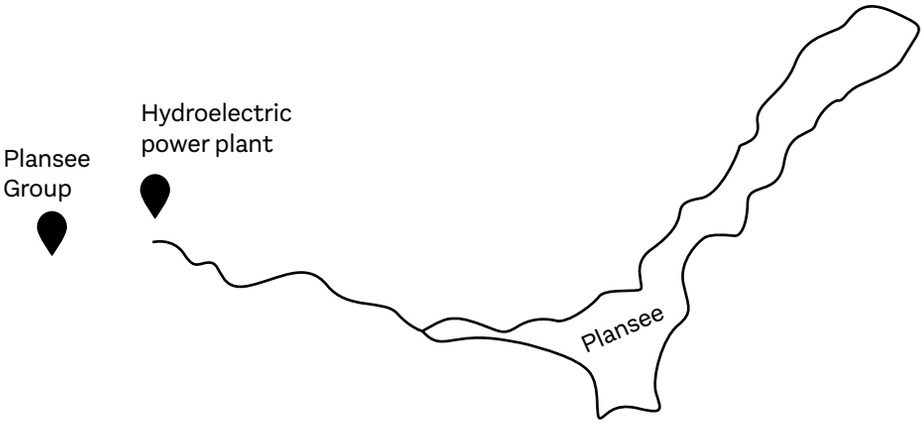
Lake Plansee, after which the Plansee Group is named, is the second largest lake in Tyrol. Together with the adjacent Stuiben Falls, it supplies the region with hydroelectric power – a key factor in the decision by Paul Schwarzkopf, the founder of Plansee, to select this location. Nature, recreational spaces, and infrastructure seamlessly blend between the lake and the outer boundary of the expansive company premises in Reutte.

There are numerous opportunities to explore the area and enjoy its many leisure activities. A hiking loop extends from the outer perimeter of the Plansee Group's premises, past the hydroelectric power station and Stuiben Falls, to the blue waters of Lake Plansee – and back via Ministersteig trail. Along this route, not only does the natural scenery of the Ausserfern with its spectacular water and the idyllic forest invite you to pause, you will also find the history of the Plansee Group alongside a cornerstone of the regional infrastructure here.

Crystal-clear gem

Lake Plansee attracts visitors with its almost three-square-kilometer expanse of water, nestled in a rocky massif. When Paul Schwarzkopf was seeking to locate his metal processing company in the area in the early 20th century, the lake's power supply played an important role. Today, Lake Plansee and the surrounding nature are primarily a recreational area for locals and tourists. The water is used not only for generating electricity, but also for pleasure and sports. A sightseeing boat regularly cruises across the calm waves, while swimmers, sailing aficionados, and stand-up paddle boarders leisurely perform their laps. Hikers and bicyclists explore the scenery around the shore, and hobby fishermen use the water to reel in their latest catch. The lake's backdrop invites visitors to dream, even in the winter.

If you follow the path through the forest, you will reach Stuiben Falls. Here the water plunges over the rocks in several cascades, demonstrating the power of this usually calm element. Brave cliff divers plunge into the raging waters of the rock basin, and many families come to swim and splash around in the torrent, as they do at Lake Plansee.



Lake Plansee
Figures, Data, Facts

Altitude: 3202.10 feet
Surface area: 1.11 square miles
Length: 3.11 miles
Width: 1.06 miles
Volume: 4,368,424,273.00 cubic feet
Maximum depth: 252.62 feet

Hydropower in the Plansee Group

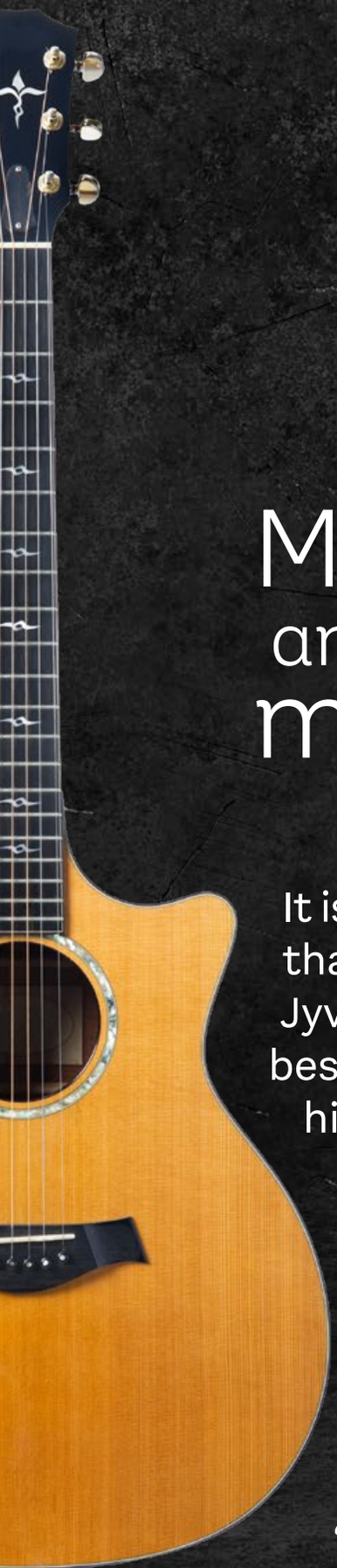
The journey continues to the hydroelectric power plant, which is not only a technical highlight but also an important part of the region's sustainable energy supply. Even today, the site in Reutte obtains the majority of its electrical energy from hydropower. But this source of energy also plays an important role at other locations – notably at Plansee's Swiss site in Seon. During the past fiscal year, 100 percent of the location's electrical energy was obtained from hydropower.

During the 23/24 fiscal year, 18 percent of **Ceratizit's** electricity mix was hydropower. The top three sites in terms of hydropower use were:

1. Ceratizit Austria in Reutte (AUT)
2. Tikomet (GTP) in Jyväskylä (FIN)
3. Ceratizit Bulgaria in Gabrovo (BG)

During the 23/24 fiscal year, 32 percent of **Plansee's** electricity mix came from hydropower. The top three sites in terms of hydropower use were:

1. Plansee Powertech in Seon (CH)
2. Plansee Bulgaria in Gabrovo (BG)
3. Plansee SE in Reutte (AUT)



Metal and melodies

It is not only hard metals that are recycled in Jyväskylä, but also the best English and Finnish hits of the past decades: Teemu Ronimus has worked as Production Operator at the Ceratizit subsidiary Tikomet for nine years. In his spare time, he sings in the cover band “Coverretout” – a passion he discovered late in life.

Since completing his commercial training, Ronimus has worked in a number of different jobs while continuing his machining training. Nine years ago, he finally applied for a job at Tikomet, where he has worked as Production Operator ever since. Tikomet uses zinc recycling to produce porous parts made of tungsten carbide and cobalt from end-of-life carbide tools. After being treated in the furnace using zinc at relatively high temperatures, the pieces are crushed and ground in a further process step – and Ronimus operates these machines. The crushed tungsten carbide powder is used to manufacture new hard metal products. Occasionally, Ronimus also lends a hand in other areas, for example at the furnaces, or he drives a forklift truck to load and unload trucks.

“I'm happy with my job at Tikomet, it's the best employer I've ever had,” says Ronimus. ”What could make our company even more perfect would be a rehearsal room for musicians. I'm not the only one here, after all,” he jokes. Teemu Ronimus only found his passion for music in his thirties – while looking for a new hobby. He took singing lessons from an opera singer and was quickly encouraged to use his talent in a band. For about ten years, he was a member of several bands in western Finland, with which he toured the country. They played both cover songs and their own songs. “When I was younger, it was easier for me to make the many trips because of more free time. I had a lot of time for music and performing. That's more difficult today.”

Pop-rock for the company anniversary

He also still sings in a band outside of work: “Coverretout” is all-acoustic and focuses on covers, essentially “recycling” the most popular songs of the last few decades. The set list is put together by the members. The band performs in small bars or at company events about once a month – larger gigs are a thing of the past due to a lack of time, but that doesn't bother any of them. “We are five guys who just enjoy music.”

When Tikomet recently celebrated its 30th anniversary, two worlds merged for Ronimus: his job and his passion. After a ceremony at the factory premises, the employees were invited to a celebration on a boat, where “Coverretout” gave a concert. “My colleagues have often asked me when I would perform at a company event. The anniversary was the perfect opportunity. It was a great concert,” he says.

Apprentices then and now: The Plansee Group can look back on a long history of vocational training.

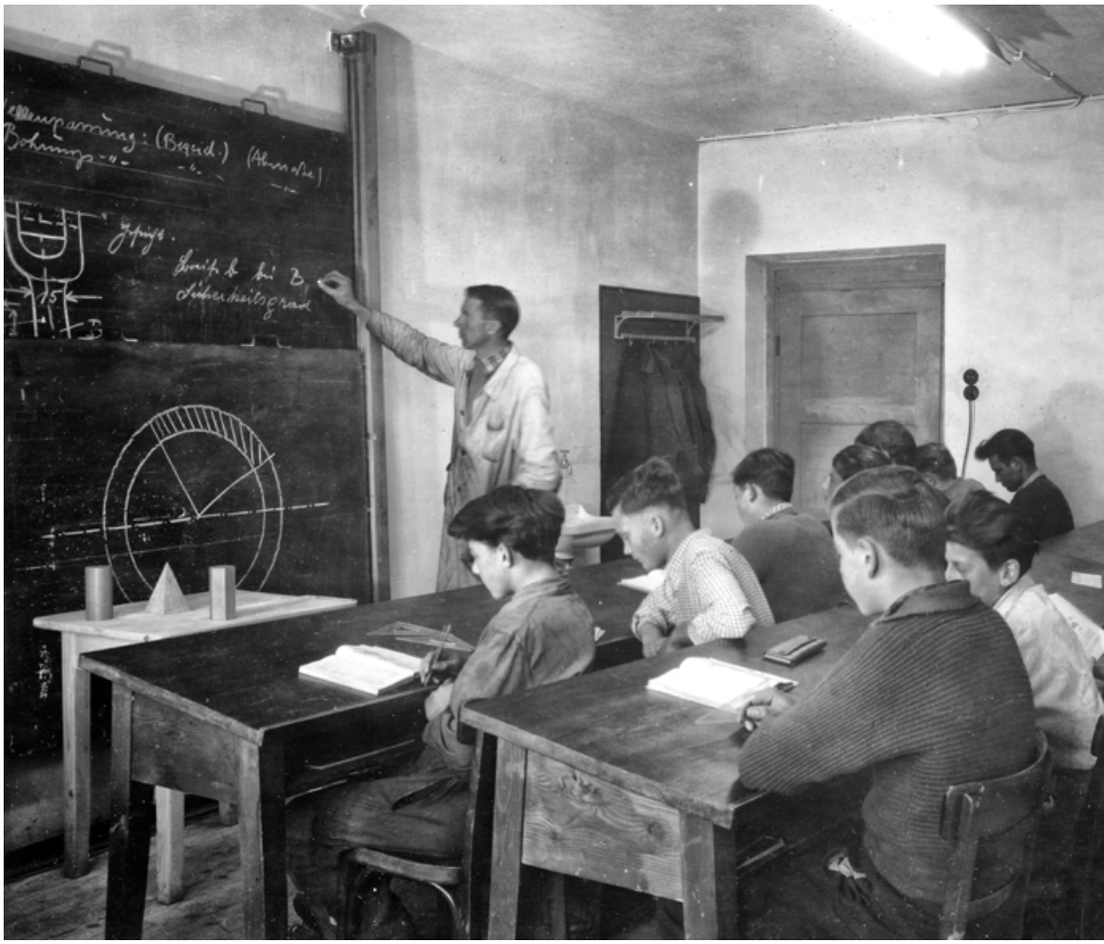
From education to vocational training

Fifteen years passed between Eduard Rudig, who unofficially became the Plansee Group's “first apprentice” in 1923, and the first official apprentice who trained to become a shop mechanic in 1938. Regardless of when it actually began at the Plansee Group, the history of (dual) vocational training is a success story. Training young people to become qualified specialists who learn their profession from scratch and understand materials and corporate culture was, is, and should remain a cornerstone of progress in the future.

“I was 14 years old when I became the first apprentice to join the metal factory in 1923.”

“I was 14 years old when I became the first apprentice to join the metal factory in 1923. I was a commercial apprentice in the administration department. Dr. Paul Schwarzkopf was there, [...] and then there were another 25 workers in the firm.” This is how Eduard Rudig described his beginnings with the company in the employee magazine in the 1970s on the occasion of his retirement from the development department. Rudig never completed this first apprenticeship, because without “apprentice compensation” he could not afford to make a living at the time and dropped out of the program only six weeks later. However, he returned after many jobs, took the journeyman's examination to become an automotive mechanic, and was ultimately able to look back on 40 years of service in a wide variety of positions.

The “official” history of apprenticeships at the Plansee Group began in 1938 – with the first apprentice to become a shop mechanic – and continued in 1939 with the company's own vocational school, which was granted public-law status in 1970 to be able to issue official diplomas. So for approximately 100 years, the Plansee Group has been training future skilled workers and teaching in-depth technical knowledge – not only in metalworking but also production support occupations.



Combining theory and practice

Joachim Resch, Head of Vocational Training at the Plansee Group in Reutte, is responsible for 120 apprentices and nine trainers at the training center. In addition, he has the support of three “part-time trainers” from Plansee and Ceratizit. A few years ago, the group invested heavily – in the training center that opened in 2020 and in the educational center with the vocational school. “We now have state-of-the-art laboratories and classrooms and a modern, fully equipped training center with a pleasant working and learning environment,” explains Resch – high ceilings, open rooms, and glass offices; a warm wooden building with more than two dozen machines and manual workstations. “This investment as well as our general training concept have paid off, as is evident from our repeated success in apprentice competitions,” he adds proudly. ”It is also quite unusual that we, as a private company, have our own vocational school. There are only fifteen of them in all of Austria, and only three of them provide training in the same occupations as we do,” emphasizes Stefan Schlichtherle, Head of the Plansee Group's vocational school.

The Plansee Group, however, trains apprentices not just in Reutte, but at a total of eleven sites in seven countries. Plansee Powertech in Seon in Switzerland, for example, has had an apprenticeship program since 2002, offering three different trades in the technical field. “Training plays an important role for us when it comes to developing the next generation of specialists and managers for our small site and for the Plansee Group family,” explains Patrik Leutwiler, who is responsible for training in Seon. “Training young people is one of our most rewarding tasks, as it also ensures that we remain competitive and can continue to manufacture our technologically complex products in the future.”

Other sites within the Plansee Group also offer training: Both at Plansee and Ceratizit, professional expertise and personal development go hand in hand in every respect.

“Our training center in Balzheim is very well equipped – with modern machines and systems, several programming stations, classrooms, a kitchen with a lounge, and a break room.”

At Ceratizit Balzheim, for example, the history of apprenticeships dates back to the 1970s, long before the plant became part of the Plansee Group. Today, the company's own training center, located a short distance from the production facility, primarily trains lathe operators as well as machine and equipment operators. “Our training center is very well equipped – with modern machines and systems, several programming stations, classrooms, a kitchen with a lounge and a break room,” says Georg Markopoulos, the Training Manager there. “Training our own skilled workers plays a very important role in our region. We offer young people a future-oriented, secure job and help counteract the skilled worker shortage.”

Stay abroad: Olaf Sierck (photo) and Burak Alca, 4th-year machining technician apprentices from Reutte, worked at Plansee USA in Franklin for six weeks and experienced local life.

Developing and challenging employees respectfully

Learning a profession such as that of a metal technician at your (future) place of work for three to four years while also attending school to reinforce your practical experience with theoretical knowledge and general education subjects – this unique combination is the hallmark of the dual training system in German-speaking countries. “After their apprenticeship, the young professionals are already integrated, have a network, and know our values, products and materials. Our departments appreciate this and are happy to take on our apprentices after they graduate,” explains Joachim Resch.

Another form of training takes place at Plansee USA in Franklin. In 2022, the site established the “Plansee USA Manufacturing Training Center.” Employees can learn new technical skills there. Their training focuses on manufacturing theory and its practical application to CNC turning and milling operations. The training program includes around 500 hours of lessons and complies with the high international training criteria of the Institute for Economic Promotion of the Austrian Economic Chambers (WIFI). Approximately ten employees have successfully completed this training so far.

Between filing and programming

The apprentices in Reutte are between 15 and 40 years of age – but mostly adolescents who, after finishing school, often first have to learn the new structures of the working world. “We support the apprentices as they settle in. We know that it can take time to get established. But we also challenge them. We want them to know that their performance contributes to the success of the company,” explains Joachim Resch.

Although most of their work later will be on CNC machines and automated equipment, manual work is still an integral part of the Austrian Chamber of Commerce's training plan. “The first time you file something, you learn to get a feel for the material and understand how it behaves. This ‘hands-on’ approach to materials and tools reduces the risk of injury and improves the quality of our products,” Resch states. The Plansee Group will continue to invest in the training of skilled workers in the future – particularly to remain at the cutting edge of technologies such as 3D printing and robotics. “We want to take a closer look at AI during the current school year,” the Head of Vocational Trainingadds. “It will change and influence training. In the future, the value of skilled workers at the workplace will be even higher. The focus is shifting away from purely technological knowledge and towards process knowledge, in order to understand and optimize the overall system,” emphasizes Resch.

The Plansee Group promotes international educational exchange between the training centers at its sites and plans to expand this further in the coming years, initially in the DACH region, but ultimately internationally. In addition, apprentices also get to experience international work environments. “Two apprentices who showed particular commitment were able to work at a site in the USA for six weeks in 2024 and get to know the culture there,” says Resch. For example, apprentices from Lechbruck have the opportunity to visit the sites in Switzerland or France every year; the apprentices at the logistics site in Kempten get to know the production sites in Balzheim and Reutte during excursions.

Award-winning facility: The training center in Reutte was recognized by the state of Tyrol for the high quality of its dual apprenticeship program.

First the training and then the continuing training

Ultimately, numerous options are available to the young professionals after they have successfully completed their training – whether it's continuing training, working abroad, or getting a taste of other departments. Eduard Rudig was also introduced at the time to these opportunities for growth within the company as well as the close interdisciplinary working relationship. Despite his work in the commercial area, he witnessed the first sublimation: “One day, the Plant Manager Schmidt said to me, ‘I need some help.’ [...] And that’s when the yellow-green smoke (molybdenum trioxide; editor's note) rose for the first time. The first sublimation was successful. We caught the smoke in a canvas bag that we held over the entire apparatus.”

Training locations in the Plansee Group

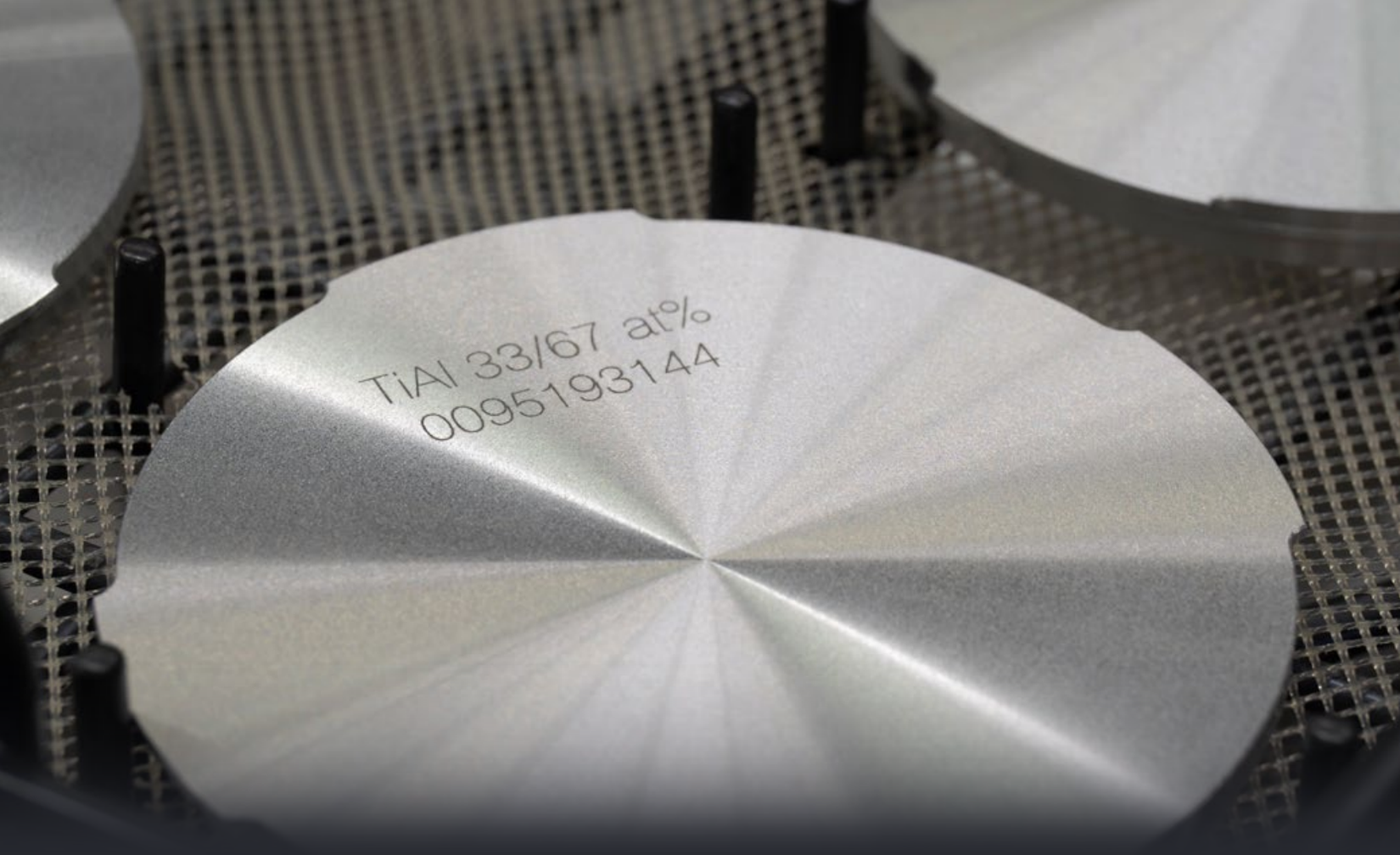
Balzheim, Besigheim, Empfingen, Franklin, Kempten, Kędzierzyn-Koźle, Lechbruck, Mysuru, Reutte, Seon, Shanghai

The magic of the coating

Strong metals, strong tools – this is the motto of the Plansee Group, which sets standards in the coating of high-performance tools for machining operations. Plansee develops the coating material, while Ceratizit is committed to making carbide tools even more efficient and wear-resistant with ultra-thin coatings.

Even though they are much thinner than a human hair, you can still see them: Coated tools such as indexable inserts for machining operations shimmer in all the colors of the rainbow. To apply these coatings, Ceratizit uses a variety of materials and technologies. The starting materials are the so-called targets (coating materials). These are discs, plates or tubes made of a special material composition – manufactured by Plansee. The targets consist of the elements that the coating should contain. Depending on the ratio, tailored properties are created in the coating: Tools become more wear-resistant, achieve a longer service life, and can be optimized for the processing of certain materials.

Martin Kathrein, who together with Peter Polcik has driven forward the development of physical vapor deposition (PVD) coatings, has been with the company for over 20 years and has worked on coating technologies from the very start. Plansee was already a pioneer in the field of coatings in the 1970s, at that time with the chemical vapor deposition (CVD) technology. In the late 1990s, Martin Kathrein saw potential for growth in PVD technology. “Still, to get a new development off the ground, we needed not only a good idea, but also the right team and perfect timing,” emphasizes Kathrein. He found allies in target developer Peter Polcik and in the scientific community, such as Professor Christian Mitterer from the Montanuniversität Leoben, Austria.



From target to tool

“The targets for all our coatings at Ceratizit come from Plansee Composite Materials in Germany. And I would even go so far as to say that Plansee is the benchmark for targets and is often mentioned as a reference,” says Christoph Czettl, who is helping to advance the development of coatings. Plansee's target production has evolved over the last 25 years. Plansee manufactures target materials using powder metallurgy – the first development at the Reutte site was in response to a customer request.

“We had to acquire new technologies in order to be able to offer different types of these PVD targets,” recounts Peter Polcik. It was always of central importance to cooperate with the scientific community, which resulted in numerous publications. “The collaboration with universities helps us to gain an even better understanding of our materials, which in turn enables us to provide our customers with better support.”

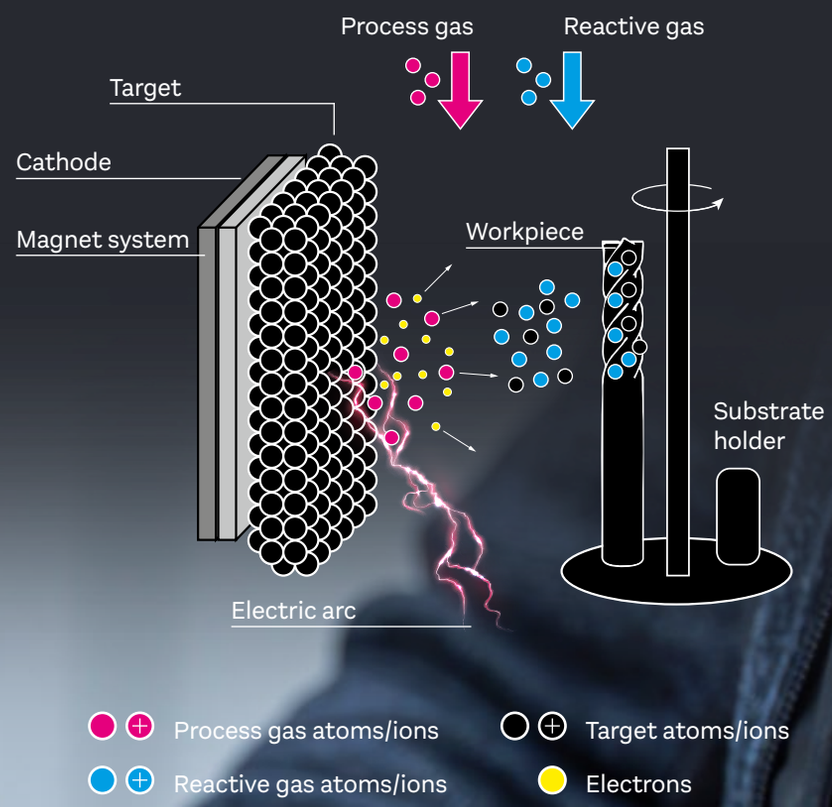
The idea also bore fruit in terms of the tools, starting in Luxembourg, and the company purchased the first high-performance PVD production machine, which could guarantee maximum quality in larger quantities. What was initially sold in very small quantities developed quickly and – thanks to the sales team, the joint patenting of the coating and the targets, as well as numerous publications and awards – became the benchmark in the industry. The share of PVD-coated tools has grown significantly in recent years: Today, the vast majority of Ceratizit’s tools are coated, and the Plansee Group operates more than 30 PVD systems in various countries.

“The collaboration with universities helps us to gain an even better understanding of our materials...”

Ceratizit focuses on the machining operation and the application possibilities of tools and is supported by Plansee with its in-depth knowledge of materials – the division supplies the base material in the form of targets and has to know exactly which properties change when certain elements of the powder mixture are altered. Today, Szilard Kolozsvari, Laurent Bourgeois, and Markus Pohler are working alongside Peter Polcik, Martin Kathrein, and Christoph Czettl on cross-departmental development projects in this field. “We help each other, even outside our core competencies, to acquire knowledge, which in turn helps our customers. The expertise of our colleagues is very helpful, and I value it very much,” explains Kolozsvari.

The research and development departments of both divisions meet regularly to exchange information on projects and innovation potential and to look at scientific studies and published works. “The implementation of the joint projects was very successful for the group – also thanks to the great team members behind it, who have grown alongside each other,” emphasizes Kathrein. They will continue to work on the coatings in the future. “We want to gain an even better understanding of our coatings in the context of new requirements and develop them further in collaboration with scientific institutions – and of course today we also consider this from the perspective of sustainability.” The experts at Plansee also continually monitor additional fields of application for their materials and test them together with their customers. “Then as now, our customers come to us with problems or requests that we solve together with them, serving as experts and innovation partners,” says Polcik. Because true developers never rest.

In a PVD system, the target is placed in a chamber together with the tools. A vacuum is created, and the chamber is heated to between 400 and 600 degrees Celsius. A triggerfinger creates an electric arc, comparable to many small lightning strikes, on the target, which starts the vaporization process. The target material evaporates. The reactive gas – mainly nitrogen – reacts with the evaporated and ionized target material, whereby a wear-resistant, nitride-based hard material layer is formed on the tool. To ensure that the ionized metal vapor coats the tools evenly, the rack on which the tools are placed is polarized and attracts the particles ionized in the plasma. This is how an extremely thin layer is created. It is important in this process that the target has a homogeneous structure and chemical composition. Otherwise, the quality of the coating would be unstable, and the tools would not perform consistently



Quotations in no time

In the fall of 2024, Ceratizit acquired a minority stake in Spanflug Technologies GmbH, a tech start-up based in Munich. Ramiro Bengochea, Director of Global Sales for Ceratizit Cutting Tools, and Markus Westermeier, CEO and Co-founder of Spanflug, discuss the planned collaboration, new sales channels, and a “win-win-win” situation.

Talking about goals and collaboration: Ramiro Bengochea (left), Director of Global Sales for Ceratizit Cutting Tools, and Markus Westermeier, CEO and Co-founder of Spanflug.

When and why did you feel that Spanflug and Ceratizit could complement each other well?

R. Bengochea: When I visited Spanflug for the first time at their offices in Munich, I immediately sensed that their culture and values are a perfect match for Ceratizit. We got to know Spanflug through an internal project that is already using Spanflug technology to automatically analyze components based on CAD models. Moreover, there is further potential for applying their technology in our quotation processes. The desire to make a difference in the machining industry and to radically simplify complex ordering processes is a very personal concern of mine. For years, I have seen the urgent need to better match supply and demand in the machining industry. And I am convinced that Spanflug has the crucial approach to do so.

M. Westermeier: We quickly saw that, by working together, we could create a "win-win-win" situation for both our companies and our customers. By pooling our strengths, we can provide support to small and medium-sized manufacturing companies. We have a shared understanding of what the industry needs and put the customer at the center of all our endeavors.

What trends do you see in the machining industry, and how can Spanflug and Ceratizit make a difference here?

M. Westermeier: The industry will change, especially in Europe: more competition, higher wages, and a lack of skilled workers. To become more productive and competitive, it is important to invest in technologies and automation while reducing costs. We connect supply and demand in the machining industry: Spanflug seamlessly matches end customers requiring CNC-manufactured parts with the most suitable manufacturing company. The end customer uploads their CAD model and technical drawing to Spanflug Buy and receives a quotation in no time. We drastically shorten the quotation process. Spanflug Make in particular supports machining companies when it comes to digitally completing tasks, such as calculations, quotations, and production planning, as quickly and efficiently as possible. Both solutions are quick and easy to implement and create real added value from day one.

R. Bengochea: Our customer base includes almost 30,000 small and medium-sized machining companies, some of which are highly specialized. Imagine you are an end customer who wants to have a component manufactured and you are looking for the most suitable contract manufacturer in this haystack. Many of these end customers and contract manufacturers spend a great deal of their time on requesting or preparing quotes. This process is very time-consuming, and in the end, the customer often wonders whether the selected quote indeed offers the best machining strategy and the best price for their problem. The manufacturing company also has to explore many questions before preparing a quotation: Which machining strategy makes sense for the particular inquiry? Which tool do I need for this? Is the material available? How do I come up with a competitive quote? And what is the delivery time I can agree to, taking into account tool procurement, free capacities on the machine tools, and the required production time?

And how do you solve this problem?

R. Bengochea: Spanflug helps to prepare quotes more precisely and efficiently and to select the most suitable provider. We know our tools and how they perform in the application. We can collect this data in countless machining operations in our Innovation and Technical Centers. Here, we thoroughly examine the use of our tools with a wide range of materials. Going forward, this wealth of experience, gathered over decades, about our tools and a wide range of machining strategies will be available to our customers via the Spanflug platform.

M. Westermeier: With our platform, we support both companies that are looking for a contract manufacturer for a specific part and manufacturing companies in their acquisition of customers – these manufacturing companies are also customers of Ceratizit.

What motivated Spanflug to work with Ceratizit, and how will this partnership benefit the platform?

M. Westermeier: Together we are even more powerful and we work closely together in product development. We also want to make it even easier for manufacturing companies to find the right tool for a specific machining operation and to order it immediately via Spanflug.

R. Bengochea: Our expertise and knowledge of cutting tools and their applications will contribute to improving the platform, and of course the Ceratizit Cutting Tools sales organization will help to promote the Spanflug solution on the market – motivated by the exclusivity of our brand in the application.

How will Spanflug technology make the day-to-day work of Ceratizit customers easier?

R. Bengochea: Our customers want to become faster and more productive. With Spanflug, they shorten the quotation phase for their end customers. Their quotes are prepared more quickly and in better quality. Thanks to the collaboration between Spanflug and Ceratizit, we can continuously improve the competitiveness of our quotations – with more productive and efficient cutting tools and applications. In addition, Spanflug opens up an additional sales channel for us: Ceratizit tools are exclusively recommended to the manufacturing companies in Spanflug Make, tailored to the end customer's order, and can be ordered directly there.

M. Westermeier: The manufacturing company can focus more on the actual production. We support the otherwise laborious quotation process and the procurement of materials and tools, and we automate these processes to a high degree. This way, everyone benefits: The manufacturing company can fully utilize their capacities and increase their productivity, and the end customer receives their machined part much faster.

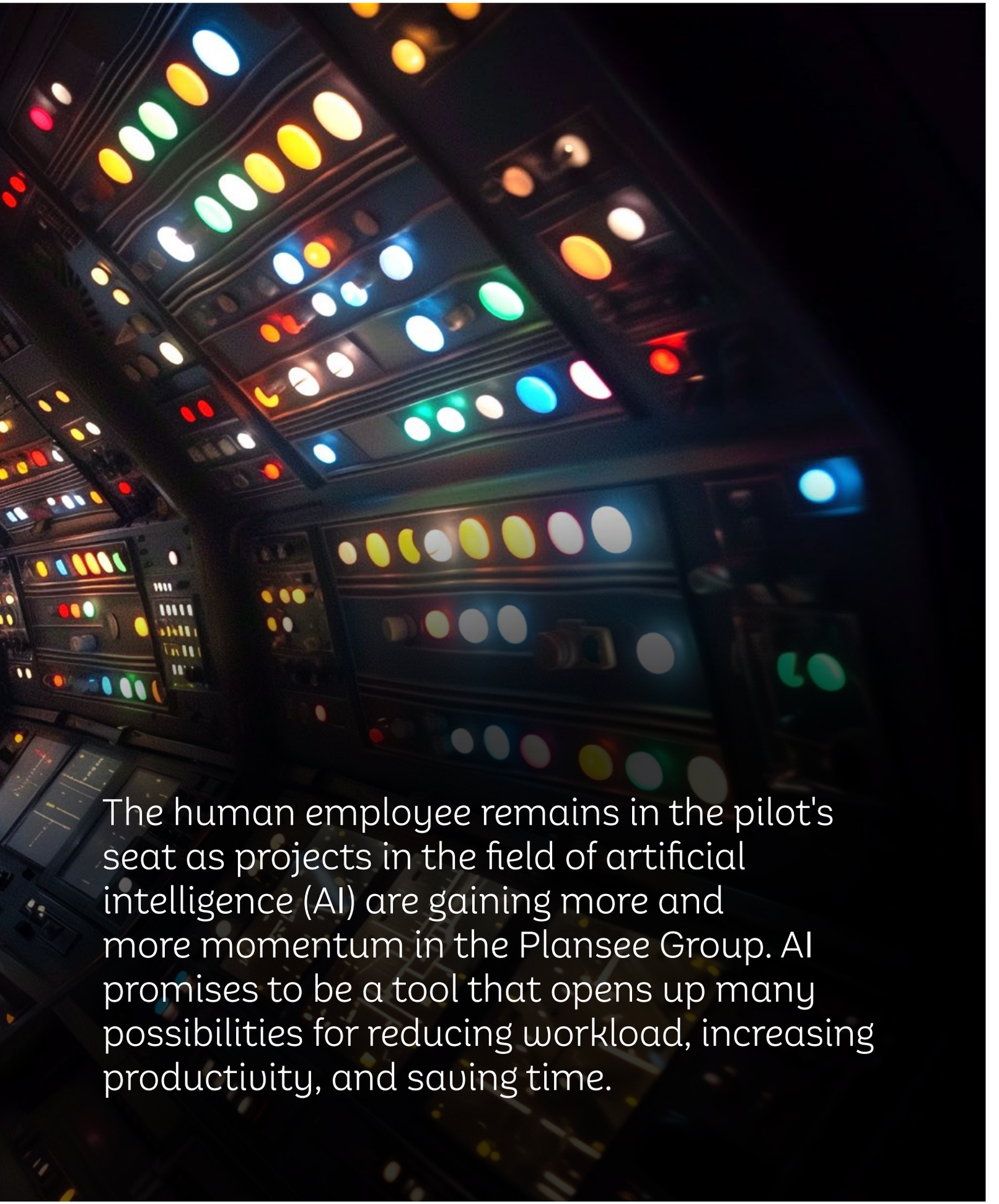
Spanflug offers two digital solutions that cover various needs:

Spanflug Buy for end customers in need of CNC-manufactured parts. Spanflug helps customers to find a company that can machine or manufacture the part based on their technical drawing. Customers immediately receive a quotation online and can place orders directly. With this, Spanflug takes care of the process of requesting and comparing quotes and the supplier management, and matches the order to the most suitable machine with free capacity in the partner network.

Spanflug Make is aimed at manufacturing companies operating in the machining field. As soon as a company receives a customer inquiry, Spanflug provides support with calculating quotations and managing orders. This means that processes such as material and tool procurement can be digitized with little effort, quotations can be calculated faster and more accurately, and manufacturing capacities can be utilized more efficiently.

Stories from the AI cockpit

They are driving artificial intelligence in the Plansee Group: Frank Thomé (left) and Laurent Federspiel.



The human employee remains in the pilot's seat as projects in the field of artificial intelligence (AI) are gaining more and more momentum in the Plansee Group. AI promises to be a tool that opens up many possibilities for reducing workload, increasing productivity, and saving time.

Floppy ears, heart-shaped eyes or a wreath of flowers – on Snapchat, faces can be magically transformed into wondrous hybrids. The app always knows whether and where a face is in the camera view and, depending on the user's preference, gives it cool sunglasses or dreamy saucer eyes. Snapchat owes this feature to artificial intelligence – years before it experienced its current heyday. From generative language models like ChatGPT to image generators like DALL-E and translation programs like DeepL, the market is full of providers. As a private individual, it can be fun to try out the possibilities of AI. But what potential does it offer for manufacturing companies?

Why AI has now gained momentum

Frank Thomé from the Ceratizit board and Laurent Federspiel, Director of Data & AI at the Plansee Group, are driving the use of AI in the company, but stress that AI is not an end in itself and instead a tool to increase operational excellence. “It's not an either/or situation – human intelligence and artificial intelligence each have their strengths and complement each other to achieve a higher productivity outcome,” says Frank Thomé. “That's why some people read AI (Artificial Intelligence) as AI – Augmented Intelligence, rather than as artificial intelligence.”

They emphasize that AI no longer speaks only the language of programmers, but also that of ordinary users. This is an important step in its development and makes it accessible to a wider audience. “The computer now speaks the human language – you no longer need to be an expert to understand it. AI reproduces what it has been taught, and in the case of ChatGPT, that is the entire internet – a pool of knowledge so vast that a human could never memorize it,” explains Laurent Federspiel. And that is what still distinguishes humans from computers: One has an unlimited memory and can calculate an unimaginable number of possible scenarios, while the other has intuition, empathy, and the ability to make balanced decisions. AI is therefore a “co-pilot”, a tool for the organization and its employees, but the final decisions must still be made by humans.

Not all AI is the same

There are various fields of AI that affect different areas of a manufacturing company like the Plansee Group. One of these is machine learning. “A separate department has been implementing projects in the field of machine learning for years. For example, predicting the shrinkage of material after sintering or putting together the best possible combination of recycled material for further processing,” explains Thomé. Machine learning employs algorithms and calculates endless combinations to find the best possible one – computing power that no human could provide. “At the moment, we are still teaching AI something, but in the future, we can expect a reverse learning process. AI will take over an extremely complex task, create a simple result, and teach us humans how to accomplish this task ourselves,” predicts Federspiel.

The latest trend, generative AI, “creates” content, summaries or advice. It enhances productivity by saving time. From chatbots to the automatic generation of quotations, it can support employees in their repetitive daily tasks, creating more room for conceptual work.

“Automation and machine learning have been around for years. They have made us more productive and created new job profiles that were unimaginable years ago,” says Thomé. “We at the Plansee Group expect AI to increase productivity, that is the order of the day. In view of the high cost increases, particularly at our European sites, we need AI to secure our competitive advantage in an increasingly global market economy.”

Data – the key

“We want AI to speak our corporate language,” comments Thomé. “It has to be fed our knowledge and information. That is why we are developing our own AI tools in addition to those already available.” At the same time, the Plansee Group seeks to improve data quality to achieve the best results. “Data is the key, but perfection is impossible,” emphasizes Federspiel. That is why the Data & AI team also trains their colleagues to use common sense and to question the results as a precaution from time to time. “We have it show us the source of every answer so that employees can check if something doesn't sound plausible.”

“In order to have AI tools that are fully under our control, we are taking the time to develop something that is secure and prevents data leaks. Our knowledge of powder metallurgy is priceless to us. AI offers us a unique opportunity to collect this knowledge, store it, and retrieve it whenever we need it in the future, but we need to keep it safe and secure,” says Thomé. Plansee Group employees are trained in a kind of AI academy before they are allowed to use certain new AI tools. “We want to ensure that there is no misconduct, whether it be careless handling of our data or questions about trade secrets or critical information – especially when it comes to personal data. We want to minimize the risk of data leaks, but still leverage the full potential of AI,” says Federspiel.

“In order to have AI tools that are fully under our control, we are taking the time to develop something that is secure and prevents data leaks.”

AI in use

Whether it is used as a search engine, translator, analysis tool or image generator: Artificial intelligence can support many aspects of a company's day-to-day business and make work processes more effective. While all Plansee Group employees can use “Microsoft 365 Copilot Chat”, even more targeted digital tools are being developed for some departments. In this article, we present two examples from numerous projects.

Coating technology meets AI

In October 2024, Dr. Eleni Koronaki and her team from the University of Luxembourg and Ceratizit Luxembourg SÀRL were awarded the country's FNR (National Research Fund) Prize for exceptional scientific achievements. They received this award for their project “Revolutionizing industrial processes: hybrid computational models for quality control, prediction and optimization”. This joint project between science and industry employs a novel computer-assisted approach to enhance the quality assurance aspects of chemical vapor deposition (CVD) processes for coating tools.

The goal of the project was to gain a better understanding of the processes in the CVD coating systems, to coat the tools more evenly, and to ensure consistent quality from the first production batch. This is because a large number of chemical and physical parameters in the system affect the end product. The new computer model was trained on the basis of a large volume of production data. This model now helps to calculate non-measurable parameters so that output can be predicted and adjustments to optimize quality can be performed more easily. With this knowledge, the industry can optimally decide, for example prior to the coating process, how the tools need to be arranged to ensure that various quality characteristics, such as surface texture or thickness of the coating, are uniformly fulfilled. The model will be further developed in follow-up projects. Ultra-thin CVD coatings are not only of crucial importance for cutting tools, but also in electronics, medical devices, aviation, and solar panels.

How AI supports the IT service desk in knowledge management

In 2024, a chatbot was developed to help colleagues at the IT Service Desk find solutions to support requests even faster. They process 2,500 tickets per month – from three sites for the entire group. To make the collective knowledge of IT support searchable at the push of a button, Estelle Goujard's team worked with an external partner to develop a chatbot in just a few months. It helps employees find recurring questions in the archive encompassing thousands of tickets in seconds – along with the appropriate solution.

To develop the chatbot, 100,000 tickets and relevant articles were compiled. A hackathon lasting several days led to a functional prototype, which entered a limited test phase in the fall. The chatbot helps IT staff to provide users with even faster support and to quickly access existing solutions for recurring problems.

The chatbot, which is available in German and English, provides references for its suggestions and always cites its sources. This enables employees to find answers more quickly and with a high accuracy rate. Although the team was initially skeptical, the chatbot has proven to be a useful tool. The bot also provides optimal support when training new colleagues. Additional chatbots for other departments are under development.

An appetite for culture

With a presence in all major economic regions, a clear strategy, and an enthusiastic sustainability program, the Plansee Group considers itself well-positioned for the future. But in addition to these important pillars, the company is also recognized for its distinctive and dynamic corporate culture, which it considers a key factor in its success.

Karlheinz Wex, Chairman of the Executive Board of the Plansee Group, explains how this culture is constantly evolving, and why change and tradition go hand in hand at the Plansee Group.

You have been Chairman of the Executive Board for almost two years and have been with the company for more than 30 years. What attracted you to the Plansee Group back then, and what do you still value about the company today?

K. Wex: Thanks to our tungsten and molybdenum materials, our products have very special properties. Those who need them come to us. The applications are very diverse, so as an employee you come into contact with many different industries. In our daily lives, we encounter many things that contain our products or have been manufactured using them: smartphones, aircraft components or computer tomography scanners. These technical components, the pursuit of innovation – especially in close collaboration with our customers – and the business aspects are what fascinate me most about the company.

After studying partly in France, I had the desire to work internationally. As an employer, Plansee has made this possible for me. Because I want to stay close to our employees, I regularly visit our sites – to maintain contact with the people and show them my appreciation. There is a lot you can only experience through personal interaction, reactions, and dealing with each other.

So, you are a true "home-grown talent". Are you an isolated case in the Plansee Group?

K. Wex: Today, it is almost a matter of course that people change jobs and employers again and again. However, since the 1970s, it has been a stated goal of the Plansee Group to develop managers primarily from its own ranks. We call this "8 out of 10". This is also intended to send a signal to applicants: We stand by our talent – whether they pursue a management or an expert career. This is not the only thing that demonstrates that the Plansee Group takes a long-term view.

You mentioned innovations. How do you manage to integrate this pursuit of new product solutions for customers, of new technical (im)possibilities, into your own corporate culture and turn it into a success factor?

K. Wex: Innovation means constantly questioning the status quo in order to achieve excellence. Interestingly, this also includes mistakes, as they provide valuable learning opportunities. That's why we prioritize a culture of open feedback and error tolerance. All of this is, of course, based on mutual trust – because without trust there can be no openness and no genuine exchange.

At the same time, long-term thinking is part of our cultural DNA. A company isn't around for 100 years without being "sustainable" in many ways. Many projects have long development cycles and take a long time to bear fruit. You need a lot of patience, but you also can't be afraid to make decisions when something isn't working. Ultimately, we – I – bear responsibility: to the family that owns the company, to our employees, but also to society and to our sites.

In very dynamic times that are marked by various crises, it is also important to convey stability to the staff and to provide security. How do you manage that?

K. Wex: Today we are experiencing many extremely rapid changes – whether these are political, climatic or technical. As an employer, we want to convey security and reliability. It is important to address issues directly and to exchange views about uncertainties. Changes must always be culturally supported and processed – whether it's the acquisition of a new company or a new technology, such as artificial intelligence.

What does culture mean to you as Chairman of the Executive Board?

K. Wex: Culture is much more difficult to grasp than strategy, structure or business operations, but it is just as much a central part of the organization. It describes how and why we do what we do. Culture arises from the actions of all employees. It cannot be defined or prescribed, only exemplified. From respect, appreciation, and integrity to the pursuit of innovation and pride in excellence. At the same time, a culture must be open to change — just like the company. The very first product that Plansee manufactured over 100 years ago no longer exists for the application it was used for at the time, but thousands of others do.

Is there something that the Plansee Group is currently changing in its culture, and if so, why?

K. Wex: We are actually a very introverted company and prefer to let our actions and our products speak for us. However, in today's job market, we need to be more confident when looking for talent. We have to communicate why it is so great to work for us. Believe it or not, we find this difficult. But in this process, it is important to remain authentic. If our day-to-day work is very different from how we present it, talented people will quickly leave. So we have to proceed step by step keep everyone on the same track.

How do you work on corporate culture?

K. Wex: Culture is a hygiene factor, but it is also essential to achieving our goals. In the Plansee Group, we have a dedicated culture department. It supports colleagues in dealing with these issues. Culture is also integrated into continuing education seminars. This is because managers often have to learn a new role, namely that of managing not only individuals, but a team. But our culture department doesn't just work on strategic approaches with management; it also works directly with many different teams around the world in workshops. This is because culture thrives on all employees: Not everyone can immediately recognize that their actions help to shape our culture, and we want to whet their appetite for it and motivate them to become actively involved.

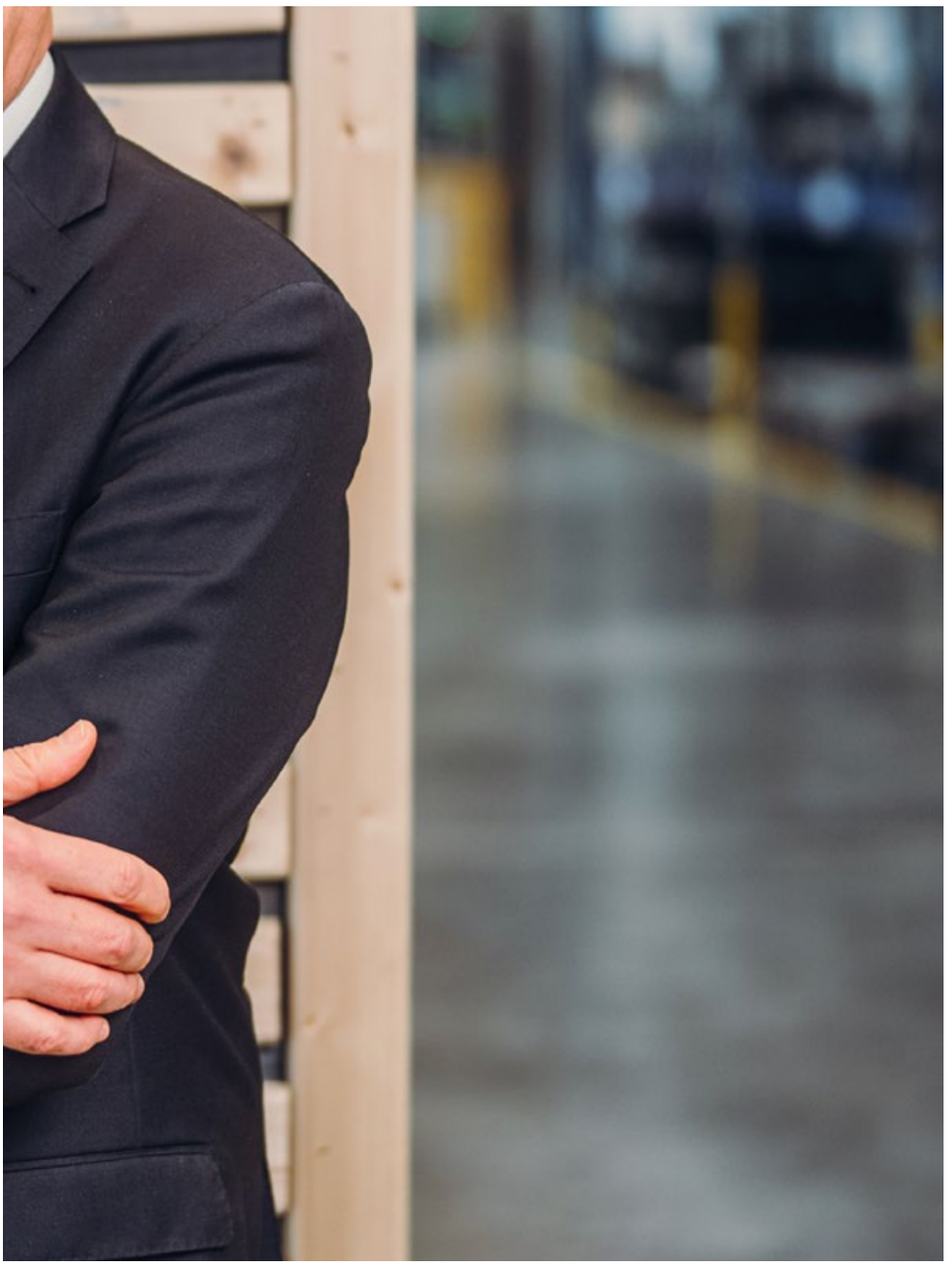
In other words, the Plansee Group's culture moves between the two poles of "quality and long-term thinking" and "innovation and tolerance of error". So it's not always black and white?

K. Wex: In culture, there is no absolute right or wrong; it's about striking a balance between both ends of the spectrum. That's why we don't actually speak of a good or bad culture per se, but rather of a functional or dysfunctional culture: Does our culture support our corporate strategy, our goals, or does it not? Every company is different, and so a culture that may be functional for one company may not be suitable for another. And even within the Plansee Group, there is a basic structure, but depending on the area, we have to embody different aspects to a greater

or lesser extent. Every employee needs a different kind of motivation, every team works differently, certain values may be more pronounced or interpreted differently depending on the country, but the basic principle and shared identity are firmly anchored.

The biggest challenges for us at the moment are internationality and diversity. Diversity adds value, but it must not be an end in itself. For diversity to work, a cultural framework must first be created, and development must be possible – which brings us back to trust and openness, on all sides, of course. The expectations of the younger generation are different, and we want to meet them, so that everyone who joins us today can say: "Yes, I want to stay here for a long time."

"Innovation means constantly questioning the status quo in order to achieve excellence."



This summary of the interview is based on an hour-long conversation between Karlheinz Wex and Georg Wolfgang in the podcast "CULTiTALK". The episode No 56 is available (in German) at cultitalk.de and offers many additional insights into the culture and values of the Plansee Group.

CULTiTALK

Values that unite

While strategy and structures define the goals that a company and its employees work towards every day, along with the means and resources they use to achieve them, culture and values take things a step further. They provide guidance on how we want to work together and what drives us. The Plansee Group has now developed shared group values for the first time.

Increasing Customer Success

Strengthening Collaboration

Living Integrity

In recent years, the Plansee Group has worked to evolve into a fully integrated group. “That's why it was the next logical step to develop shared values for the entire Plansee Group,” emphasizes Karlheinz Wex, Chairman of the Executive Board of the Plansee Group. “To find the right values for us, we first looked at what made us strong in the past, and what we need to place particular emphasis on in the future to continue to be successful.”

To ensure that the shared values can apply to everyone in the Group, regardless of their site or role, they were developed with input from a number of colleagues. In addition to the existing values of the Plansee and Ceratizit business areas, as well as other resources, the process was based on the results of comprehensive culture surveys in which more than 3,000 employees worldwide have now participated. From all these contributions, three group values emerged: Increasing Customer Success, Strengthening Collaboration, and Living Integrity.

In addition to the three central values of the Plansee Group, there are two more specific values each for Plansee and Ceratizit, which – tailored to their respective markets – play a differing role in the business areas. “Our values express how we want to work together in the Plansee Group, and how we want to act when working together within the company or in contact with customers, partners or applicants. They reflect our culture and provide guidance,” says Wex. In an effort to make them more tangible and to demonstrate how they can be embodied in our daily interactions, each value is associated with a behavior – so that these values are also brought to life in our daily work.

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Plansee Group Functions Austria GmbH
6600 Reutte, Austria
www.plansee-group.com

Contact
Jana Pfeiffer, Group Communications
jana.pfeiffer@plansee-group.com

Dénes Szechenyi, Head of Group Communications
denes.szechenyi@plansee-group.com

Collaboration
Michael Androsch, Ramiro Bengochea, Christian Bienert, Laurent Federspiel, Sabrina Fichtl, Walter Foley, Parwez Farsan, Houda Hajji, Markus Keller, Martin Kathrein, Szilard Kolozsvari, Christian Lanschuetzer, Patrik Leutwiler, Kathryn Leinweber, Georg Markopoulos, Bernhard Mayr-Schmölzer, Roland Megele, Lydia Miller, Lorenz Mikosch, Veronika Roelle, Martin Roelle, Teemu Ronimus, Balaji Ravi Rengarajan, Peter Polcik, Joachim Resch, Michael Rieder, Sean Rabatin, Jonathan Schaefer, Uwe Schleinkofer, Carolina Schoeffel, Hennrik Schmidt, Sylwia Stepien-Woerle, Norbert Stattler, Frank Thomé, Georg Thurner, Christoph Thurner, Tanja Wachter, Ariane Wahrmann, Elisabeth Walser, Markus Westermeier, Marion Webhofer, Heiko Wildner, Pascal Zwingert

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