LIVING METALS

When, if not now?*

*** From the Plansee Future Plan:**
We are constantly strengthening the material and resource efficiency of our production.

Accuracy is not enough
Matthias Rüttinger and his team are researching laser welding at Plansee, because this technology opens up new possibilities in semiconductor production. About a job where “almost perfect” is still far too inaccurate.

Silver threads from India
Mysore is the centre of Indian silk production. But the fact that other threats are also spun here is shown to us by Supriya Salian, who has been managing Plansee India since 2019. In addition to managing the company, she is also responsible for school and social projects.

Soundful jewellery
Irish artist Genevieve Howard uses her voice to create individual pieces of jewellery, partly from niobium, with the help of electrical voltage.

Editorial

Dear Readers,

The term “sustainability” has been firmly established in our vocabulary in recent years. Regardless of whether it is in industry or agriculture - the question as to the effect that the production of clothes, furniture, food and other products has on people and on the environment is essential to a growing number of consumers. The issue of how sustainably we produce is also high on the agenda of the Plansee Group and has been for many years. As a result, in this issue of Living Metals, we are exploring in-depth what sustainability means. We interviewed the sustainability researcher Dr. Fred Luks, and spoke with Karlheinz Wex, the Spokesman of the Executive Board, about the challenges of sustainable production.

Additionally, we look at India in this issue and the vital role that the Plansee Group plays locally for the employees and their environment, demonstrating how important it is to consider the topic of sustainability integrally - beyond the environmental aspect. In addition, we analyze our materials from a different point of view in this issue by speaking with the artist Genevieve Howard about her jewelry made of niobium, which is the result of her collaboration with the Plansee Group. Finally, careers can also be sustainable when the work conducted by colleagues can exhibit an effect over a long period. This applies in particular to the work of Melissa Albeck. She has held positions of responsibility within the Plansee Group internationally for more than 25 years. Now she plays a crucial role at GTP while serving as a member of the CERATIZIT Group board. Together with her, we look back on her exemplary career. Finally, we take you on a bicycle tour to Paris - the first Tour de France Femmes - as well as deliver insight into the commendable work of our colleagues in China during the lockdown.

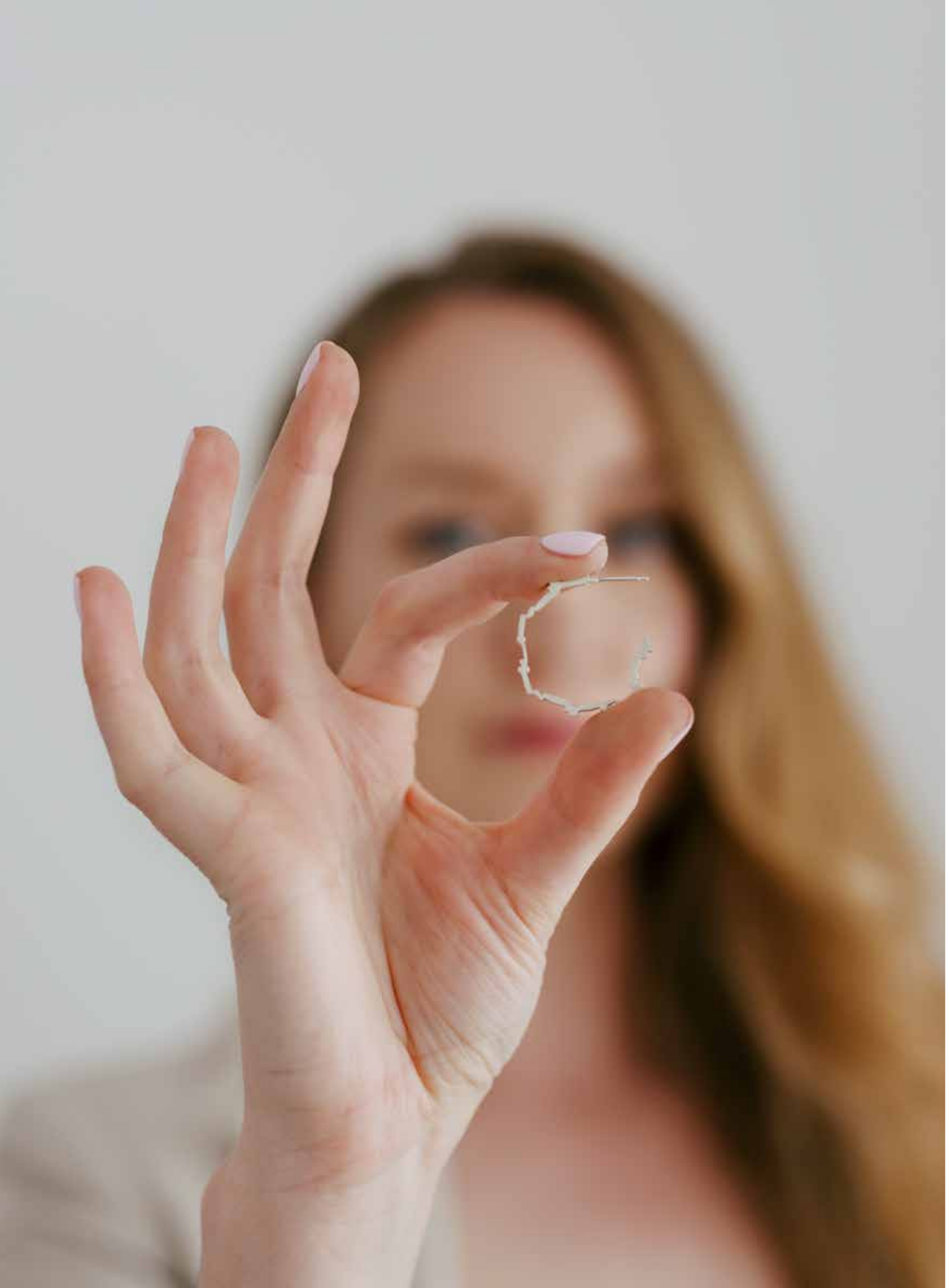
We hope you find this issue of Living Metals enjoyable to browse and read!

Sincerely,

Your editorial team

Contents

Gaelic alchemy	4
Between silk and wire	12
What is actually sustainable?	24
“We have a recycling quota of more than 70%”	28
Light and shade	38
The invisible seam	40
New life	46
Pedal to the metal for research	50
Paris, the city of bicycles	58
Rich in science and culinary delights: the Plansee Seminar	62
Green metal - is there such a thing?	70
Hard drills made of green powder	72
“I would not have wanted to miss any of it.”	76
Living in the office	84
Imprint	90



Gaelic alchemy

The Irish artist Genevieve Howard is looking for means and ways to represent music graphically. She seeks to do this by incorporating her voice as a medium to dye jewellery made of niobium - thereby merging the rare metal featuring a host of unique properties with various acoustic colours.

“I brought these things together.”

Genevieve was sitting at the piano one day, looking at the scores of music in front of her, when she suddenly realized that sheets of music were nothing other than music in physical form. The young Irishwoman took this as an opportunity to pursue this realization through art - and to dedicate her time, for an undetermined duration, to personally research and explore the matter: translating sounds into other states of matter. The brief moment, which had a tremendous impact, was all it took to merge two forms of expression Howard had articulated ever since she was a child: music and visual arts. And since she never wanted to decide between these two artistic forms of expression, she did what she has always done, which she succinctly sums up as follows: “I brought these things together.”

A childhood among musicians

Growing up in the fishing village of Howth, located on a peninsula in Dublin Bay off the Irish capital, Genevieve was exposed to music at a very early age. Both her parents had jobs related to music. Her mother was a music teacher, and her father was a classical guitarist who had many performances, including with the legendary Dubliners. Starting at the age of four, Genevieve started taking piano lessons and later would also learn to play the Irish harp and the guitar. Additionally, she was enthusiastic about singing - a circumstance that would become meaningful in her later work. She was also excited about her art classes in primary school, which allowed Howard to uncover her artistic talent beyond music: “That‘s when I realized that I could also paint, draw, and sculpt.”

In secondary school, it was an art teacher who encouraged Genevieve to give arts a try as a profession. She took the advice to heart and was accepted by the National College of Art and Design in Dublin, where a world full of possibilities opened up: “We were expressly invited to make a stab at a wide variety of techniques. I initially tried ceramics design because I really enjoyed pottery at school, but I quickly switched to jewellery design because I saw greater potential in it.”

Living Metals / Gaelic alchemy

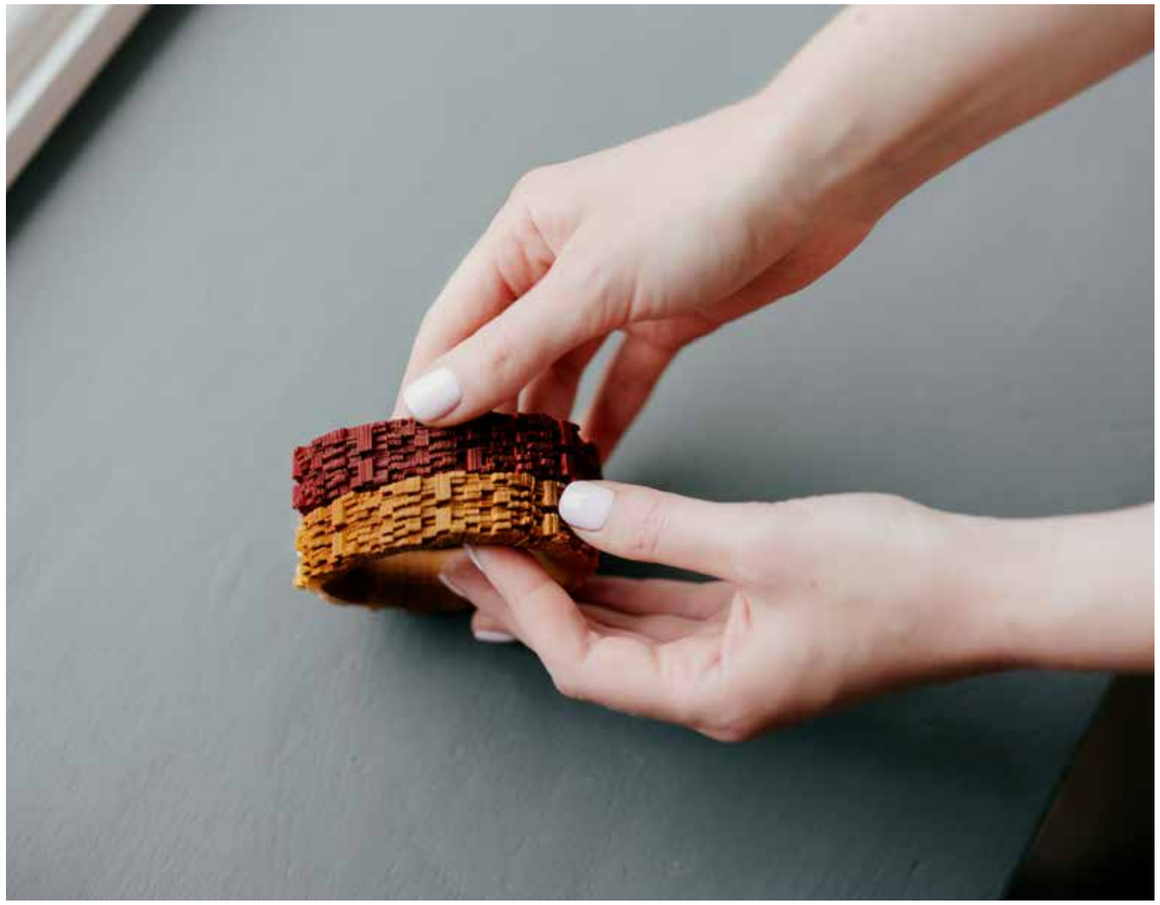
Linz via Antwerp

Without any affectation in light of her open and amiable disposition, Howard has remained down-to-earth and relocated from Dublin to the continent after earning her BA. After three years of increasingly successful artistic work, she moved to Antwerp in 2018 to pursue her Master‘s degree at the Royal Academy of Fine Arts, where she studied Jewelry Design, Gold and Silversmithing. “I have high expectations regarding the artisanal quality of my work,” Howard explains. “I try to blend the interfaces of the analogue and the digital and merge them into something entirely new.” A professor soon advised the student to transfer to the University of Art and Design in Linz, which is also known in Belgium as a laboratory heavily geared toward digital techniques. The small but excellently equipped university was the ideal environment for the Master‘s student to thrive: “There, I was able to explore 3D printing methods and robotics extensively.”

Lightweight products made of linen paper

Starting with her passion for piano sheet music, Howard‘s focus migrated toward working with paper. While browsing a Dublin stationery store, she found a suitable material: Japanese linen paper. Its sculptural quality immediately appealed to her and inspired her to use it to create three-dimensional objects. She used electronically controlled equipment, such as 3D printers or laser and water jet cutters, and followed her approach to fusion, often combined with other components, such as silver. In addition, she intended to impart a certain musicality to the material at the time. The results of her experimental series earned Howard her Bachelor‘s degree in 2015 and the Craft & Design Award of the Institute of Designers in Ireland (IDI). Gallery Marzee in the Netherlands, which specializes in contemporary art jewellery and is considered one of the world‘s leading galleries in this field, was also impressed: they discovered the young woman‘s work and immediately signed a contract with her. This proved to be a real stroke of luck that allowed Howard to participate in exhibitions and even garnered a few shows of her own on three continents, including in London and Melbourne. One can also find her art in the Dallas Museum of Art and the CODA Museum in the Netherlands.

Living Metals / Gaelic alchemy



Mail from Reutte

The “Steel City” itself, which proudly cherishes its industrial heritage and its Ars Electronica Festival - whose lists of artists already featured Howard - has been a pioneering force in digitalization and was also an inspiration. “Given the daily tapping of the furnaces, steel production remains omnipresent in the city, which certainly contributed to my delving into metals”, says Howard. In any case, Howard‘s metal work took a new direction in Linz on the Danube River. Here, she was able to fulfil her long-standing dream of studying the anodization of metal. Anodizing is an electrochemical process used to produce a thick, protective layer on the surface of metal parts using oxidation. Howard developed a digital tool for this purpose, which translates the frequencies of music or the human voice into voltage, which, in turn, can perform magic in creating a range of hues on the surfaces of reactive metal (see Infobox).

Before turning to niobium, the multi-talented artist initially conducted her experiments on titanium. Since niobium is difficult to procure and quite costly, Howard, at the advice of Vienna Textile Lab founder Karin Fleck, contacted Plansee in Reutte. She did not seriously expect a reply. To her surprise, she received a friendly response from Plansee. The company immediately expressed an interest in an anodizing process using music, adding a new facet to niobium processing and finishing. Howard received an invitation to Reutte, along with an offer by the company to sponsor the material for her experiments. Robert Grill, Development Engineer at Plansee, shares: “As early as 2003, we started, together with the Austrian Mint, to issue a silver-niobium coin as an annual collector‘s item. The coin‘s niobium core was dyed similarly to what Genevieve used. As a result, we saw Genevieve Howard‘s idea as a wonderful opportunity to acquaint the broader public with the special properties of niobium.”

Gaelic anodizing

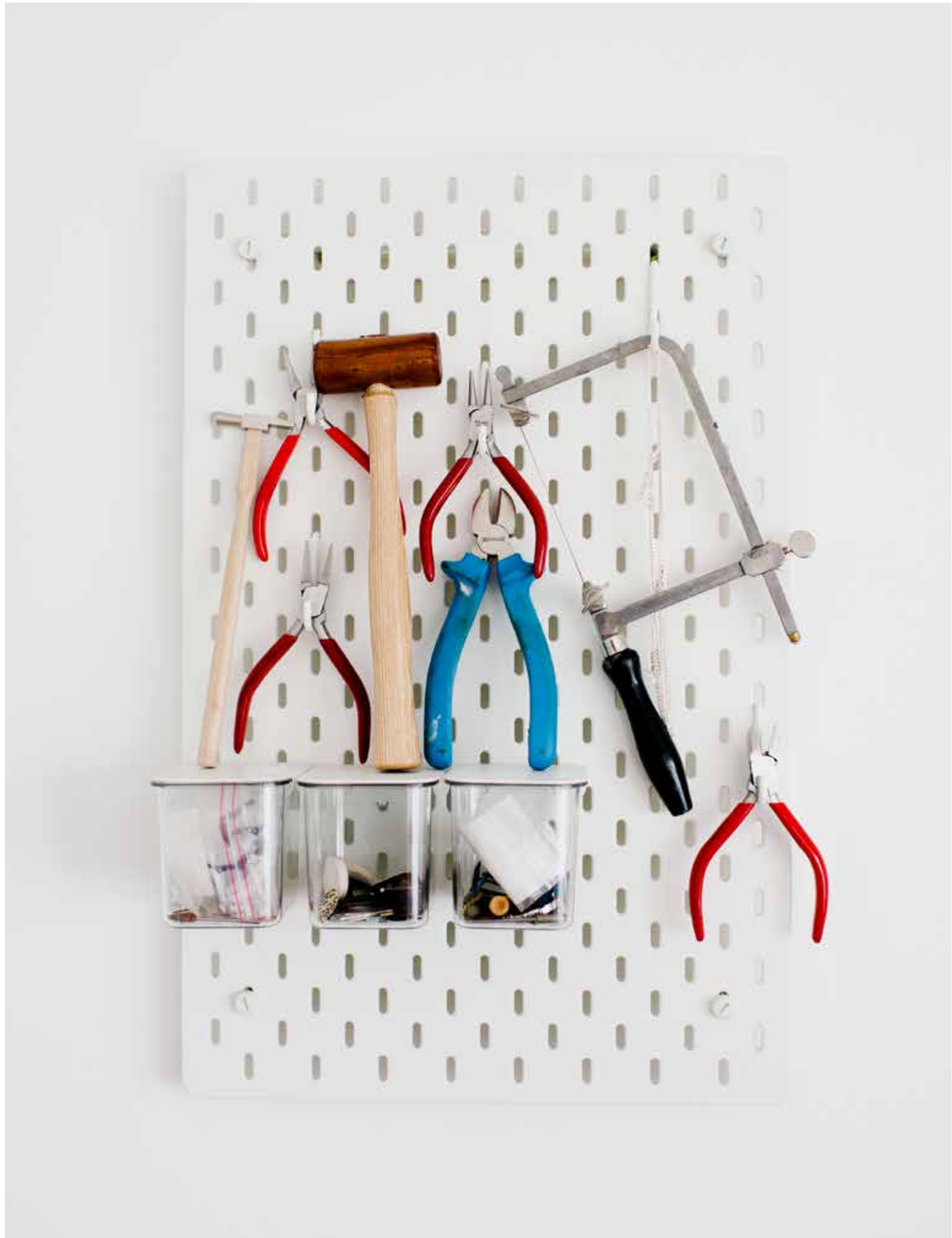
For her Master's thesis - a necklace made of anodized niobium - the artist started a back-and-forth package exchange with Plansee, where the individual links of the necklace were cut from a niobium plate according to Howard's design specifications. Afterwards, she set about anodizing the individual workpieces. For this process, she capitalized on one of niobium's unique properties: niobium is one of the reactive metals. Its reactivity emerges when energized. Under the influence of voltage, it forms different oxide layers on the surface, whose thickness increases with increasing voltage. Metallurgists and chemists know this process as anodizing, which is associated with a visual effect. For this effect, the workpiece is connected to a power source and dipped into a solution (usually sulfuric acid). When the current flows, electrolysis takes place. The oxygen released thereby reacts with the surface of niobium, anodizing it. Since light sources are refracted more strongly on an anodized surface, these surfaces appear coloured to us. A voltage of as little as 15 volts is sufficient to impart a light bronze shade to the metal.

At 110 to 120 volts, niobium features a dazzling opalescent green colour. Genevieve selected traditional Irish music in Gaelic, the way she had learned to sing from her mother, for the anodizing process. This is a traditional Irish style of singing known as Sean-nós, which is highly ornamented. It is typically performed a cappella. Genevieve, however, opted for a synthesizer sound-scape as the musical counterpart for her voice: "I did this, on the one hand, to make the frequency range of the music richer for the anodizing process and, on the other hand, to combine the archaic and electronic spheres in my work here as well."

There is a lot left to do

Howard graduated with an MA with distinction in 2019 for this work. She now lives in Howth again and has opened a studio. She garnered much recognition for her niobium objects anodized in such an exceptional process. "As artefacts, they stand on their own," says Howard, who herself is passionate about wearing earrings. "But of course, they become even more interesting when you are familiar with how they are made." Artistically and technologically, she still has a long way to go regarding the sound-based anodizing of niobium. "In the next step, I want to find out how one can control the anodizing process in terms of sound, and I would also like to work with niobium in 3D printing. I know nobody has done this yet because niobium is difficult to process. But that is precisely what makes it so attractive to me." She would also like to explore the virtual architectural quality of her three-dimensional pieces of jewellery as it relates to the variation of light and shadow. In any case, the collaboration with Plansee continues: "I am very excited about how and in what direction things will develop."

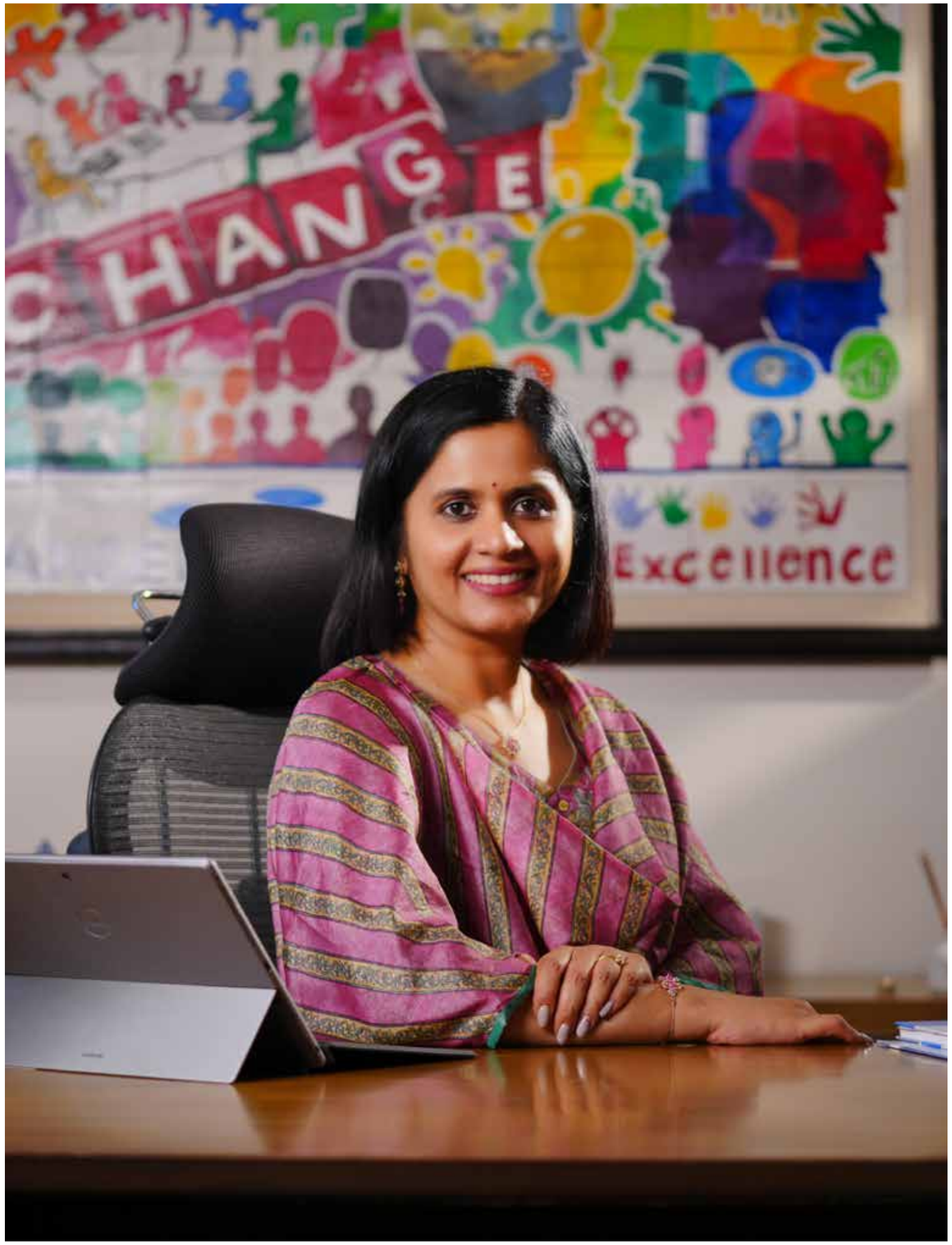
Living Metals / Gaelic alchemy



Between silk and wire

Plansee India has its registered office in Mysore, a city in the south Indian state of Karnataka. Supriya Salian assumed management of the company in 2019 and has been at its helm ever since. Plansee specializes in the production of tungsten and molybdenum wires. In addition to manufacturing outstanding products, Supriya Salian spends much time helping her employees to develop and improve their lives.

Living Metals / Between silk and wire



Employees of Plansee India
laying a picture out of petals

Mysore

The three-wheeled rickshaws clatter across Krishna Rajendra, a traffic circle in the heart of Mysore. The statue of Maharaja Nalwadi Krishnaraja Wadiyar is located in the centre, beneath a stone canopy. Various textile shops are situated around the square, offering colourful silk sarees adorned with gold embroidery. Mysore is one of the vital production centres for Indian silk. Millions of silk-worms are feeding on mulberry leaves in the regions around Mysore. The thread from their cocoons is used to produce luxurious silk fabric on looms. At the same time, an entirely different kind of filament is produced just 20 minutes by car north of Mysore: threads that are much thinner than silk but have an exclusive metallic silvery colour. Aside from other products, Plansee India manufactures ultrafine tungsten and molybdenum wires.

On modern buildings, which could just as easily be situated in Europe or the USA, the sun is reflected by Plansee India's dark tinted windows. Outside there is a manicured grassed area with shrubs and trees. This is where the five production buildings are located. Supriya Salian is sitting in a modern but simply appointed office, and pictures of everything synony-mous with Plansee India - its history and developments - are hanging on the walls. Supriya Salian has managed the company since 2019, which her father founded in 1987 with two business partners as Wolfram-Moly Products, and has been part of the Plansee Group since 2010. Even though Supriya Salian initially had different career plans, she manages the company successfully.

For years, Plansee India has been running a school for children whose parents cannot afford the usual school fees in India. Over 200 children receive free education in this way.

“I earned my Master‘s in Computer Engineering in Boulder, Colorado, in the USA,” she comments. After returning to India, she was initially searching for a job in a company. And since she had some time, she began to help her father with small IT upgrade tasks in the factory. That was the plan at the time. One morning, one of her father‘s business partners passed away unexpectedly. Supriya began to support the company and her father during this challenging period. And after some time, she decided to stay on board. “I was the boss‘ daughter, but it was important to my dad and me that I could earn the staff‘s recognition and acceptance on my own.” Supriya started at the bottom, learning almost all of the company‘s work steps from the ground up. As a fast learner, she missed no opportunity to learn something new - in Production, Sales, IT, or Finance and Administration. Her father and his business partner quickly recognized that Supriya‘s IT proficiency, modern management approach and technical understanding made her the ideal successor for Plansee India.

Even though Plansee India now manufactures several other products using different technologies, the company maintains its focus on fine tungsten and molybdenum wires.

Today

Today, 18 years later, Supriya enjoys not only the employees‘ recognition but also that of the other industrial enterprises in the city. The Confederation of Indian Industries (CII) in Mysore elected her their chairwoman. What was once founded by her father as a family business has evolved into a high-tech company with over 500 employees in Mysore. Even though Plansee India now manufactures several other products using different technologies, the company maintains its focus on fine tungsten and molybdenum wires. These wires are nearly invisible as they heat the windshields of modern automobiles, cut even the most rigid material, soar as antennas on satellites or glow as filaments in halogen lamps. They are also used in medical technology, allowing precise surgeries to be carried out or for robotic arms to move. The diameter of the wires is often no more than 0.015 millimetres. By comparison, human hair is four to five times as thick. The expertise that Plansee India developed concerning wire drawing and the wires‘ exceptional quality recently prompted the Austrian parent company to relocate the wire manufacturing operation almost entirely to India.

This was a truly proud moment for Supriya Salian and all employees of Plansee India. Still, Supriya is modest about her success. She is a loving mother to her teenage daughter, a homemaker in addition to her primary occupation, and passionately involved in social projects. In India, companies are required by law to spend a certain percentage of their revenue on social projects. For Supriya Salian, though, social issues are integral to Plansee‘s vision.

“Bangalore, India‘s IT hub, is not far from here,” says Supriya. “Generally, we have good availability of technically skilled and qualified candidates. At the same time, there is a huge lack of basic infrastructure and services. Moreover, many of our female labourers are single mothers. They come from difficult family circumstances. As a company, it is essential for us to improve their living

conditions long-term." For Supriya, this includes favourable working conditions and a high degree of appreciation. "With little things, we help to put a smile on faces, such as by celebrating Women's Day once a year, going to the movies together, going out for a nice dinner or looking for a project we can implement together. On one occasion, for example, we visited a children's home and spent a fun afternoon with the children there," Supriya recounts.

Education is another critical aspect. Supriya knows that education is the key to effectively improving one's life. She knows that her education and training led to her success. And she wants to ensure that everyone has access to a good education. Unfortunately, in India, access to good schools is not free. Financially disadvantaged families often cannot afford tuition. Three years ago, Plansee India, therefore, decided to take over the management of a school. "A few parents whose children attend the school pay tuition, but everyone else is not in a position to do so. So we cover costs such as the teachers' salaries, maintenance, and the construction of classrooms and other infrastructure. As a result, approximately 200 children from first to tenth grades go to school here, without the parents having to pay anything," Supriya explains. But the company's commitment goes further than that. For Supriya, it is essential that the employees feel connected to the school project. "Employees who enjoy doing so are permitted to teach at the school a few hours every month," she adds. The response that this offering has been met with has been enormous, as has its impact. The students not only receive real-life training but also experience the benefits of it.

"With little things, we help to put a smile on faces."

As the sun goes down and the shadows become longer in the bustling streets, thousands of lights shine at the former Palace of the Maharaja of Mysore. The road is filled with honking cars and mopeds. Restaurants and stalls sell Mysore Pak, a sweet speciality made with ghee, sugar, gram flour and cardamom. Mysore is a city with a rich history and plenty of opportunities for the future. Plansee India is proud to help shape this future.

What is actually sustainable?

A practical approach to the concept of sustainability with Dr. Fred Luks

Living Metals / What is actually sustainable?

Welcome, Dr. Luks. In recent debates, the term ‚sustainability' has been used mostly in connection with climate change and topics related to the environment when, in fact, it covers so much more. How would you define the meaning of the term?

Dr. Fred Luks: I think you have to view the term both in a societal and a corporate context. Solutions that are sustainable are consequently those that help to create a balance of environmental, social and economic benefits. This is about ecological topics, but also just as much about economic and social issues. To arrive at a sustainable solution, you have to consider and reconcile these three areas. For example, it is not possible to be environmentally and socially sustainable without being economically successful - or else you are gone from the market quickly. In today's society and economy, however, the core of sustainability is change. I refer to the United Nations' 17 goals (see graphic on the left), which all represent transformation. As a company, it is not sustainable, for example, to simply continue with business as usual and then donate some money to charity. A company becomes sustainable when it transforms its core business so that it is not only ecologically sound, but socially and economically as well. So societies and companies must undergo a genuine transformation process on their journey to true sustainability.

This can't be easy to implement.

Dr. Fred Luks: Most certainly not. Incidentally, there is one factor that often plays a much greater role during this transformation than technical or financial matters - the aspect of corporate culture. If you want change in a company, questions such as how we deal with one another, how we communicate with one another, how we define success or how co-determination is implemented in the company are at least as important as the economic issues. The culture of the company must embody the principle of sustainability. Everyone in the company has to be aware of this, and everyone has to want to participate. If, on the other hand, corporate management attempts to dictate the company's sustainability strategy from the top, without the employees going along, Peter Drucker's famous quote often comes into play: “Culture eats strategy for breakfast.”

The Plansee Group celebrated its 100th anniversary last year. Is the fact that a company has become this old a sign that it is sustainable?

Dr. Fred Luks: Well, at least it is a strong indicator. The fact that a company has existed for such a long time and operated successfully in the market demonstrates that it is very sustainable within the meaning of long-lasting. For example, I also find the Catholic Church to be a very sustainable institution. It has sufficiently managed to adapt to the circumstances of the particular times to be able to continue to exist. Still, this very example also shows the particular challenge. We are in the process of experiencing a turning point in history. Many things are changing very rapidly and fundamentally. To cope with this transformation successfully, it is therefore not enough to have a long tradition. There is a beautiful quote that says: Tradition is not the worship of ashes, but the preservation of fire. This sums it up quite nicely. On the other hand, however, it is very helpful in difficult times to have roots. So companies that can look back on a long history, during the course of which they have most certainly overcome other challenges, can build on this knowledge and, as a result, often cope better with the new challenges.

Have companies genuinely understood the topic of sustainability yet, or is it still more a “nice-to-have,” that you go along with as long it does not hurt?

Dr. Fred Luks: This has changed drastically over the last two to three years. In many markets, it has already become established that sustainability is anything but “nice to have” and that the market expects companies to seriously change their business models. This started in the food industry, where organic, better animal welfare and fair production conditions are important factors today. Then it was the fashion industry, which has to be mindful of more sustainable raw materials as well as fairer working conditions. At present, the furniture industry is undergoing the transformation. But other areas are also following suit. Ten years ago, the financial sector, for example, still mocked the notion of sustainable accounts. Today, many major financial institutions offer exactly these accounts. People are becoming increasingly aware that the way we operate has no future. The events that

“The crisis consists precisely in the fact that the old is dying and the new cannot be born.” *(A. Gramsci)*

have transpired in recent months have made this very clear to us again. The dependence on Russian gas or raw materials and products from China has proven to be a huge problem. I am therefore convinced that everyone has realized that the party is over for now. Something has to change. On the one hand, this is a very challenging situation, but on the other hand, I also perceive it to be an attractive challenge for management. And I believe we can do it. At the same time, though, I also admit that I believe it because I hope it.

Achieving complete sustainability is a high bar. Can companies even achieve it?

Dr. Fred Luks: This certainly depends on the sector. What does not help, though, is to demand perfection from yourself. For example, I don‘t eat meat and don‘t own a car. But I won‘t save the world with this. Still, it‘s a start. The key is to set achievable goals. Every improvement step matters. If you try to achieve one hundred percent from the start you will very likely fail. Additionally, there are many factors you cannot influence: general political conditions or customer behavior are not within the companies‘ sphere of influence. Companies should therefore initially focus on aspects that they can truly control themselves. If everyone did that, we would already make a lot of progress.

Are politicians creating the right general conditions for companies to become more sustainable?

Dr. Fred Luks: A year ago, I would have answered that I see this issue critically, but much has happened since then. This is especially noticeable when considering that the topic is now also being discussed in business-oriented and conservative circles. Some of the demands that are being voiced would have been considered eco-radical just a few years ago. This transformation has also found its way into politics, and the course is being set now to implement the change toward a sustainable society. However, it is important for politicians to not shy away from communicating clearly what this means for us, and that our lives will fundamentally change. Another step that is absolutely essential now is environmental tax reform. However, there is a risk that many will perceive this necessary change as a threat. Gramsci once said in this regard: “‘The crisis consists precisely in the fact that the old is dying and the new cannot be born.” This is exactly the situation we are in today. We know that our lives will change fundamentally, but don‘t know yet how. This causes fear among many people, and politicians must respond.

To avoid excessively extensive changes, some companies take measures that can be referred as greenwashing rather than actual change. How do you see this?

Dr. Fred Luks: I recently read an article in a major German daily that the police conducted a search of a company suspected of greenwashing. I found this to be very significant because it demonstrates that greenwashing is no longer a trivial offense. At least it is not when customers are deceived about products and services by purporting that they are sustainable, when they are not. On the other hand, I don‘t consider minor greenwashing to be such a terrible thing. After all, once you start with the topic of sustainability, you will have to deliver at some point. Customers are paying attention. I‘ve frequently experienced that communication precedes action in this regard. A company initially presents itself more environmentally friendly than it is, then it receives critical questions from the customers and finally the company actually changes.

Dr. Fred Luks is one of the most distinguished sustainability researchers in German-speaking parts of the world. He studied economics in Hamburg and Honolulu and has long been involved in research, teaching and management of issues that will affect our future. He supports organizations with respect to sustainability and transformation. After serving as a visiting professor at the University of Hamburg, he was Head of Corporate Sustainability at a large financial institution. Thereafter he was ultimately tasked with developing and managing the Competence Center for Sustainability at the Vienna University of Economics and Business as well as becoming Head of Unit for Sustainability at the Wiener Neustadt University of Applied Sciences. Dr. Fred Luks lives in Vienna.

What does a company have to do to devise a credible sustainability strategy? Or in other words, how can one tell that a company is serious?

Dr. Fred Luks: First of all, this requires specific goals, as well as specific measures to achieve these goals. The goals also have to be credible and satisfactory. A steel manufacturer that plans to save two per cent CO_2 over the next ten years has a goal that is specific, but certainly not satisfactory. And as I mentioned earlier, the corporate culture has to be right. This requires a time investment as well as a financial investment to accordingly influence the corporate culture.

Companies are now obligated to compile sustainability reports. Is this kind of political and regulatory pressure necessary?

Dr. Fred Luks: The real problem is that those who issue the reports have not yet changed anything. I can compile a sustainability report and publish it without doing a single thing. This doesn‘t help anyone. What‘s more, such reports can cause a lot of stress among those responsible for them. And in the end, nobody reads the reports. That is frustrating. Even though reports are important, I would advise to pursue more pragmatic approaches and focus to a greater extent on changing the behavior of the companies and their employees, which is far more important.

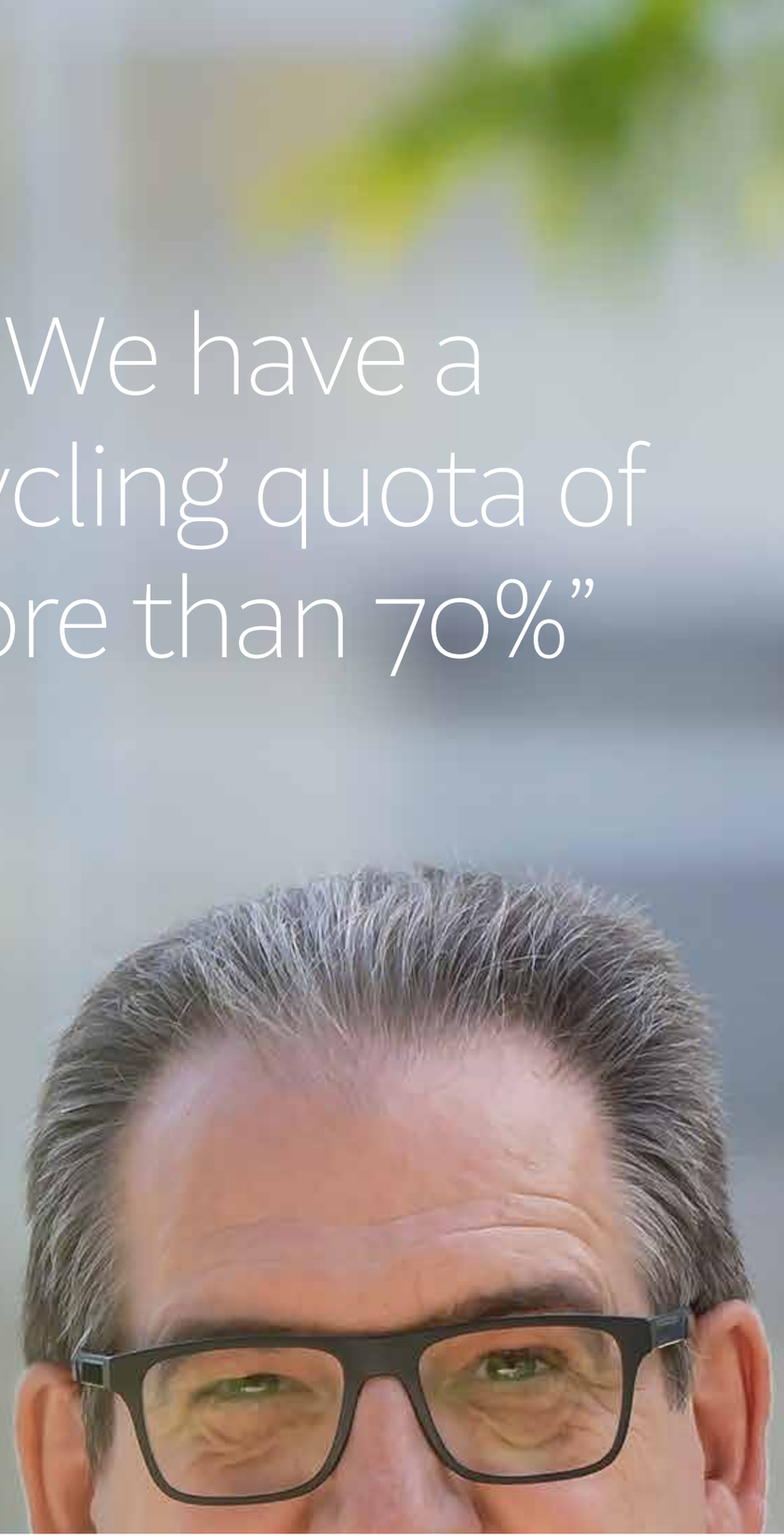
Is genuine sustainability even possible given our fixation on growth?

Dr. Fred Luks: The simple answer is no. To believe, in a finite world, that we can continue to produce more and more is an illusion. In the long run, there is no green growth. However, those that say that growth has to stop have not offered any conclusive solutions. Retrenchment strategies are not realistic. At the same time, our affluence will not grow indefinitely. Politicians time and again say that we must defend our security, our freedom and our prosperity. However, they do not say how this is supposed to work in a finite world with a growing worldwide population and in the face of climate change. How do we create a functioning economy without growth? This question, though, is currently only being discussed in North America and Europe, and not in the developing countries. They are after all are seeking to catch up with the rich industrialized nations - and this requires growth.

One final question: Wherein lie the pitfalls during the transformation toward greater sustainability?

Dr. Fred Luks: Well, we have to come to terms with the fact that the entire process will produce not just winners, but also a large number of losers. Some companies will not manage to change. Additionally, I see great challenges in terms of skilled labor. We need a lot of skilled professionals, and I don‘t mean university graduates, but craftsmen as well as skilled workers who move the conversion of the economy forward in very practical terms. What‘s more, we are also deluding ourselves way too much. For example, when it comes to mobility, we now hear that everything has to become electric, and that this is the solution. I don‘t see it like this at all. The rare earth elements and the countries from which they originate are highly problematic. What we need, rather, is to reinvent urban and rural mobility. The goal is to devise a grandiose plan if we take the topic of sustainability seriously. The sooner we concede that our lives will fundamentally change and we come to terms with this, the more successful we will be in the end.

“We have a recycling quota of more than 70%”



In the background is the historic administrative building of the Plansee Group. The view is directed at the monument of company founder Paul Schwarzkopf, who once succinctly summed up the company‘s purpose. Karlheinz Wex is sitting on a park bench in front of the monument. He briefly summarises the key elements of the sustainability program of the Plansee Group.

“ … we know in detail, for select products, how much more they would be worth if they had a lower carbon footprint.”

Mr. Wex, on what is known as the Fairytale Meadow at the Reutte site, we are find ourselves at the heart of the Plansee Group, where the monument of company founder Paul Schwarzkopf was dedicated on the occasion of the 100th Anniversary held last year. He coined the definition of Plansee's corporate purpose, which applies to this day: “Our metals drive machines, bring light into our homes, transmit words and pictures across large distances, and do thousands of other valuable and important things”. Is this historically handed-down corporate purpose limiting, or does it help to create focus?

Karlheinz Wex: I do not perceive it as limiting. On the contrary: This is our North Star. From one hundred years of experience, we know that our clear focus on our material groups covering tungsten, molybdenum, and hard metal has made us successful. The founding of Plansee at Lake Plansee in Tyrol traces back to the availability of inexpensive and green hydroelectric power.

What does the Group's energy mix look like today?

Karlheinz Wex: The energy mix as well as the associated CO_2 footprint are heavily dependent on the local circumstances at the individual locations - depending on how the power is generated. In France, the CO_2 footprint is very small, in Poland it is very large. In Reutte, about two thirds of the energy comes largely from green hydroelectric power. The remaining third of the energy input consists of natural gas, which we need to produce hydrogen.

The CO_2 balance at the Reutte location has traditionally been good, i.e. low. However, this only holds true when one assumes that clean electricity is used. In reality, this is not the case since purchased electricity generated by coal- and gas-fired power plants in neighboring countries also flows into Austria's grid. So how can a company improve its CO_2 footprint? Is this only possible through compensation payments?

Karlheinz Wex: This is only possible through transparency. Our improvement efforts begin with us finding out from our utility company how large the CO_2 footprint per supplied kilowatt hour is. In Austria, one kilowatt hour on average has a footprint of 300 grams of CO_2. We know the numbers of every single location and have examined all options to procure greener electricity.

This does not happen overnight.

Karlheinz Wex: Correct. The entire supply grid has to be aligned accordingly. We also have to be prepared that green electricity will be more expensive.

And who will bear these additional costs?

Karlheinz Wex: We spoke with our customers about this and know in detail, for select products, how much more they would be worth if they had a lower carbon footprint. Some customers say that they are prepared to pay x per cent more. Others have signaled that they desire a smaller carbon footprint but are unwilling to pay more.

The Plansee Group recently calculated the sustainability values of its molybdenum and tungsten materials. What makes a material sustainable? And how can a material be sustainable when its production is energy-intensive?

Karlheinz Wex: Previously, conducting an analysis included the amount of energy that must be expended to extract and process raw material and how long the deposits of a particular raw material will last. However, the so-called Sustainability Scorecard* that we created for our materials is about much more than material availability, energy expenditure and CO_2 pollution. The Scorecard results from a critical analysis of the entire production and value creation chain: To what extent is the ecosystem being influenced? What are the production conditions in the country? Are human rights respected, and are the working conditions safe and fair for the people? In what final applications are the processed materials used? Is it in the defence industry, medical technology or semiconductor industry? The key at the end of the review process is to determine whether the resource that we process, which in our case is scarce, can be recycled economically and physically. Depending on the answers to these questions, the material is more or less sustainable (see the article “Green metal - is there such a thing?” on page 70).

And why do I need a Scorecard for this?

Karlheinz Wex: The Scorecard clearly and transparently shows what influencing factors exist and their weightings. From this, we can derive focal action areas and set goals. We see at a glance what we have to do to improve our score and with this, the sustainability value of our materials. We are convinced that this aspect will become increasingly important for our customers.

Many metal industry companies are working on more climate-friendly products or issuing corresponding declarations of intent. Will this prompt you to follow suit?

Karlheinz Wex: If you refer to the steel manufacturers, we can stay relatively relaxed by comparison since our technological challenges are considerably less than those of the steel industry. Our processes are based, to a large degree, on electricity. If that is green, our homework in this regard is almost done. What we still have to accomplish is to switch our hydrogen production from natural gas to green power. At that point, we will be well on our way in Scopes 1 and 2, i.e., in our immediate sphere of influence. Our emissions balance will look even better when we recycle a significant portion of our materials and further expand the recycling process. We have been working on this issue for many years now, and our tungsten recycling rate exceeds 70 per cent (see Infobox regarding Scopes 1, 2 and 3).

Would that be all it takes?

Karlheinz Wex: When you look at Scope 3, the task becomes larger. This is about the process by which the raw material comes from the mine to us, and how the finished products get to the customer from us. We will have to have a very in-depth discussion with our suppliers in this regard to ensure that we are not the only ones to do our homework but that everyone else does too.

Is it correct that production at Plansee in Austria was electric at some point in the past, but less expensive natural gas provided an irresistible economic opportunity, and that today Reutte is faced with a task that had already been resolved?

Karlheinz Wex: This is a longer story. We have never been one hundred per cent electric - we have always used gas for heating. However, we did not use natural gas for a very long time because it was not available in Reutte. When the utility infrastructure was put in place around 2006 or 2007, we debated whether it would not perhaps make sense to switch specific processes in our manufacturing operation to natural gas. Electricity shortages existed even then, and we decided to change our hydrogen production to natural gas. Just like everyone else, we assumed at the time that the supply situation was reliable.

So among the large number of companies now moving away from natural gas, at least you know where the journey will take you?

Karlheinz Wex: Yes, except this only helps us in the medium-term. Having assessed all available alternatives as early as the fall

of 2021, we chose the right technology for us and ordered initial equipment. Unfortunately, we will not receive it until one year from now. Still, we have already found a way by which we can considerably reduce our carbon footprint - which is essentially always created by the production of hydrogen using natural gas - over the next three to five years.

To what extent are your efforts reliant on the relevant general framework from a political perspective?

Karlheinz Wex: In terms of the power supply, we need stable general conditions. It does not help us when we switch our hydrogen production operation to electrolysis and the electricity that goes into the electrolysis is generated from coal.

In a Ceratizit podcast, you expressed your displeasure with many companies declaring themselves to be climate-neutral, even though they consume energy that causes CO_2 emissions. What would you be more agreeable to?

Karlheinz Wex: We are at the beginning of this transformation. At present, many companies want to appear greener, but forget to do their homework. I would be placated by everyone doing this kind of homework in their own area of responsibility, i.e. Scopes 1 and 2.

These days, many companies are urged to implement CO_2 reduction measures by major customers who desire to make their supply chain climate neutral. Does this also apply to Plansee?

Karlheinz Wex: It is standard practice today for customers to inquire about our sustainability strategy. They want transparency and want to know the CO_2 footprint of our products as well as what measures we have in place to reduce it.

Major U.S. technology groups are known to word such requests in a friendly tone but are uncompromising regarding the issue. Is this what you are experiencing?

“
It is standard practice today for customers to inquire about our sustainability strategy. They want transparency and want to know the CO_2 footprint of our products as well as what measures we have in place to reduce it.
”

Karlheinz Wex: Our customers‘ expectations are unequivocal. They are under pressure themselves - from the consumer and their customers- provided they are part of value-added chains. Transparency is the only way to deal with this pressure. Everyone knows that we will not achieve the transformation overnight and will only accomplish it in the medium term when everyone is working together - not just the companies but also the citizens. In China and in the USA, as well as in Europe.

Being strict regarding this issue means that one is sorted out relatively quickly when it is impossible to adhere to targets and agreements?

Karlheinz Wex: When better alternatives are available: yes. You definitely have to make sure that you are at the forefront. When we devised our sustainability strategy last year, we spoke not only with our employees but also with our customers and stakeholders. Our employees, even more so than the remaining stakeholder groups, expect the Plansee Group to excel over our competition regarding sustainability. Our employees know that being a sustainable company is in our DNA.

Does the Plansee Group pursue a uniform sustainability strategy worldwide? Or are there differences between Plansee and Ceratizit, or between Austria and Germany on the one hand, and countries such as India and China on the other?

Karlheinz Wex: We developed our sustainability strategy jointly within the Group. Both divisions (Plansee HLW and Ceratizit) and employees and customers from all business activities and regions were involved. The core of our strategy consists of four key fields and is binding for the entire Group. Below that, at the division level, different focal areas exist, of course, since the challenges are different.

What are these four key fields?

Karlheinz Wex: They are sustainable technology and product innovations, our environmental and social responsibility

in the supply chain, material and resource efficiency in production, and our commitment to being the preferred employer for our employees.

Where are the challenges the greatest?

Karlheinz Wex: We experience the most significant challenges wherever we need hydrogen in large quantities. In Germany, we are faced with the problem that the carbon footprint of electricity is much higher due to the high number of coal-fired power plants. Buying electricity that has a smaller footprint is a huge task. Therefore, recycling plays a vital role for the Plansee Group.

Recycling plays an important role for the Plansee Group. Would you briefly summarize what the current status is, and what is planned for the coming years?

Karlheinz Wex: We essentially recycle tungsten and cobalt. In the case of tungsten, 80 per cent of natural resources are located in China, while the largest cobalt deposits can be found in Central Africa, a crisis region. We wanted to become more independent. In 2008, we acquired GTP, which already had extensive recycling expertise. A few years later, GTP acquired Tikomet, a Finnish company specialized in the so-called zinc recycling process - a particularly energy-saving reclaim process for tungsten scrap. Later, we also acquired Stadler, which offers special expertise in the collection of tungsten scrap. As a result, today we have all the necessary tungsten recycling capabilities in our portfolio. This also has a positive impact on our CO_2 footprint: it takes much less energy to recycle tungsten than to use virgin raw material.

How high is your recycling rate?

Karlheinz Wex: Mostly, this depends on how much tungsten scrap is available at any given time. The year before last, we had a recycling rate of over 80 per cent. However, last year, it was just over 75 per cent because not enough scrap was available. Therefore, there are still technical constraints regarding the level of recycled tungsten that can be used for specific material qualities. However, we have been working for several years on developing hard metal types made of recycled material that have properties identical to products made of virgin raw tungsten.

> “We developed our sustainability strategy jointly within the Group. The core of our strategy consists of four key fields and is binding for the entire Group. Below that, at the division level, different focal areas exist, of course, since the challenges are different.”

Let‘s talk about definitions. How would you classify the climate goals “climate-neutral” and “net zero”?

Karlheinz Wex: “Climate-neutral” is used a great deal today by companies that pay close attention to their carbon footprint and arrive at climate neutrality by decreasing their footprint to zero through compensation payments or other compensatory measures.

Is this cheating?

Karlheinz Wex: Let‘s say their standard is not exceptionally high. If we took this approach, we could become climate-neutral relatively quickly. This would save us many investments because the compensation payments are considerably lower than the investments we are currently making, such as switching our hydrogen production to electrolysis. But what do we gain when company after company becomes CO_2-neutral on paper, and our CO_2 emissions as a national economy remain the same or even go up? This is where things don‘t add up for me. The path to “net zero” is considerably more demanding. Here, you look at the entire value chain, i.e., Scopes 1, 2 and 3 - to reduce CO_2 emissions according to the Paris Climate Accords by 90 per cent.

What is the difference between a material loop and recycling?

Karlheinz Wex: These topics are related. In a circular economy, the question arises as to which loop is being considered. Let‘s take our molybdenum loop, for example, We receive the material from the mine. We process this molybdenum without any loss. However, we sell waste from production, which is used in the steel industry as pure molybdenum as an alloying constituent and enters another loop there.

“Look at how the Plansee Group has also operated outside its factory gates during its one-hundred-year history. You will see high social responsibility and a genuine commitment to society.”

This molybdenum is then lost for you.

Karlheinz Wex: For us, it is lost. However, it is not lost for the national economy because steel is also recycled. It is also crucial in this regard to keep scarce natural resources in the loop for as long as possible. The higher the content of recycled material in this circulatory system, the more resource-conserving it is. The more fresh material has to be added, the higher the environmental impact.

In public, Plansee deliberately operated very discretely for a very long time. Many are unaware that the company has been very sustainable for quite some time. Is this now coming back to haunt you? Does this create a credibility problem and Plansee being wrongly suspected of greenwashing?

Karlheinz Wex: It is true what you‘re saying. We are a rather introverted company. We don‘t talk much about ourselves, neither when things are going well nor when they are not. In the past, this strategy served us very well. The people we deal with - our employees, customers, and suppliers - are very well aware of how we operate. And they also know how sustainably we work. Still, there are two areas where we now plan to communicate more extensively to the outside. The first is the labour market to appeal to potential new employees. Secondly, transparency in terms of sustainability is where the public has great expectations.

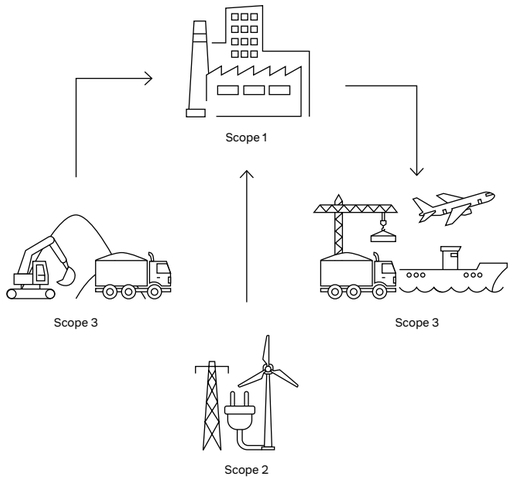
In a different context, you emphasised that Plansee, from the very beginning, invested in sustainable innovation and also made sustainable investments in its workforce. This suggests that your thought process is within the framework of a broad notion of sustainability. How would you define this notion in terms of substance? What is sustainable for Plansee - and what is not?

Karlheinz Wex: My understanding of sustainability is that taking a long-term view, in contrast to a short-term perspective, is a top priority. From the start, the development of our company went hand in hand with the development of our employees. For example, we have had the declared goal for twenty years of developing and filling eight out of ten managerial positions from within our ranks - and we meet this metric. At the same time, sustainable action also includes the employees‘ environment. Look at how the Plansee Group has also operated outside its factory gates during its one-hundred-year history. You will see high social responsibility and a genuine commitment to society. Especially during crises, it has become clear that people appreciate this commitment: When we had a devastating fire here at the Reutte site in 1996, not only did our employees demonstrate absolute loyalty, our suppliers, our customers, banks and insurance companies, and even our competition helped us.

In conclusion, let‘s come back to the topic of sustainability again. In principle, there are two schools of thought. One relies on foregoing things, the other on innovation, to achieve the goal of CO_2 neutrality.

Which one do you lean toward?

Karlheinz Wex: I expect people to become more open toward technological innovation, considering that in some circles there is a particular hostility toward technology when discussing the best concepts. For me, though, technological innovation is the solution. I aspire to ensure that the route to achieving CO_2 neutrality is unobstructed and open to technology. Of course, you can specify the framework. But politics must refrain from predefining what the technology must look like. As companies, it is up to us to find appropriate solutions with all our innovative strengths.



Scope 1: These are the direct emissions of a company. They include emissions from energy sources at the company's site, such as natural gas, fuels, and coolants, as well as emissions from the operation of boilers and furnaces for which the company is responsible or controls. Scope 1 also covers emissions of the company's fleet, such as cars, trucks or other vehicles.

Scope 2: Scope 2 encompasses indirect emissions from purchased energy. This includes emissions associated with the purchase of electricity, district heating or cooling - all forms of power purchased from a utility company.

Scope 3: Indirect emissions along the company's value chain are covered under Scope 3. They include all emissions from equipment not owned by the company and that the company also cannot control, but the company influences that through purchasing raw materials or goods. A distinction is made between upstream and downstream emissions. Upstream emissions are emissions that arise during the production of purchased raw materials and interests (for example, when a company utilises ores to manufacture its products, the greenhouse gases generated during mining are considered upstream emissions). Downstream emissions are emissions created by the goods the company sells (for example, when a company manufactures engines, the CO_2 that the engines generate are considered downstream emissions).

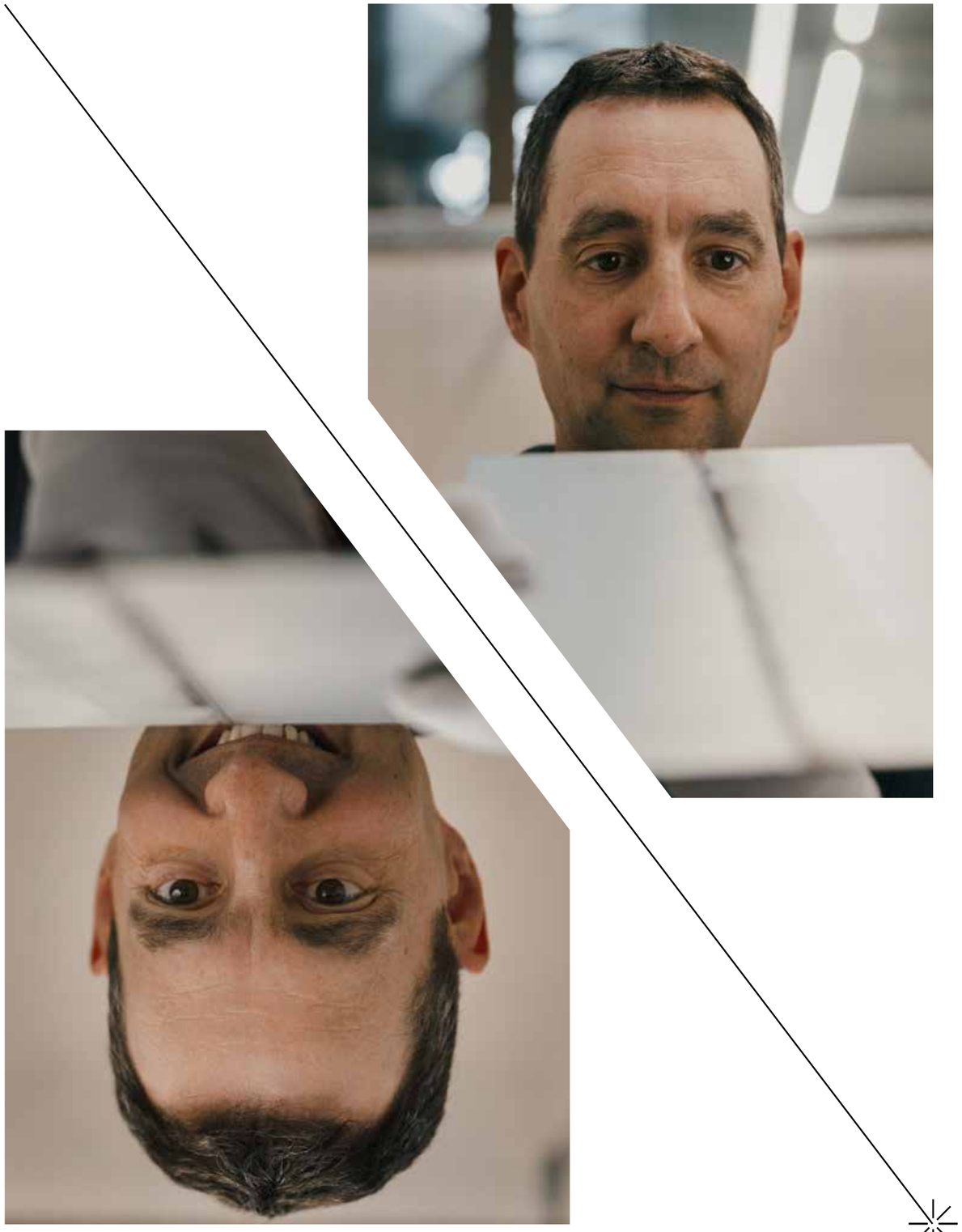
Light and shade

Those visiting Ceratizit in Luxembourg in the spring or summer need not search for a parking spot in the shade. Instead, powerful photovoltaic installations cover the parking spaces, keeping the cars cool while producing electricity.

During the summer, drivers enjoy a spot in the shade to prevent their cars from heating up too much. Ceratizit in Luxembourg now offers precisely that - and the system is even sustainable. Giant PV installations soar above the parking spaces, producing 1,253-megawatt hours per year. This approximately equates to the annual power consumption of 415 households. Alternatively, the power could be used to drive almost 158 times around the earth in an electric car or, in other words, 6.3 million kilometers at the consumption of 20-kilowatt hours/100 kilometers. What is much more important, though, is that this installation saves 526 tons of CO_2 annually.

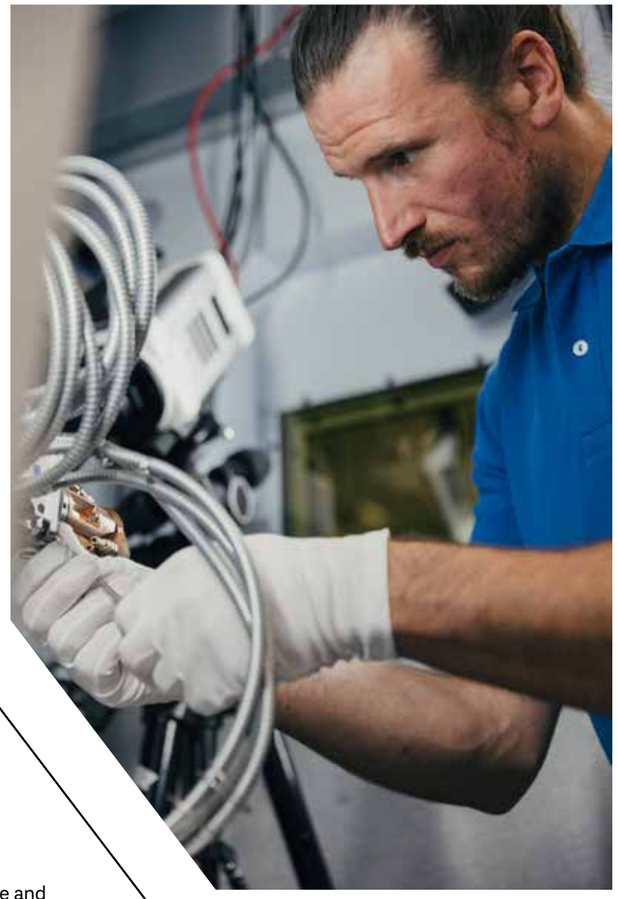
In the future, drivers of electric vehicles in particular will be delighted since 40 battery charging stations are planned to be installed in these parking spaces.

Living Metals / Light and shade



The invisible seam

When people hear the word “laser”, many first think about science fiction movies where the heroes and villains face off with laser swords. The term laser is synonymous with something futuristic. This notion is not too far off. For the Plansee Group, laser technology opens up new possibilities for processing molybdenum and tantalum. Matthias Rüttinger and his team at Plansee in Reutte are conducting necessary research in this regard.



The laboratory of Matthias Rüttinger, Markus Kögl and Bernhard Lang is situated rather inconspicuously at the end of a hallway in one of the large manufacturing facilities on Plansee‘s premises. If you expect to see tables full of notes and technical equipment, you will be surprised to find none of that here. Instead, the room is dominated by two large, square machines connected to each other by various cables. The laser is located in the smaller cuboid; the actual welding equipment is in the more giant cuboid.

Laser welding has been essential for the Plansee Group for some years. The hard metals tungsten, molybdenum, niobium or tantalum, which the Plansee Group uses to manufacture its products, have many positive properties, such as high heat resistance, low thermal expansion, high thermal conductivity, favorable electrical conductivity and corrosion resistance - but easy weldability is not one of them. At the same time, demand is high for components made of these hard metals, which cannot be blanked, cut or shaped otherwise and instead have to be joined - for which laser welding is needed.

The chip industry is a crucial market. Modern computer chips are no larger than a few nanometers. To store information in such a small area, tiny patterns are burned into these microchips using extreme ultraviolet light, forming the microprocessors‘ foundation. For this to work, the light must have an exact wavelength. And the process requires tin. In an exposure position, a laser beam impinges on tiny tin droplets and, as a result, is refracted so that the forwarded light has an exact wavelength of 13.5 nanometers. So far, so good. The problem is that tin is highly corrosive, which means it attacks materials with which it comes in contact. This can result in impurities in the container, rendering the tin unusable for the exposure process. To bring the tin from the tanks in which it is stored to its point of use in the exposure machine,

Living Metals / The invisible seam

Plansee developed small tantalum tubes. Tantalum withstands the corrosive effect of tin, making it ideally suited for this purpose. To ensure that these small tubes can be connected to the tanks, they require pressure-resistant connectors, known as fittings. And this is where laser welding comes into play. “The weld seam created by traditional welding would be much too large,” explains Matthias Rüttinger. “We need an almost seamless joint between the small tube and the fitting to allow the tin to flow unimpaired and ensure pressure resistance. This is only possible through laser welding.”

The research conducted by Matthias Rüttinger and his team currently focuses on optimizing weld seams. To examine this aspect more closely, the team has set up a high-speed camera in the welding system. This allows every welding operation to be recorded and evaluated on the laptop. The key is to examine different welding fluxes for their properties. “Our goal is to achieve a very thin and smooth weld seam, which then has a certain flexibility.” The challenges are manifold. The team must determine the correct composition and form of the welding flux, as this dramatically impacts the welding process. “Both aspects are interrelated. In terms of the welding flux, we are experimenting with different compositions of substances. So far, we produce a wire from the ingredients as soon as we find the correct composition. Wire has the advantage that it can be welded very cleanly. The drawback, however, is that it takes very long to produce the wire,” explains Matthias Rüttinger. The process is sped up when the different components are mixed directly in the lab in powder form. The disadvantage of powder, however, is that it is dispersed during welding, leaving behind microfine impurities on the welded product. Considering the

accuracy that is required for the use in chip production, this is a no-go. Another factor is the velocity and heat of the laser beam. “The laser beam makes it possible to generate great heat in a tiny spot. At the same time, though, the material cools off quickly after welding, which can cause high stresses in the workpiece,” Matthias Rüttinger adds. “The worst thing that can happen is that the weld seam itself disappears again.”

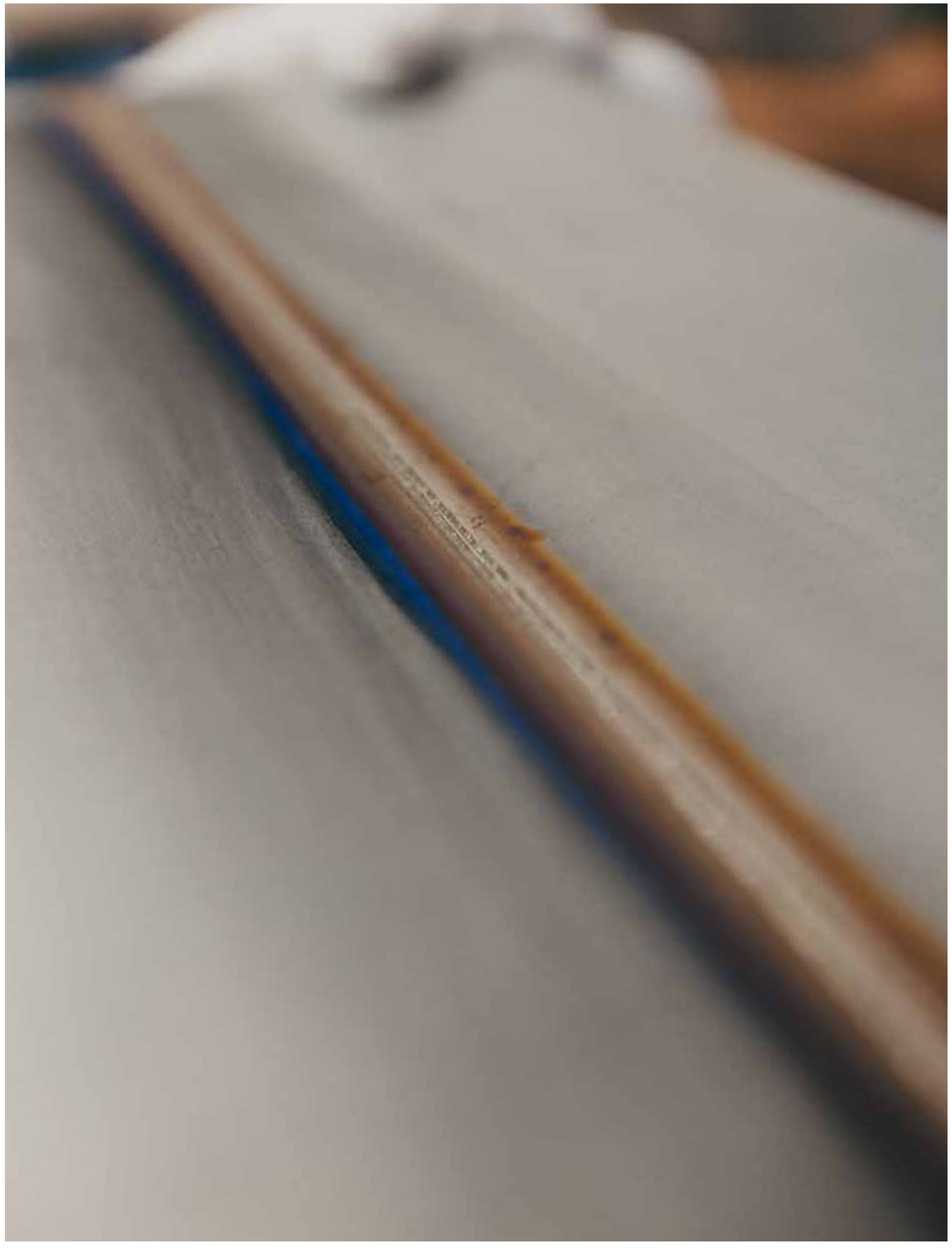
And so Matthias Rüttinger, Markus Kögl and Bernhard Lang continue to work diligently every day on new compositions of the welding flux, the proper velocity of the laser beam, and the optimal temperature of the laser beam. Soon, they will receive a new laser welding system that will be twice as powerful as the current one. “Surely, it is a constant process of trial and error, adapting and rejecting,” Markus Kögl explains. “But that is precisely the allure. We will find the correct formula at some point, and then we will know that the countless experiments were worth it.”

“The weld seam created by traditional welding would be much too large.”

The almost seamless laser welded joint is already within reach. Until it becomes reality, the development process of trying out, adapting, rejecting and new beginnings simply continues.

→

Living Metals / The invisible seam



New Life

There has been a clean room at Plansee in Reutte for four years where sensitive equipment for the semiconductor industry is manufactured. Now Plansee HPM has started to refurbish these high-tech products at the end of their life cycle. This marks an essential step toward greater sustainability in information technology.

With a whoosh, the air flows out of the four nozzles in the corners of the small room. The air pressure pushes the synthetic full-body suits against the abdomen and chest, and the hood inflates. Then the air current falls silent. We are now allowed to open the second door, which takes us into the clean room. A few minutes earlier, we changed clothes and slipped into the sky-blue suits for the clean room, applied beard covers and bouffant caps, put on cotton and rubber gloves, and stepped into special boots. Only our eye region was left open. Now, we are standing in the clean room. The air conditioner whirs quietly. This room has a temperature of precisely 21 degrees Celsius 365 days a year. Here, nine employees build equipment for the semiconductor industry, which must be manufactured under the most stringent purity conditions. These are essential parts of the chip industry, which are intended to help satisfy the enormous demand for high-performance chips worldwide.

The matter of sustainability, however, plays an ever more significant role in this industry as well. Plansee has therefore developed a method that allows ion grids to be refurbished. Ion grids are an essential component for manufacturers when it comes to optical layers. For example, they are needed for producing hard drives and coating glasses or for anti-reflective coatings of smartphone

screens. Essentially, wherever optical layers are applied. For more than 30 years, Plansee has supplied ion grids and associated components to corresponding manufacturers.

The various grids are on top of each other, spaced several centimeters apart, similar to a tiered stand. Each grid has 6,000 to 9,000 boreholes. Unfortunately, they are subject to deposits during grid use, which partially or entirely clog the holes. As a result, the beams that are supposed to pass through are either deflected or blocked. As a result, ion grids become unusable after about 240 hours of operation.

Previously they had to be replaced with a new grid. This replacement caused valuable resources to be lost. Plansee, therefore, developed a refurbishing process for used ion grids. The positive effects of the refurbishment are multifaceted. Not only does it reduce the use of valuable raw materials, but it also saves the customers money in two respects. Firstly, reconditioning the grids is considerably less expensive than procuring them new. Secondly, the refurbished grids have longer operating times - by as much as 30-50%, depending on the process.

The grids, however, are complex to refurbish, requiring some twelve steps. The grids are analyzed and broken down into their components. They are cleaned using multiple steps, and the holes are resized. The reconditioned grids are reassembled in the clean room and packaged to ensure that they arrive at the customer's facility without even the slightest impurity.

As a result, customers are guaranteed to receive their grids back in the best possible condition, ready to install, after a brief treatment period. With this method, Plansee contributes to increasing the sustainability of the semiconductor industry, which is a win for both the environment and the customer and conserves valuable resources.

Living Metals / New Life

Pedal to the metal for research

The future belongs to electromobility. The researchers and developers at Ceratizit agree. To develop young scientific talent in this area, Ceratizit supports an Austrian team and a German Team in Formula Student, the most significant race series for students. Ceratizit is decisively helping with the development of electric race cars. We met with the two teams to discuss their preparation for the new season.

Living Metals / Pedal to the metal for research

The race is against the clock, so accidents on the track can be avoided.

1. What motivated you to become involved in Formula Student? What is the unique appeal of this sport?

Campus Tirol Motorsport: Being able to apply in practice what we have learned during our studies is very exciting for all of us. We also have the chance to delve into things that are not explored in this depth at university. It is fascinating to witness how, over a few months, ideas and CAD drawings turn into real components and, ultimately, an entire vehicle. Participating in the individual steps - from conception, through design, to production and assembly - allows us to gather much hands-on experience and improve our skills year after year.

GreenTeam (Stuttgart): There are several reasons why our team members join the *GreenTeam* and become active in Formula Student. One can essentially summarise them into three categories. The first group is looking to connect socially. They are frequently new in town or at the university and want to meet new people with similar interests. The *GreenTeam* offers the perfect basis because students from various degree programs (economics, media, engineering, humanities, etc.) partner up. At the same time, you become a genuine family over the season and “live” together in our building. This is often where lifelong friendships are formed, and people collect memories they can still reminisce about when they‘re 80. Some members also join in developing a successful vehicle and winning races as a team. Finally, we also have members who transferred to the University of Stuttgart primarily to participate in the *GreenTeam*.

The majority, though, join the team to develop personally. Additionally, they want to work on an actual project, such as they would encounter later in their jobs, which is impossible through lectures at the university.

“It is fascinating to witness how, over a few months, ideas and CAD drawings turn into real components and, ultimately, an entire vehicle.”

2. How large is your team, and how are the tasks divided? Additionally, we would be interested to know how many men and women are active on each team.

Campus Tirol Motorsport: The CTM team currently has approximately 60 members. Within the team, there are two prevailing disciplines: technical and business. Under the technical management, students from the Electronics & Powertrain, Chassis & Aerodynamics and Suspension departments are responsible for the development and production of our car. The business side is in charge of the Marketing, Sponsoring, Finance and Administration departments and, in addition to the organizational, financial and tax aspects, is busy devising a business plan and procuring the resources needed to move the technical development of the car forward. Currently, men account for approximately two-thirds of the team, and women one-third.

GreenTeam (Stuttgart): Our team comprises approximately 40-50 active members. An active member spends at least 20 hours per week or more on our project. The core team works on the project full-time and has approximately 15 members. The team structure is based on major automotive sector companies‘ structures. Team management and Technical Management are at the top. Beneath that are the Area Heads and the Subteam Leaders. Together, they are in charge of project management and personnel management. The subteams are based on the functional groups (Chassis, Powertrain, etc.) and divided into the remaining team. As in many technical areas, the share of women in the project is rising steadily.

3. Which fields of study are represented? Are they “only” technical fields, or are there also members from entirely different departments?

Campus Tirol Motorsport: Our team has a very interdisciplinary make-up, with members spread out over various degree programs. Included are technical fields of study, from mechatronics, electrical engineering, physics and architecture to studies in different economic and business areas. At the same time, students from teaching degree programs, psychology, and translation studies are represented on the team. Everyone can contribute something to the project in their way when the motivation is right. Our team has almost 60 members, who are spread across a wide variety of fields of study at the four universities in Tyrol.

GreenTeam (Stuttgart): Of course, our project has a high share of technical degree programs. And we have to, given the extremely high development effort concerning the project‘s duration. Still, the project involves far more than just vehicle development. Managing the implementation also requires an enormous time commitment. This ranges from public relations, assistance for sponsors and suppliers, media and social media, to financial management. We have a large number of IT professionals, especially for IT administration and the development of the autonomous system. Overall, the members of the *GreenTeam* come from three local universities and 15 different nations.

4. What are the significant challenges when developing and building cars? How do you approach the planning for each new vehicle?

Campus Tirol Motorsport: Since a new vehicle is developed and built every year, the objective is to learn from past experiences and continuously evolve. In addition to the technical complexities, it is a big challenge to find dedicated students who are motivated to invest in the project and their studies and learn new things. Another challenge is to find the necessary partners for implementing our vehicle. Without them, we would not be able to put a project like ours into practice.

GreenTeam (Stuttgart): You can boil this down to three main factors: time, money and staff. The development period of six months (including production) for building a prototype vehicle is very tight. A delay of two to three weeks (e.g., for the delivery of a component) can cause problems and occurs quite frequently. In addition to the time factor, the budget also plays a significant role. Due to the high degree of proprietary developments (> 95%), the production costs are already high, even without new products. Added to this are current problems, such as the COVID pandemic, the Ukraine war, delivery issues for electronics items and an inflation rate of about 7.5%. Another general problem of Formula Student is the lack of staff. The projects have grown tremendously over time and have become considerably more complex. As a result, it takes a large number of qualified students who participate in the development and production of the vehicle. The planning process for the new vehicle essentially starts with the analysis of the previous season, with a focus on the results of the event. Performance, reliability, but also utilization of the potential, and the economic and staffing situation have an influence. In cooperation between the old team and the new team, this data then serves as the basis for developing the concept design of the new vehicle.

5. How are the races carried out? Does everyone start at the same time, or are there time trials?

Campus Tirol Motorsport & GreenTeam (Stuttgart): The Formula Student competitions are divided into static and dynamic events. In terms of the static disciplines, the key is to present the team‘s technical solutions, break down the costs of production, and present a business plan for a company in the context of a Formula Student race car.

The dynamic events focus on demonstrating the capabilities of the car while driving. Important factors include the maximum longitudinal and lateral acceleration, lap time and efficiency. All disciplines are conducted as time trials, as the rules prohibit traditional wheel-to-wheel racing for safety reasons.

6. How is the decision made as to who drives the car?

Campus Tirol Motorsport: There are several female and male drivers. All of them are team members who qualify for this position over the season. The qualification process includes a good lap time on the track and factors such as size, weight and an active role on the team in general.

GreenTeam (Stuttgart): At the beginning of the season, all team members are invited for a drive on the track. The fastest drivers are then given a chance to show their mettle in the previous year‘s vehicle. The five best drivers are then trained during the test phase.

7. What was your most significant success so far in Formula Student?

Campus Tirol Motorsport: As a young emerging team, we think one step at a time. Last season marked an important milestone in having a fully compliant and operational car. This season we want to take the next step. We achieved the first measurable results for CTM in the dynamic events by ranking twelfth overall during the FS Netherlands event and sixth place during the Acceleration race. Still, we hope to improve this result further at the FS Austria in late July.

GreenTeam (Stuttgart): The *GreenTeam* has been one of the top teams worldwide since becoming the overall winner during the first year of Formula Student Electric. Therefore, we have set the goal to win every competition we participate in. Of course, this doesn‘t work out all the time. The most rewarding thing is to be in first place in the global ranking at the end of the season. So far, we have managed to do so twice: in 2010 and 2021. Our goal in the current season is to defend this title and effectively demonstrate the quality of the *GreenTeam*.

8. What form of support do you receive from the Plansee Group or Ceratizit? What specifically do they help with?

Campus Tirol Motorsport: We are very grateful to be supported by the Plansee Group and Ceratizit. The financial support from the Plansee Group allows us to purchase necessary components for our vehicle - which include indispensable parts like rechargeable battery cells, wheels and many other items. The manufacturing support from Ceratizit‘s Tool & Die shop makes it possible to produce additional important car components that we could not implement in this form otherwise, given the limited manufacturing capacity in our shop.

GreenTeam (Stuttgart): This year, Ceratizit supported us with the finishing of complex SLM-printed components. Finishing the wheel carrier proved to be an incredibly challenging task. However, by drawing on the two competence centers in Milan and Madrid, we accomplished it in a short time. We want to work with Ceratizit in this regard again in the coming year. This time with new components and new materials, which present a challenge.

9. How does the collaboration take place? When do you contact the Plansee group, and what are the process steps?

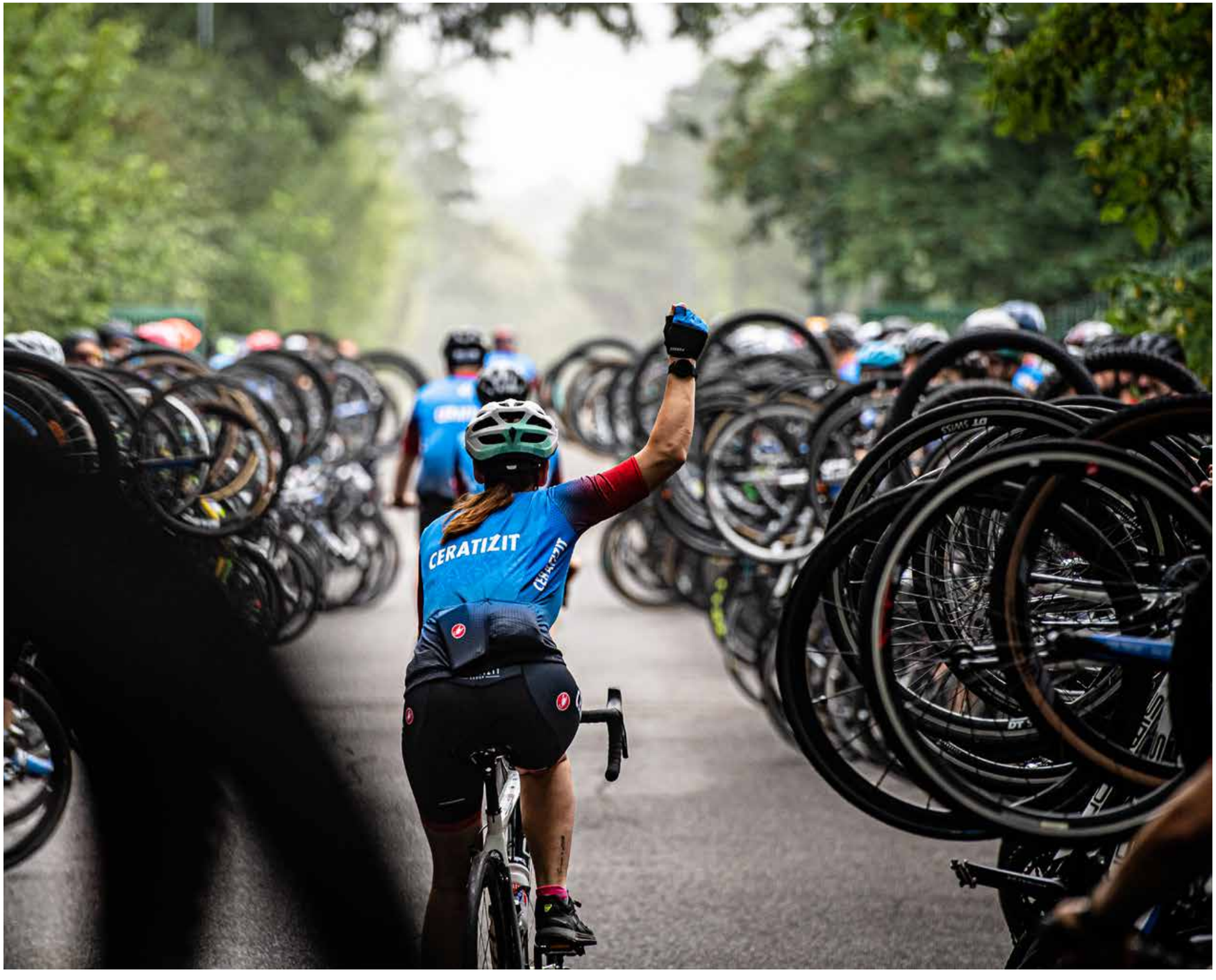
Campus Tirol Motorsport: At the start of every season, in general, around September or October, we contact our sponsors to inform them about our progress in the past season and, ideally, extend or expand the sponsorship. Support is provided in terms of production. In that case, we clarify the manufacturing options as soon as possible and create a list of priorities to establish what can be produced and in what time frame. In the case of individual components, we closely coordinate adjustments to simplify production. Of course, we also constantly stay in contact during the season, inform them about the current status of our project, and plan the implementation of joint activities, such as visits by our teams or the vehicle to Plansee Group.

GreenTeam (Stuttgart): We are continuously in contact with Ceratizit. Immediately after the event phase, we create our team for the next season, introduce the new contact persons and exchange ideas about exciting components. Primarily working with Tim Haudeck as the Project Manager from Ceratizit has been an enjoyable experience. The most challenging part every year is to plan the finishing phases because we often do not know until the end of the design phase what the pieces will look like exactly. And then we want to start production or finish as soon as possible. In this regard, the simple and uncomplicated communication with Ceratizit has been beneficial and enabled us to implement optimizations on the components on short notice.

Living Metals / Pedal to the metal for research

“Of course, we also constantly stay in contact during the season.”

Living Metals / Paris, the city of bicycles



Paris, the city of bicycles

The time has finally come: The first Tour de France Femmes, i.e., the women‘s Tour de France, was held, and CERATIZIT was there. In addition to six cyclists from the squad of the CERATIZIT-WNT Pro Cycling team participating in the race, 220 CERATIZIT employees travelled to Paris to cheer on their team.

France in fast motion: one of many chateaus along the long road to the cosmopolitan city. The Ceratizit dress appropriately picks up on both the French and Luxembourg national colours.

The Tour de France Femmes started on July 24, immediately after the men's Tour de France. Riders competed in eight stages and covered 1,029 kilometres, with some stretches including extreme uphill grades. Olympic gold medalist Lisa Brennauer (Germany), Laura Ascenio (France), Maria Giulia Confalonieri (Italy), Sandra Alonso (Spain), Kathrin Schweinberger (Austria) and Marta Lach (Poland) competed in the CERATIZIT-WNT Pro Cycling team.

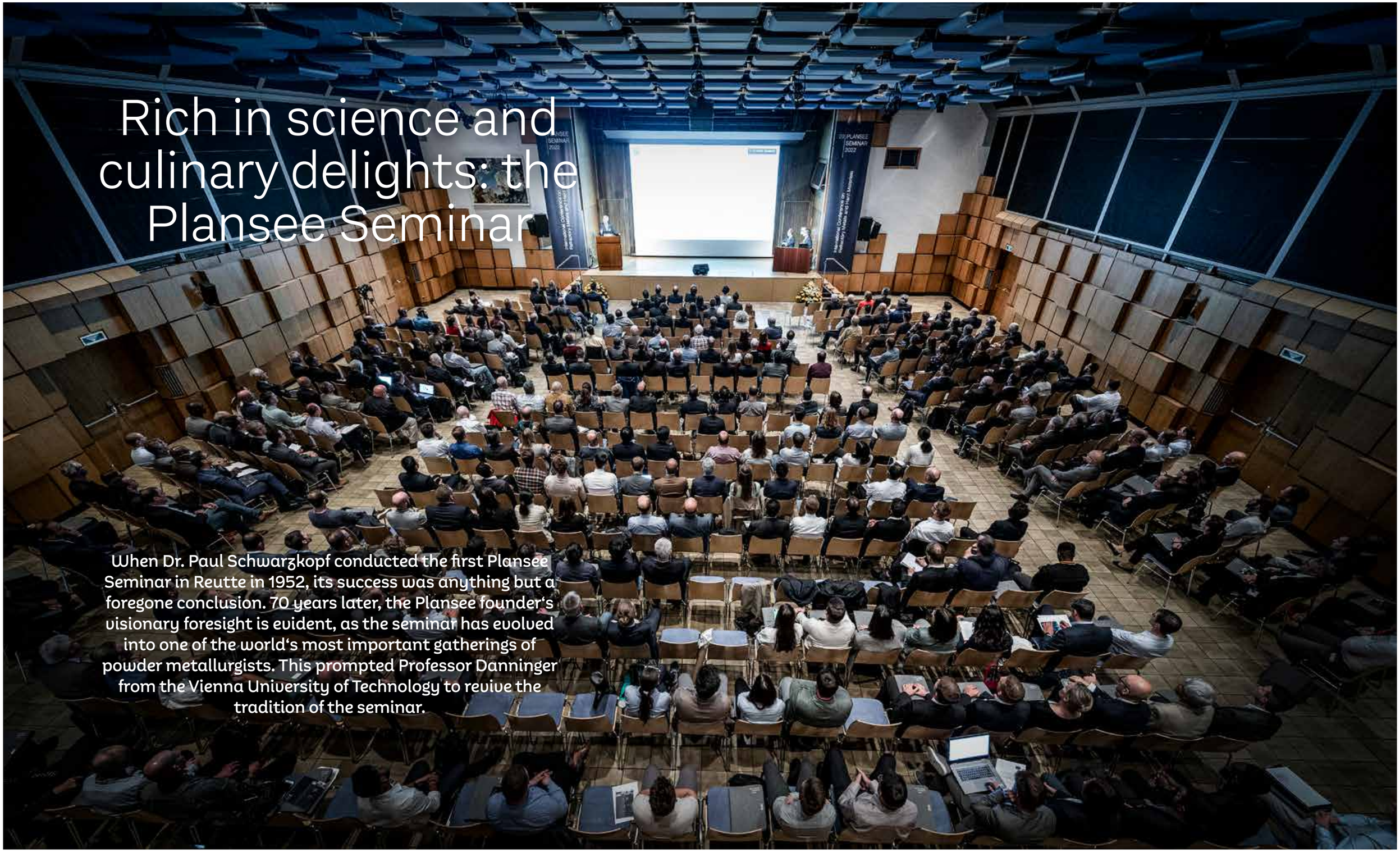
The employees of CERATIZIT made their presence felt in Paris days before the start of the race, of course on a bike and wearing CERATIZIT jerseys. In time for the start of the tour, everyone was sitting in the stands to enthusiastically cheer on the team. Small wonder that this spurred the CERATIZIT-WNT Pro Cycling team to deliver outstanding performances during the tour's first stage. This unique "company outing" was also an unforgettable event for the employees.

Unforgettable: The Ceratizit field after the final défilé over the Champs Elysées at the finish within sight of the Eiffel Tower

Arriving in Paris on two wheels is Triumph enough, even without the Arc.

Living Metals / Rich in science and culinary delights: the Plansee Seminar

Rich in science and culinary delights: the Plansee Seminar



When Dr. Paul Schwarzkopf conducted the first Plansee Seminar in Reutte in 1952, its success was anything but a foregone conclusion. 70 years later, the Plansee founder's visionary foresight is evident, as the seminar has evolved into one of the world's most important gatherings of powder metallurgists. This prompted Professor Danninger from the Vienna University of Technology to revive the tradition of the seminar.

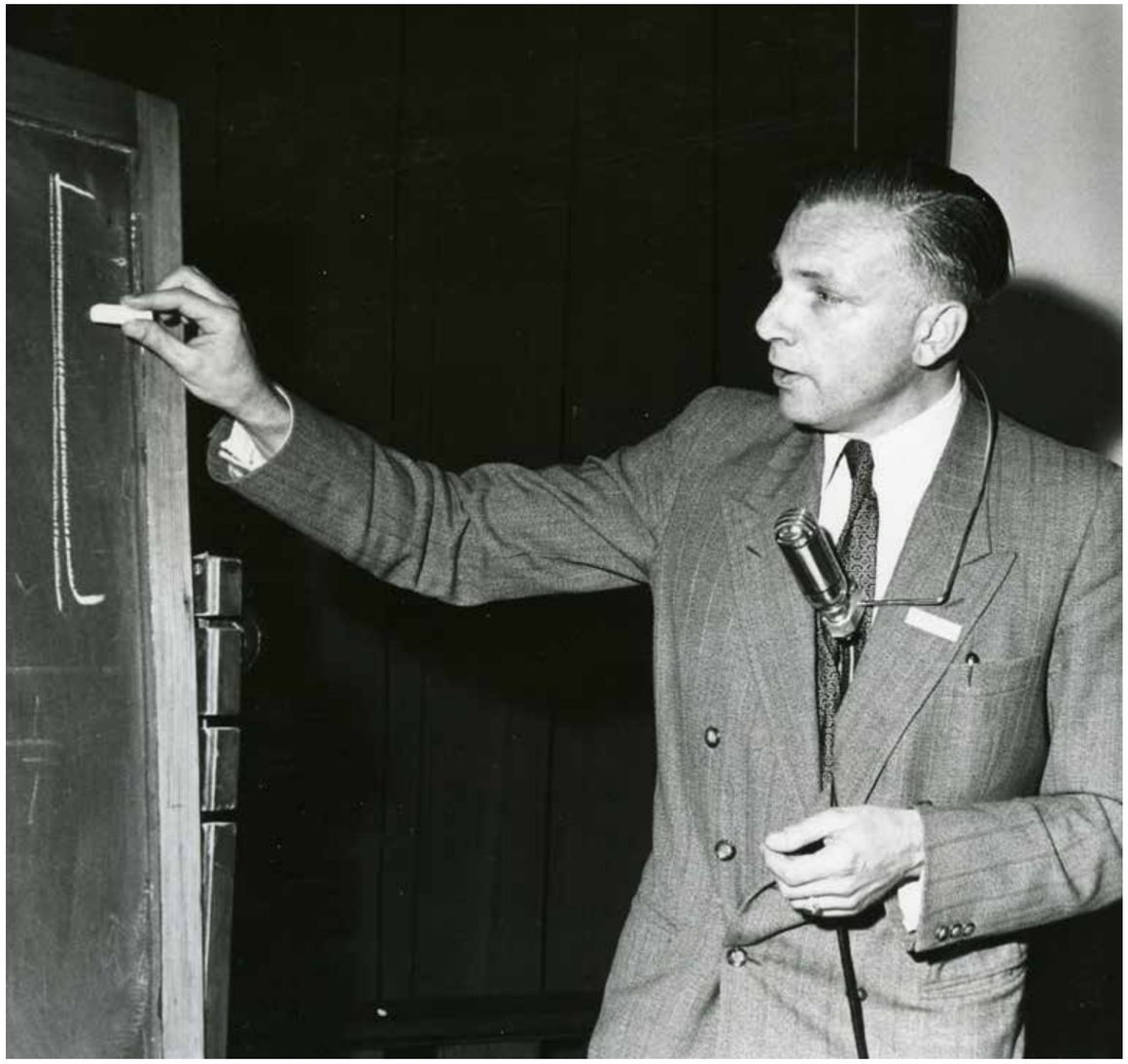
“If it was possible to conduct such a seminar in Graz, surely it would be possible in Reutte.”

It was 1950. The war had reduced large parts of Austria to rubble. The United States, Great Britain, the Soviet Union and France had divided the republic in the Alps into four zones. The Austrian economy recovered only sluggishly. It was then that Dr. Paul Schwarzkopf travelled from Reutte to Graz. In other words, he drove from the French and American zones into the British zones. The purpose of his trip was a seminar that Professor Gustav Hüttig, a chemist and Head of the Institute for Inorganic and Physical Chemistry, held in Graz on powder metallurgy. It was the first seminar since the war's end that scientists from several European countries attended.

After his return, Dr. Paul Schwarzkopf was convinced that if it was possible to conduct such a seminar in Graz, surely it would be possible in Reutte. The idea was born. In a quite clever approach, Schwarzkopf obtained permission from the French occupying force and invited the political and military leaders, governor, and other Austrian representatives to attend the international meeting of powder metallurgists in Reutte - the first Plansee Seminar.

More importantly, the guests of honour and industry experts travelled to the

Living Metals / Rich in science and culinary delights: the Plansee Seminar



Ausserfern region in droves. Even though modern presentation technologies were still a long way off, the participants listened closely to the presenters as they stood at the podium in front of the blackboard explaining research results, whirling their pointer sticks. In another respect, however, the seminar was far ahead of its time: Simultaneous translation into English was offered for the international audience.

And another aspect was essential to Dr. Paul Schwarzkopf: He wanted the attendees to feel completely welcome - which, in addition to excellent lectures, naturally meant some cultural events and, most importantly, sustenance. Today, it is quite common to have a lavish buffet at international conventions. In 1952 Tyrol, it was challenging to purchase sufficient, upscale food to feed this many people over several days. But they pulled it off.

A look at the programs of the Plansee Seminars since 1952 provides an exciting journey through time as it relates to the significance of molybdenum and tungsten. While the topic of the first Plansee Seminar was still generally speaking “powder metallurgy,” the topics grew increasingly sophisticated over the years, in each case reflecting developments in various industries. In the late 1950s and 1960s, for example,

the presentations revolved around powder metallurgy in the nuclear age. In addition, the discussion was centred on metals for outer space in response to the landing on the moon and space exploration. At the same time, it became increasingly apparent that there was a growing focus on the key topic that has shaped the Plansee Seminar to this day: refractory and hard metals produced by powder metallurgy. According to Prof. Danninger, the reason for this focus is easily explained: The fields of application and the significance of molybdenum and tungsten have grown extensively, be it in the automotive industry, medical technology, IT, aviation or the construction industry. Moreover, their unique properties have rendered these material groups indispensable in many high-tech industries and caused the market to continue to grow.

The Plansee Group experienced the same level of growth as Professor Danninger illustrated based on historic photographs. In 1952, an aerial picture of the Plansee plant showed only a small complex of workshops and halls. Today, the plant in Reutte takes up several times the amount

The fields of application and the significance of molybdenum and tungsten have grown extensively, be it in the automotive industry, medical technology, IT, aviation or the construction industry.




A forum where high-calibre research, industrial trends and tomorrow‘s scientists come together.

of space. And just like Plansee grew over the course of one century, so did the importance of the Plansee Seminar. Today, several hundred participants flock to Reutte every four years - researchers, heads of large industrial companies, students, and many more. They come from Asia, North and South America, Africa, and Europe. They all have one thing in common: they want to learn about the latest research results in powder metallurgy and hard metals. The Plansee Seminar provides them precisely this forum where high-calibre research, industrial trends and tomorrow‘s scientists come together. And entirely in keeping with Dr. Paul Schwarzkopf‘s spirit, an extensive buffet and a festive gala dinner await them at every event. After all, everyone should feel completely welcome.








After all, everyone should feel com-pletely welcome.


Green metal – is there such a thing?

36.3 billion tons of carbon dioxide were emitted into the atmosphere in 2021. That is an incredibly large amount. According to rough estimates, far less than one tenth of a percent comes from the molybdenum and tungsten industry. Nevertheless, this industry is also called on to make its contribution to reducing global greenhouse gases. That is easier said than done. To select effective steps for reducing greenhouse gases, it is initially important to be able to measure both the creation and the reduction of greenhouse gases.

In the refractory and hard metal industry, of which the tungsten and molybdenum industry is a part, it is the high energy consumption in production that causes most gases. In addition, aspects such as water consumption and waste water, toxic waste, air pollution or land use and deforestation must be taken into consideration.
We refer to this comprehensive view as the life cycle assessment. This is where the environmental effects of a manufactured product are analyzed from cradle - that is, from raw material production and processing - through the manufacturing, distribution and use of the product, all the way to recycling or final disposal.

At first glance, molybdenum and tungsten do not score well in the extraction of the raw materials and production. High and consequently energy-intensive processing temperatures and low concentrations in the ore cause the specific carbon footprint to be large. It is almost one order of magnitude larger than for steel and copper and ranks at levels similar to energy-intensive aluminum or as of yet non-recyclable lithium carbonate.

However, when looking at the positive ecological effects of their applications or social aspects, both during production and during use of the metals, a better assessment is possible in terms of the positive and negative effects that products made of molybdenum and tungsten have on the environment and society. For example, a positive impression results from the significance of tungsten in the healthcare field for X-ray anodes or for heavy metal shields. On the other hand, the use of tungsten in munitions casts some doubt on the positive assessment. Another aspect is known as the criticality of a material, which means how indispensable it is for certain processes and products. Examples in this regard include the significance of tungsten for more powerful integrated circuits (ICs) or of lithium for batteries. So it is important to view a raw material and the products manufactured from it from various perspectives in order to arrive at a comprehensive finding, and to be able to draw a conclusion about the sustainability of a raw material.

Another key aspect for assessing the sustainability of a raw material is the three Rs, denoting “reduce, reuse, recycle.” Reduction signifies lower raw material consumption, and the hard metal industry is one of the pioneers in this regard. Over the last few decades, hard metal tools have doubled their wear and impact resistance every ten years. This has resulted in considerably longer tool lives (the duration for which a tool can be used). And a tool that lasts longer does not need to be replaced so soon. This saves material, causing less carbon to be emitted.

Another important instrument for cutting greenhouse gases during production is to reduce the energy that is used. Plansee has converted the furnaces in the rolling mill to conductive heating for this purpose. The heat required for treating a workpiece is generated directly in the workpiece by means of a heating current. This is considerably more energy-efficient than the previously customary radiation heating from outside. It not only saves 13 kWh of electricity, but also saves half a cubic meter of hydrogen per kilogram of wire that is produced. This, in turn, results in a total annual carbon dioxide reduction of 800 tons.

The second R stands for recycling and refurbishing. The best-known example from the hard metal industry is the regrinding of carbide tools. This savings potential has essentially been utilized ever since hard metals were invented in order to save material. The industry experienced another boost when, after regrinding, recoating conducted in coating centers became possible. Still, a lot of untapped potential exists in this regard as well. For example, it is possible to refurbish rotating X-ray anodes.
X-ray anodes are the most heavily used components of an X-ray tube. The anodes in computer tomography machines in particular are very heavy, weighing two kilograms per piece. Producing them new generates 40 kg CO_2 per piece. Every year, approximately 170,000 new anodes are needed, of which only five per cent are being refurbished thus far. However, it is possible to refurbish 50 per cent, leading to carbon dioxide savings of up to 2600 tons per year. This corresponds to almost one third of the annual worldwide carbon emissions from X-ray anode production.

The recycling process is already a big step further. Revert scrap, i.e. scrap that develops during the production of the raw material, and new scrap, which arises during the manufacture of tungsten and molybdenum products, are already fully recycled. The situation is different in the case of obsolete scrap, which means when a product can no longer be used. Since tungsten is primarily used for the hard metal industry, for example for tools, it is easy to recycle. Molybdenum, in contrast, is often used as an alloying element, for example in the steel industry, which makes it more difficult to recycle. To increase the recycled share, it is necessary to have access to an even larger number of used products. As a result, Ceratizit, which is a member of the Plansee Group, acquired the scrap collection and processing company Stadler, thereby recovering valuable raw materials.

The last aspect is to increase recycling efficiency. For decades, chemical recycling has been the state-of-the-art process used in the hard metal industry. For several years now, however, a new, far more environmentally friendly method has been gaining ground. It is known as the zinc process, during which the scrap is processed directly into a tungsten carbide-cobalt reclaimed powder in a kiln process, without a chemical reaction. This method uses only electrical power. If green energy is used, then it‘s even an entirely emission-free recycling process. This proves that, at least in the case of tungsten, increasing and improving recycling offers some of the greatest leverage for reducing the carbon footprint. An additional 59,000 tons or carbon dioxide emissions could be avoided simply by growing the recycled share during zinc recovery to 30%.

Does this mean that tungsten and molybdenum can become “green metals” after all? Given their scarcity and high melting points, molybdenum and tungsten cannot be greener metals. However, similar to other metals, they are indispensable when it comes to producing greener products, achieving our climate goals and saving our planet. The goal therefore must be to recycle and recover these valuable raw materials wherever possible, so as to minimize the associated negative effects of the raw material extraction process and the manufacture of new products. This is possible.

Living Metals / Green metal - is there such a thing?

Hard drills made of green powder

Ceratizit has set ambitious sustainability goals for itself. The Plansee Group company intends to become one of the most sustainable companies in the hard metal sector. Green carbide, obtained almost 100% from recycled materials, is the first important step in this direction.

Living Metals / Hard drills made of green powder

“We have been working on manufacturing our products more sustainably for quite some time. To be successful, though, it takes a market that calls for these greener products,” explains Dr. Jonathan Schäfer, Manager of Research and Development for Cutting Tools at Ceratizit. Now, this market exists. The machining tools market is ready for solutions with low environmental impact - and Ceratizit has the correct answer.

The Ceratizit Innovation Center towers high up on the premises of the Plansee Group in Reutte (Tyrol). This is where interdisciplinary teams develop new products, and this is also where green carbide was developed, bearing the technical term CT-GS20Y. The innovative carbide used to produce hard metal tools has a 99% content of so-called secondary raw materials, which means raw materials are reclaimed from scrap through recycling.

“The notion of sustainability, however, extends beyond just the material,” explains Dr. Uwe Schleinkofer, Director of Research & Development at Ceratizit. “When we produce the new carbide, we only employ low-emission manufacturing processes and energy sources, as well as short transport routes, creating very little CO_2.” As a result, the process impacts only 2.6 kg CO_2 per kilogram of hard metal. This is an unrivalled small CO_2 footprint for a premium hard metal type that offers maximum performance capability.

This yields several advantages for the customers. Using this hard metal for their tools, in turn, allows them to reduce their products‘ carbon dioxide footprint significantly. Additionally, using recycled hard metal helps stabilize prices and ensures delivery reliability.

We have now arrived at the recycling building. Scores of metal drums hold used drill heads, waiting to be converted back into powder using the environmentally friendly zinc process. The material comes from Ceratizit‘s own scrap dealer Stadler, which presorts the drill heads and milling cutters and sends them to Reutte.

“The notion of sustainability, however, extends beyond just the material.”

The powder produced here is ultimately shipped to the neighbouring high-bay warehouse, where it is compressed into tiny spherules while adding additional ingredients, which are then pressed into the new shapes. Afterwards, the items are sintered and ground before the new rods made of recycled powder are brought to market again to start a second or third life as a drill, milling head or carbide tool.

Dr. Jonathan Schäfer and his team are visibly excited to have successfully produced rods made of recycled hard metal, which achieve such outstanding results that, in some areas, they perform better than rods made of new material. Additionally, Dr. Jonathan Schäfer is particularly pleased with the tremendous support they received from the company for the project. “The entire management team has been behind it - an important indication as to the significance that sustainability has in our Group.”

Living Metals / Hard drills made of green powder

How to substantiate the sustainability of a hard metal?

The collection and verification of product-related CO_2 footprints is a complex process. The Product Carbon Footprint (PCF) quantifies the greenhouse gas (GHG) emissions arising during the production and transport of products or product groups. The PCF thus encompasses all greenhouse gas emissions created throughout a product's entire life cycle - starting from raw material extraction to recycling or disposal. When calculating the Product's Carbon Footprint, a distinction is made between direct and indirect emissions (scopes). Scope 1 covers all emissions caused directly by the company. Scope 2 considers indirect emissions generated by external electricity, heat, cooling or steam providers. All other indirect emissions that occur either in the upstream supply chain or during product use are covered by Scope 3 (for example, the purchase of products). Based on this analysis, it is possible to determine product-specific emissions precisely and implement steps for their avoidance.

Living Metals / I would not have wanted to miss any of it

“I would not have wanted to miss any of it.”

Melissa Albeck has been with the Plansee Group for 28 years. She has worked in various roles and at many of the Group‘s locations. Today, she is a member of the CERATIZIT Group board and is in charge of securing raw material supply for the entire Plansee Group. Yet, she did not plan her career this way.

Impressive clouds are moving across the northern corner of Lake Forggensee, the artificial reservoir that is the picturesque background of the Neuschwanstein fairy-tale castle on countless postcards. Melissa Albeck has lived in the southeast corner of the Allgäu region in Bavaria for ten years. If you peek through one of the modern house‘s large front windows, you will likely be surprised. You will see a workbench, several woodworking tools, and several half-finished violins, violas and cellos. But more on that later.

Melissa Albeck grew up in Kent, in Lincolnshire in eastern England, not far from the world-famous White Cliffs of Dover. Perhaps this proximity to the commanding rocks ultimately took her to Innsbruck in the Tyrol Mountains. That was in 1994. After spending a year as an exchange student at the Inn River, she knew she wanted to stay in Austria. So, when she was offered a position as Marketing Assistant at Plansee, it seemed like the perfect opportunity. “I had just received my business degree in England and had nearly no job experience, but I got the job,” Melissa recounts. Still, there was a small catch: “I was to work not just in marketing but also teach English as part of their training program because, at the time, they had no employee, other than me, whose mother tongue was English.” And Plansee needed more employees who could represent the company internationally as the company was in the process of a global expansion - a circumstance that would prove beneficial for Melissa.

“While in Reutte, I met my husband, a German violin maker who worked in Füssen,” Melissa says. “He absolutely wanted to go to the United States, and I wanted to stay with him. It was clear that I would leave Reutte and, with this, likely also Plansee.

Therefore I submitted my notice. ”Still, she did not like the idea. As a result of her English classes, she developed an extensive network within the company and became familiar with new divisions.

“The longer I thought about moving to the USA, the more I wondered whether I couldn‘t perhaps work for Plansee in the United States,” Melissa relates. Moreover, Plansee USA - then Schwarzkopf Technologies Corporation - was smaller than today and did not serve all of the industries that Plansee in Europe was already supplying. So, wouldn‘t it make sense to conduct market research in the USA to explore hidden growth opportunities?

A look into the workshop of Melissa‘s husband, a violin maker.

Living Metals / I would not have wanted to miss any of it

The idea persuaded those in charge in Reutte, and Melissa was given a chance to freelance for Plansee USA from California for an initial period of three months. “After the three months, they asked whether I would like to stay with Plansee USA.” And Melissa stayed. First in Los Angeles and then in Santa Fe, New Mexico, where the conditions for her husband as a violin maker were better than in Los Angeles. “During the ten years that followed, I almost exclusively worked from home,” she relates. In addition, she travelled in the USA extensively. For example, she developed new business areas in the glass and lighting industries, which remain essential customer segments for Plansee USA. Her two sons were also born during this time. “After my sons were born, we became keenly aware that we had no relatives in the USA. Therefore, we wanted to return to Europe to be closer to my family and my husband‘s family. It just so happened that around the same time, new members were being appointed to Plansee‘s management board in Great Britain,” she recounts. Melissa got the job. While her husband - as he did back in the USA - cared for their sons, Melissa developed business operations in Great Britain and acquired the medical technology and lighting industries, amongst others, for the company. In addition, she saw to it that their children could put down roots. “Family and knowing where you belong is significant to me. There was so much change in my life that I wanted to give a certain stability to my children.” After five years, it was time for another change: “We all knew the journey could only take us to Germany, my husband‘s home.”

Initially, she headed Business Development at WNT, a Plansee subsidiary in Kempten. There, she established the Technical Training Center and was in charge of founding the plants in India and China. Later, in 2017, she was responsible for launching the Group‘s Matmatch start-up in Munich, which allows companies to find the best material for a desired application and directly connects manufacturers and customers. In 2021, she received an offer to head the integration of the Global Tungsten & Powders Division (GTP) into the newly acquired Ceratizit Group while also becoming a Member of the Executive Board at Ceratizit.

Melissa Albeck shows us around her house. Pictures of friends, family and former colleagues are on the walls, and farewell presents are on the floor, including

“Family and knowing where you belong is significant to me.”

Melissa Albeck‘s main tasks include securing the supply of raw materials of the Plansee Group. 80% of the world‘s tungsten reserves are located in China. This makes it that much more important for western companies to recycle existing tungsten. The Plansee Group made the right decision in this regard early on. The Group‘s Finnish subsidiary, Tikomet, is Europe‘s only supplier of reclaimed powder derived from the zinc process that offers these products on the open market, and does so in a quality that ensures that tungsten recycled in this way can be used in numerous applications. The zinc process is an environmentally friendly form of recycling, which considerably reduces energy consumption and carbon dioxide emissions compared to the production of new powder. Since the company exclusively utilizes green electricity for recycling the tungsten, Tikomet‘s operation is almost climate-neutral even now. The CERATIZIT Division GTP in the USA produces tungsten carbide-cobalt powder from premium sintered hard metal scrap. The plant is also able to reprocess mixed scrap, or even scrap containing impurities, in order to recycle as much raw material as possible and reduce the negative effects of raw material sourcing, especially from mining.

Living Metals / I would not have wanted to miss any of it

a bouquet made of tungsten. Then we enter her husband‘s workshop. Some finished and half-finished string instruments hang on the wall, and wood shavings cover the countertop. Three cello cases in red, blue and silver are sitting in front of the workshop door. She then takes us to the next room. Here, her cello is seated against the wall. Melissa Albeck sits down, grabs the instrument and begins to play. Music is her escape. Even back in Reutte, she played in the orchestra, in Roßhaupten, she sings in the choir, and during her time in Munich, she regularly took cello lessons. Additionally, she loves pottery. The children gave her a potter‘s wheel for her birthday; however, she has not used it yet. She simply does not have the time right now.

We have meanwhile entered the garden. Melissa Albeck looks around. It is a rare moment of peace and quiet. These days, she is frequently in Luxembourg, at Ceratizit, or in the USA, at GTP.

Living Metals / I would not have wanted to miss any of it

The following day, she will travel to Japan for just over a week. “I truly do not know right now where my home is,” she says, adding: “But I would not have wanted to miss any of what I was able to do. All my career changes in the Plansee Group always came at the right time and were a logical succession. I am very grateful that I was entrusted with so many interesting duties and that I have been able to work with so many great people around the globe.” Is she considering another relocation, perhaps to the USA or to Luxembourg? Melissa Albeck shakes her head. Even though their first son is already in Hamburg attending university, and the second one is about to graduate and likely to move away, she plans to stay. If anything, she could imagine, at a later time, returning to her beloved Austria. For Melissa Albeck, this would arguably be the shortest move of her life.

Living Metals / Living in the office

Living in the office

On the evening of March 27, 2022, Plansee China was notified that there would be another lockdown, explicitly starting on March 28. The reason was the high number of COVID infections in the region. In four hours, management had to decide whether Plansee Shanghai would be closed, or the company would try to maintain its operation with a skeleton crew.

Check-in indefinitely with rolling suitcase and safety distance.

←

They opted for the latter. Within two hours, 40 employees arrived at the premises to stay at the company: 24 hours, seven days a week. Nobody knew at the time that the lockdown would extend over two months.

The employees in China managed to make the best of their situation. They purchased folding beds and sleeping bags and brought them to the factory. They set them up in meeting rooms and offices, considering everyone‘s privacy. They also delivered sufficient groceries to ensure the staff was taken care of.

A touch of youth hostel: bunk beds.

The crew spent breaks and weekends together in the weeks that ensued, breaking up the time with board games or movie evenings. Additionally, they stayed in touch with their families by video chat. After the lockdown ended, many employees stated that even though it was difficult not to see their families for such a long time, being with their colleagues often felt like being with friends while at school.

Brain jogging and passing time with Go.

The achievement of the team members in Shanghai during this time was exceptional, and they kept the company going so that customer orders could be delivered mostly on time, despite the lockdown.

Cradle to Cradle: Highest Standard of Sustainability

The print version of this issue of Living Metals was produced in silver according to the Cradle to Cradle standard. This was done by the printing company and eco-visionary Ernst Gugler in Melk, which was the first print shop in the world to which in 2011 was the first print shop in the world to offer print products that meet the Cradle to Cradle specifications. Furthermore, it is the only one in the EU to boast a gold Cradle to Cradle certification.

The Cradle to Cradle concept was developed by the German chemist Michael Braungart and the American architect William McDonough in the 1990s. William McDonough, in the 1990s, as a sustainable design concept based on the modelled nature, which in principle operates without waste, Cradle to Cradle guarantees unlimited and quality-loss-free recyclability, 100% material health and responsible use of the resource water.

Imprint

Publisher
Plansee Group Functions Austria GmbH
6600 Reutte, Austria
plansee.com/group

Contact
Dénes Szechenyi, Head of Group Communications
Denes.Szechenyi@plansee-group.com
Christian Mörken, Editor Internal Communications
Christian.Moerken@plansee-group.com

Collaboration
Szechenyi Dénes, Grill Robert, Sedmak Florian, Mörken Christian, Yilmaz Deniz, Walser Hermann, Xu Ilona, Haudeck Tim, Farsan Parwez, Danninger Herbert

Layout and design
kest advertising agency, Linz
www.kest.net

Print
Gugler, Melk/Danube
www.gugler.at

Picture credits
Fuchs Alexander, Grace Ellius, Marke Rolf, Xu Ilona, Campus Tirol Motorsport, Greenteam Stuttgart

–

The protection of your personal data is important to us! Therefore we use your data exclusively for the mailing of Living Metals magazine. If you are no longer interested in receiving our magazine in future, please send us a message stating your address to living-metals@plansee.com. The keyword “Unsubscribe” in the subject line is sufficient. Otherwise we are pleased that you will be one of the readers of our magazine in the future.

We ask for your understanding that, for reasons of easier readability For reasons of readability, we have largely confined ourselves in the text to the masculine form generally used in editorial publications. It refers refers to persons of both sexes.