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Dear Readers,

Last year, Greta Tintin Eleonora Ernman Thunberg, a young Swede, drew a lot of attention to the topics of climate protection, conservation of resources and energy saving. These topics are of essential importance for future generations, since the resources on our planet are limited and there is no second earth as an alternative for humanity. However, discussing these issues and taking to the streets is not enough. I am therefore all the more pleased that the Müller-Guttenbrunn Group repeatedly play a pioneering role when it comes to conserving resources and saving energy. We are always proud of this achievements when we compile our Spectrum magazine - a kind of annual review.

What strikes me anew year after year is that standing still is never an option for our employees. We want to keep getting better, to keep recovering even more recyclable materials from waste - and to do so in the most resource-friendly way possible. Our staff in all our company sites do a fantastic job every day. For example, our „Bobby Car Project" - in which we collect and recycle old products made of both hard plastics and metal - has been gaining momentum in recent months. Equally remarkable is our commitment to researching new technologies to recycle even more types of plastic.

In order to be able to recycle valuable materials properly, appropriate machines and equipment is a decisive prerequisite. Therefore, we are always anxious to keep the infrastructure of our plants up to date. It is just as important to us, that thanks to our maintenance crews the machines have the longest possible service life. This is how our shredder plant in Amstetten had worked for almost 35 years! Step by step we have now turned it into the most modern waste shredder in Austria, which will hopefully serve such a long period of time.

We are not only breaking new ground in our home region in Mostviertel. Our international subsidiaries are taking important steps into the future as well. You will get a small glimpse of that at the very end of this magazine - but I do not want to give away anything more. Just this much: We will continue to work on conserving resources and energy in 2020. This is why we are already working on one of the largest photovoltaic plants in Lower Austria. You will probably read about this in the next issue of Spectrum...

Christian Müller-Guttenbrunn, Mag.
CEO

The pitfalls of **the hard plastic collection**

MGG Metran employee Daniel Forstner reported on the current status of the Bobby Car project in a presentation at the training course for waste material collection centres in the Amstetten district. The main focus was on the question: What belongs in the hard plastic collection and what does not? Afterwards the participants were able to take a look behind the scenes at the plastics recyclers of the Müller-Guttenbrunn Group (MGG).

Everyone in the packed hall pricked up their ears when Daniel Forstner began his lecture. Armed with the now well-known Bobby Car and a few other paraphernalia, the process development expert from MGG Metran stepped in front of his audience. His audience: 65 employees of the waste collection centres (ASZ) from the district of Amstetten. Forstner was invited as an external speaker to talk about the new hard plastic collection system (Bobby Car project) as part of the „ASZ Training 2019“ of the Amstetten Regional Service Association (GDA).

The 40-year-old MGG Metran employee briefly explained the „Bobby Car“ project, which has been running for three years: old products made of both hard plastics and metal are collected and recycled. Up to now, these valuable resources have unfortunately been incinerated as bulky waste.

Skis and furniture are not desired

The employees of the waste collection centres were particularly interested to know which products should now be collected in the container provided for this purpose and which not. Garden furniture, children‘s toys such as Bobby Cars, plastic tubs and barrels are welcome and can be processed without any problems, Forstner explained. However, he added: “Unfortunately, we also receive a lot of waste deliveries in which we find plastic films, PVC pipes, old skis, furniture, styrofoam or other impurities. These do not belong in this collection, because they are very obstructive to this hard plastic recycling process.”

Daniel Forstner also provided information about the quantities collected at the six GDA collection centres taking part. In 2018, for example, a total of 103 tonnes were collected from the collection centres in Amstetten West and East, St. Valentin, St. Peter/Au, Hollenstein and Haag. More than half of this was used to obtain target plastics for recycling. “We were able to save 60 tons of plastics from dying in a fire,“ Forstner laughed. He - and probably also his listeners - hope in the interests of environmental protection that there will be many more tonnes of hard plastics that can be recycled at MGG Metran. Only in this way resources and CO_2 can be saved.

"Unfortunately, we also receive a lot of waste deliveries, in which we find many impurities, that are very hindering for this hard plastic recycling process."

Old material from the capital

In addition to collection points in Lower and Upper Austria, hard plastics with metal content are now also being collected in Vienna for the first time. "There is a lot of potential here for the next few years," says Daniel Forstner, who sees many opportunities to obtain new raw materials from old products.

For half of the participants in the ASZ training course, a short break was followed by an excursion to MGG Polymers, the experts for plastics recycling in the Müller-Guttenbrunn Group. Here, too, the participants pricked up their ears, because the visitors were told exactly what happens to old vacuum cleaners, video recorders, coffee machines, radios and similar equipment at the MGG Polymers plant: from transport, through the shredding process and the separation of the individual components (metals, plastics, impurities), to the extrusion of the saleable plastic granules. The GDA team was amazed at how new plastic granulate is created from the old electrical appliances for the manufacture of new products. GDA employee Birgit Baier, who co-ordinated the training event together with her colleague Roland Poxhofer, was equally astonished: "The tour was very informative for us because now we have a better understanding of some points that are essential for the recycling processes. In future, we will be able to focus on important details already during waste collection".

Info about the hard plastic collection container

Wanted materials:
+ plastic composites with metal: bobby cars, tubs with metal handles, garden furniture etc.
+ containers emptied of residues (e.g. plastic drums)
+ plastic buckets, plastic boxes etc.

Unwanted materials:
- plastic films, packaging material
- styrofoam
- wood, chipboard
- furniture
- bathtubs
- PVC pipes and garden hoses
- plastic windows and shutters (PVC)
- cable ducts (PVC)
- floor coverings and carpets
- roof panels, transparent corrugated sheet metal

"Despite all the precautions taken at the collection points, it can happen by accident that a battery is overlooked and becomes a potential cause of fire in the recycling material."

A fire engine on the hall roof

A new automatic extinguishing system was successfully tested at the MGG Metrec plant in Amstetten in spring 2019. This system is designed to counter the fire risks posed by lithium-ion batteries in old electronic equipment.

The fact that mobile phones and other electrical devices suddenly start to burn can be heard and read over and over again. The reason for this is often the lithium-ion batteries used, which quickly start to burn when mechanically damaged. It may even be enough for the electronic device to simply fall to the ground.

Accumulators and batteries are therefore usually already removed when these devices are collected at the waste yards. Despite all the precautions taken, it can happen by accident that such a battery is overlooked and becomes a potential cause of fire in the recycled material. The Müller-Guttenbrunn Group (MGG), which processes thousands of tons of electrical and electronic scrap every year, is well aware of this. For this reason, a fire alarm system was installed in the shredder hall for electronic scrap at the MGG Metrec plant in Amstetten as early as 2014.

Automatic fire fighting

This system has now been supplemented with an automatic extinguishing system. "Now we have a fire engine hanging from the roof of the hall," smiles MGG Metrec Managing Director Michael Grimm. "The new system automatically detects if a fire should break out in the hall and immediately fights it with a water-foam mixture. This allows the fire brigade to contain or even extinguish the fire in the time it takes for the first fire engine to arrive after the fire alarm."

The new fire-fighting robot has a water reservoir for half-hour operation. Since the water in the shredder hall would freeze in winter at freezing temperatures, the tank is heated to ensure that it is always ready for use during this time of year. Müller-Guttenbrunn invested a total of 175,000 euros in the new system, which was successfully tested for the first time in early April. Michael Grimm is pleased that the burning old electrical appliances were extinguished within seconds: "It really worked great. Now we can all sleep a little more soundly."

A red-hot danger: lithium-ion batteries

Armin Blutsch, Commander of the Amstetten Volunteer Fire Brigade and employee of the Müller-Guttenbrunn Group, supervised the test of the new extinguishing system together with fire brigade colleagues. He explains the danger posed by the lithium-ion batteries: "The energy density in the small batteries is very high. Often the protection against damage is very low due to the design of the batteries. If, despite all precautions, such an energy source gets lost in the recycling material to be processed, it can quickly lead to the destruction of such a battery through the use of large machines. Finally, the material is transported by trucks, loaded and unloaded and processed with large machines. Such an accumulator is quickly destroyed, resulting in a short circuit and overheating."

The fire brigade commander also points out that the battery itself cannot be extinguished, but is completely burnt out after a short time. "It is important that the surrounding area - in the case of electrical appliances, the plastic - does not catch fire," says Blutsch. Lithium-ion batteries can be found in many devices nowadays - from mobile phones to e-bikes, from notebooks to digital cameras. Often, however, the batteries are built in such a way that it is impossible to remove them yourself. Armin Blutsch therefore sees a need to catch up in terms of equipment design: "Manufacturers are called upon to ensure that the batteries can be removed without special tools and without special knowledge. Then, like other batteries, they could be collected relatively easily separately from the old appliances. This would reduce the risk of a battery being overlooked at the waste disposal site."

First fast track pilot project successfully completed

Transporting recyclable materials within the EU can become a Herculean task. For almost four years, the Müller-Guttenbrunn Group (MGG) has been waiting for the necessary documents for such a transport - and the wait is endless. The recycling pioneer from Amstetten is now working on a European solution. MGG is actively involved in the "North Sea Resources Roundabout New Green Deal" project - with success, as the first pilot project has been successfully completed.

Everything revolves around an application to transport old display screen equipment for recycling from A to B - specifically from Amstetten to Bavaria. On the 16th of March 2020, exactly four years will have passed since the Müller-Guttenbrunn Group (MGG) submitted the notification application. A simple application has turned into an endlessly complex procedure that has not yet been completed.

In the four years prior to this, MGG held numerous discussions with the competent authorities involved - from the environmental ministries in Austria and Germany to the authorities in Bavaria. The result: much bureaucracy, little movement. "This situation is unacceptable", MGG Managing Director Christian Müller-Guttenbrunn can hardly believe it. "On the one hand, people are trying to get a circular economy going in Europe. On the other hand, the necessary cross-border transport of recycling material is being made impossible, as our application shows."

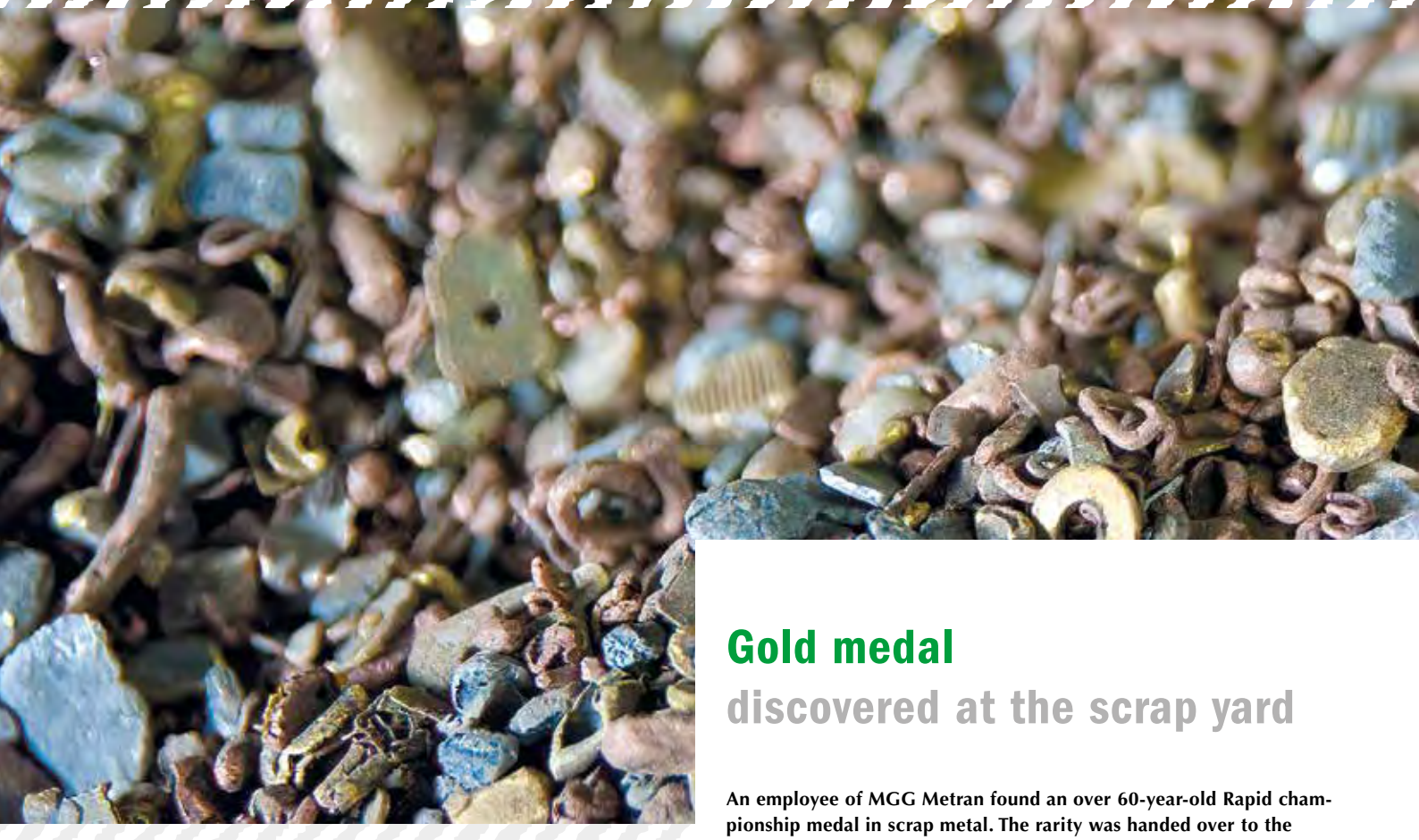
Solution in sight

Without the necessary recycling material, however, a circular economy is unthinkable. Therefore, MGG is working feverishly with European partners on a proposed solution: Fast Track Notifications. The proposal provides for audited recycling companies to have their plants inspected and registered with the authorities in advance and to obtain advance approval for them. This will make it possible to process the necessary notification requests for transports to these plants more unbureaucratically and much faster.

A solution of this kind with less bureaucracy would be an important boost to promote recycling and the use of the secondary raw materials obtained in Europe. It would also provide the competent authorities with important resources for taking a more targeted approach to combating the genuine illegal transport of waste. Christian Müller-Guttenbrunn therefore has high hopes: "This sad anniversary of waiting four years for the necessary documentation for waste shipments is reason enough for all sides to make the necessary efforts to find a solution for rapid procedures. The concept of a recycling economy is literally crying out for fast-track notification."

The first fast track notification was finally approved at the end of March 2019 and completed within 19 working days. This is an enormous improvement, but it was also found that there is still room for improvement and that the processing time can even be further reduced.

"Such a solution with less bureaucracy would be an important push to promote recycling and the use of the secondary raw materials obtained in Europe."



Gold medal

discovered at the scrap yard

An employee of MGG Metran found an over 60-year-old Rapid championship medal in scrap metal. The rarity was handed over to the museum of the Austrian football record champion.

In the past season the kickers of SK Rapid Vienna were far from winning the Austrian league championship. Nevertheless, they were able to be happy about a championship medal in Wien Hütteldorf: A gold medal from the 1956/57 season was discovered by chance at the MGG Metran plant in Kematen.

"Our employee Carmen Wieser discovered the medal during the processing of non-ferrous metals. She was very excited when she came into the office with it," says MGG Metran managing director Gunther Panowitz. Everyone was astonished what Carmen Wieser had discoverd in the many tons of waste and scrap metal. "OESTERREICHISCHE FUSSBALL-STAATSLIGA - Sieger Meisterschaft Liga A 1956/57" was written on the medal. Investigations revealed that it was a championship medal of the Austrian football record champion SK Rapid Wien. In this championship team played at that time greats like Ernst Happel, Gerhard Hanappi, Walter Zeman or Alfred Körner.

"An MGG Metran employee discovered the championship medal by chance during preparation of industrial metals."

Treasure gets a place in the Rapid Museum

The medal was of course returned to the club. GF Gunther Panowitz therefore quickly contacted the Rapideum, the museum of the Viennese club. Rapideum coordinator Laurin Rosenberg can still remember exactly the call: "It was Friday afternoon and I was about to leave

office. Then I saw that another e-mail had come in. As I read that they had found a medal from the 1956/57 season, it was clear to me that I had to write back immediately."

The contact was established and the medal was soon handed over. Rosenberg gladly travelled to Kematen to receive the rare specimen. "It's nice to see how such a medal, which has been on the hunchback for several years, reappears and is found - especially where it was found is very interesting," the museum coordinator was amazed when Gunther Panowitz gave him an insight into the working methods of the recycling professionals at MGG Metran.

Priceless rarity

The championship medal made of 14 carat gold already shows quite a few scratches and burn marks, which is why Gunther Panowitz is sure that the medal has already landed in a waste incineration plant once. But it was saved from the fate of being melted down thanks to MGG Metran. Laurin Rosenberg - and probably many Rapid supporters with him - is particularly pleased about this: "For players and a club, a medal like this is a symbol of great success - and can therefore hardly be offset by money."

Thus, Rapid was able to celebrate the 120th anniversary of the club despite a disappointing season by winning a championship medal. By the way, this can now be viewed by all those interested in the Rapideum.

Video on the topic

The TV magazine programme "Rapid Viertelstunde" created a film report about the sensational discovery at MGG Metran. The report can be found at: https://bit.ly/35vylwv

Or you can simply scan this QR code to open the video:

“There’s always action around here!”

Helmut Ziervogl is a much sought-after man as workshop manager at MGG Metran in Kematen. The 50-year-old answers questions in a detailed interview. In the company, he makes sure that all systems and vehicles run smoothly. But that is only part of his job, as the jack-of-all-trades from Krenstetten tells us.

Mr. Ziervogl, you have been with MGG Metran for 16 years. What have you experienced during this time?
HELMUT ZIERVOGL: There would be a lot to tell. I started working in shifts on the old swim-sink sorting plant. There, like everyone else in the company, I got to know the materials we handle at MGG Metran. Standing at the conveyor belt for the first time was a challenge - I would have loved to run away again. But one learns quickly and so I often fought a duel with my colleagues to see who could get more material off the belt. I repeatedly took part in repair work and my abilities as a trained car electrician were probably recognized. I guess that is the reason why I ended up in the workshop, which I now run.

But you are much more than just the workshop manager here at the workshop...
ZIERVOGL: Yes, I am actually an all-rounder. I drive a truck just like I drive a wheel loader. My area of responsibility also includes internal truck traffic, container loading, ordering materials or loading and unloading our wagon transports. I also step in if one of our three production managers is absent. However, I have to admit that this task is often not that easy when you haven’t done it for a long time. So much is simply constantly changing in the details.

With so many different activities, you definitely keep an overview of the big picture. This is also necessary when it comes to service work on the separation plants. What do you need to pay attention to?
ZIERVOGL: The most important thing is to get the right time. In the past, we often repaired the machines on weekends and over Christmas. But that had the big disadvantage that partner companies we needed for this were simply not available. Therefore we now carry out this work on normal working days. This means, however, that we have to plan the shutdown exactly so that we don’t have to work off a lot of material at this particular time. Then we have to work through the checklist - the faster our team is, the faster the machine can be up and running again.

How many employees are available for such work in the workshop?
ZIERVOGL: Our workshop team consists of a locksmith and an electrician in each of the two shifts. In addition, there is one employee on the day shift. Of course, the respective plant team also helps with repairs to the plants. It’s exciting every day anyway, because many repairs have to be carried out unplanned because an important part has broken. We also have to make sure that our 15 or so vehicles - from wheel loaders to forklifts - function properly. In any case, there is always action around here!

There is certainly also action when new plants have to be set up...
ZIERVOGL: Quite clearly. But here it is also important to coordinate well with the production managers, to coordinate material and team accordingly and then to get everything set up quickly.

The material flow in the plant must also function properly. Fully loaded wagons transporting recycling material from other MGG subsidiaries and external companies arrive in Kematen every day. As you have already mentioned, this area also falls within your area of responsibility...
ZIERVOGL: Yes, here I can often be found on the loader or the truck. The wagons arrive at about half past eight. Then they have to be unloaded and the material weighed before it is stored temporarily or processed immediately. Of course, the wagons have to be loaded again before they are brought back to Amstetten at three o’clock.

A fully loaded truck often takes you to the neighbouring MGG Polymers plant...
ZIERVOGL: I deliver the plastic material to our colleagues at MGG Polymers together with my junior, who now also works at our plant. We have to start very early on Mondays, Wednesdays and Fridays in order to be able to deliver the material without any problems. We then transport up to 600 tonnes to our sister company. Here, a lot depends on what plastic material we have and what material our colleagues need.

On the subject of colleagues - what makes working for the Müller-Guttenbrunn Group so attractive for you?
ZIERVOGL: With us it’s simply really like working in a big family. You’re not a number, even though we continue to grow. We all have a joy when we go to work - and we know that our boss always has an open ear and stands behind us.

Finally a question about the private person Helmut Ziervogl: What does he do in his free time?
ZIERVOGL: When I want to switch off, I spend time with my family. I also like to go hiking. However, I have to admit that I also often tinker around in my own workshop in my free time - I simply enjoy it.

Then we wish you continued enjoyment in tinkering and your work!

Practical experience instead of grey theory

As is well known, a little practice is often much more comprehensible than a lot of grey theory. For this reason, 13 students from the HTL Waidhofen/Ybbs got a close-up view of how new raw materials are obtained from waste at the Müller-Guttenbrunn Group (MGG). At the three MGG sites in Mostviertel (Metrec, Metran and Polymers), the HTL students learned exciting details - and the young guests naturally had interesting questions on the subject.

In the meantime, visiting the HTL Waidhofen has become a tradition at MGG. "We are pleased that we can contribute to bringing topics such as recycling and sustainability closer to the young people. On the basis of our three locations they learn how resources can be kept in circulation - and of course also what function each individual plant has in the Müller-Guttenbrunn Group," explains MGG Managing Director Christian Müller-Guttenbrunn.

Three exciting tours

The 13 HTL students started off at MGG Metrec in Amstetten, where the recycling process for many materials in the Müller-Guttenbrunn Group also begins. The excursion group learnt that at MGG Metrec, old cars are accepted, freed of pollutants and shredded with a huge shredder. The same also applies to household and electrical waste. The iron scrap obtained from this is delivered by rail for further processing in the furnaces of the steelworks.

Findings without monetary value

The guests also learned what happens to the non-ferrous fractions in various sizes coming from the car shredder or electric shredder: These are transported to MGG Metran for further processing. The MGG plant in Kematen was the next stop for the students, who were particularly fascinated by the most varied separation systems and the cleverly designed machines. They learned which physical laws are applied to enable effective separation mechanisms. Among the different fractions produced by the individual separation steps, there were also some special discoveries - for example "no cash" coins, which are used to fill a wide variety of vending machines and washing systems.

In recent years, more and more plastic fractions have been recovered at MGG Metran. These are transferred to MGG Polymers for further processing. The neighboring plant was also the third and last stop for the students from Waidhofen on their excursion. Here, the youngsters learned that the plant specializes in recycling plastics from electrical and electronic waste. After impurities such as fluff, foam, rubber, wood, etc. have been separated, the target plastics ABS, PS, PC/ABS and PP are separated according to type and extruded. The plastics obtained are finally packaged as granules in different variants and sold to customers, who can use them to manufacture new products.

From waste to new secondary raw materials

With this short round trip, the pupils were able to follow the recycling cycle of waste well and get to know the special recycling chain within the Müller-Guttenbrunn Group: from the initial great force required for shredding in the shredder plants to the sophisticated separation methods for individual metals and plastics to the production of pure, recovered plastic. The students were also told how much energy and raw materials can be saved by recycling. For example, CO_2 emissions can be reduced by 4.5 tonnes by recycling one tonne of engineering plastics. This grey number from the theory has certainly gained some colour and shape for the 13 HTL students after the day in the Müller-Guttenbrunn Group.

A new management at MGG Polymers

MGG Polymers, a leading manufacturer of post-consumer recycled (PCR) plastics, took important decisions in the fall of 2019: Günther Höggerl and Chris Slijkhuis, both long-standing divisional managers of the Müller-Guttenbrunn Group (MGG), took over the management of MGG Polymers GmbH. "We are pleased that we were able to fill the management with experienced employees from our own ranks. As early companions of the company, Günther Höggerl and Chris Slijkhuis have the best prerequisites to continue the successful path of MGG Polymers and to successfully master future challenges," says Christian Müller-Guttenbrunn, CEO of MGG.

The new top personnel

The new Technical Managing Director of MGG Polymers is Günther Höggerl (born 1969). After many years in the automotive and automotive supplier industry, the graduated polymer scientist joined the former MBA Polymers Austria in 2005, where he was responsible for quality agendas and product development. Since 2011, Höggerl has been head of Research and Development at the Müller-Guttenbrunn Group.

Chris Slijkhuis (born 1954) took over the commercial management of MGG Polymers. Having worked for an international manufacturer of electronic equipment for a long time, Slijkhuis started in 2005 at MBA Polymers Inc. - the joint venture partner of MGG in the establishment of MBA Polymers Austria and was responsible for the Global Sourcing division. Since 2012 Slijkhuis was responsible for WEEE, Public Affairs and Marketing at Müller-Guttenbrunn Group. Currently he is also a member of the board of EERA, the European Electronics Recyclers Association.

At the same time, Serge Hombroukx (born 1966) strengthened the new management team as Sourcing Manager. After working in the aviation and refrigeration industries, Hombroukx joined the international sourcing team of the Müller-Guttenbrunn Group in 2012.

Focus on strategic cooperation

"We look forward to further expanding our business relationships with WEEE recyclers throughout Europe. The optimisation of the available mixed plastic fractions or the establishment of strategic cooperations is the focus of our attention," Hombroukx emphasised right at the beginning. Höggerl and Slijkhuis, the two new managing directors, confirmed this: "Optimum input materials form the basis for high-quality products. Successfully implemented applications prove that they can be used as drop-in replacements for virgin material - we are proud of that. We call this: Responsibility starts with the raw material. In the future, MGG Polymers will focus even more than before on working closely with manufacturers of durable products. This is our contribution to the recycling industry!"

"We are pleased that we were able to fill the management with experienced employees from our own ranks."

PC/ABS: A new recycled plastic

thanks to research and development

Recycling of plastics - not always easy, because much for this has not yet been sufficiently researched. However, with the "Plastics Strategy" proclaimed by the EU in 2018, the path for Europe is clearly set - recycling rates are to be increased dramatically! MGG Polymers is well positioned for this - an internal research and development team has been working for years on ideas to recycle more plastics than before. Good solutions, however, require time and patience. "As early as 2012, we have already started to think about how the separation and refinement of PC/ABS by type could succeed. It then took six years before it was ready for series production," says Günther Höggerl about the long development path taken by MGG Polymers.

It was quite a risk when MGG Polymers decided years ago to tackle the recycling of PC/ABS (polycarbonate/acrylonitrile butadiene styrene). While some plastics can already be recycled relatively easily and profitably, until recently PC/ABS was one of those plastics that had to be disposed of - i.e. incinerated. At the start of the project there were neither known separation processes nor experience with the separation of this polymer. It had been high time for the development team to change this.

Strong results

MGG Polymers tackled the expedition into unknown territories with strong partners. Before that, however, the company improved its own separation processes. "In some cases, a really big effort was required. For example, the technologies behind these separation steps had to be developed from scratch," reports Günther Höggerl. The project was finally completed in 2018 - a big step forward that brought amazing results.

MGG Polymers as trendsetter

To complete the recycling of PC/ABS, the material has to be not only optimally sorted, but also compounded and granulated. In order to successfully master this step, a tailor-made extrusion line was designed in cooperation with an Austrian machine manufacturer. This line conceals important innovations - such as high-performance degassing devices, which are now increasingly used in the industry. MGG Polymers has thus set new trends, which is not surprising in view of the advantages for Höggerl: "This high-performance degassing system enables pollutants that are generated during the processing to be removed much more effectively. This also improves the odor of the finished product - which is particularly important for customers in the automotive industry".

The system also enables the dosing of additives in their pure form. This allows the properties of the produced recycled plastic to be significantly influenced. "It is not always easy to obtain finished additive solutions for our sorted recycled plastics on the market. Therefore, we have to develop them ourselves to some extent. Thanks to our flexible plant, we can always try out a few things here," Höggerl sees many more development opportunities.

PCR plastic as good as new

Years of effort have paid off: the PC/ABS recycled by MGG Polymers can be used for housings of new electronic devices. The company is very proud of the fact that this plastic has once again succeeded in meeting all relevant properties including the optical requirements for high-gloss housings such as beamers, routers, setup boxes and loudspeaker covers. "Manufacturers have subjected our post-consumer

recycled plastic to numerous tests and certified that they found no difference between the material of MGG Polymers and virgin material," says Höggerl, pleased that the hard development work has paid off. The PC/ABS recycled by MGG Polymers also offers an ideal basis for applications in the automotive industry.

Since 2018, MGG Polymers has been commercializing the "new" recycled plastic PC/ABS at various well-known customers - allowing the development team a short break. For the company's management, the recycling of PC/ABS represents the start of a whole series of developments at MGG Polymers. Other types of plastic are to be recycled in the coming years - also because there are changes in some areas. "We are closely observing our target markets and therefore already know today that the composition of plastics in consumer products is constantly changing. After all, today's electrical appliances are not the same as they were 5, 10 or 15 years ago," explains Höggerl. "Since the company was founded in 2005, we have carried out extensive analyses of the quality of the waste streams delivered to us and can therefore say exactly which types of plastics will increase or decrease in percentage terms over the years. This of course helps us to choose which plastic we want to recycle next".

Application instead of theory

The preparations for this are already underway, and one thing is clear - breaking new ground is easier together than alone. For this reason, MGG Polymers maintains a number of partnerships with universities, research institutes and machine partners. The focus is currently on the possibilities and limitations of sensor-based sorting, which is expected to lead to a technological leap in the coming years.

"We combine the theoretical principles developed by the research partners and their test results with our data collected over many years and our practical experience. This is the key to success," Günther Höggerl is convinced. "The development work has paid off - PC/ABS is no longer incinerated, but is given a new lease of life as an input material in high-quality applications. Step by step, we want to prove that it is also possible for other types of plastics - even if it should again be a long way to success. In any case, we are very confident about the future."

"Manufacturers have subjected our post-consumer recycled plastic to numerous tests and certified that they found no difference between MGG Polymers material and virgin material."

Prevented threshold values and important decisions

Important aspects of environmental protection were addressed in the United Nations BRS-COP 2019. Chris Slijkhuis, an employee of the Müller-Guttenbrunn Group, also contributed his expertise.

Spring 2019 was again COP time. In this case, COP does not stand for an American police officer, but for the "Conference of the Parties". Specifically, these are the parties to the UN conventions of Basel, Rotterdam and Stockholm (BRS), which meet every two years for a conference. Often unnoticed by the public, these three international agreements regulate the prevention and combating of the illegal traffic and trade in hazardous chemicals and waste.

The Basel Convention, for example, lays down rules on the cross-border transport of hazardous waste and its disposal. Hazardous chemicals and pesticides are covered by the Rotterdam Convention. Persistent organic pollutants are monitored by the Stockholm Convention Conference.

Among the approximately 1,400 participants from 180 countries, Chris Slijkhuis, an employee of the Müller-Guttenbrunn Group, was also present at last year's COP in Geneva. Slijkhuis took part in the conference as a representative of the European Electronics Recyclers Association EERA.

Limit values for brominated flame retardants

Among the many aspects discussed, his main focus was on the Basel and Stockholm Convention around the topic of Persistent Organic Pollutants (POPs) and more particularly on the setting of limit values for certain brominated flame retardants. One of these flame retardants - more specifically Deca-BDE - is often found in old electronic appliance housings. At COP 2017, this substance was declared as POP, for which an international valid Low POP Content limit value was to be found. While an upper limit of 1,000 ppm (parts per million) has been set in the EU since April 2018 for the full substance group of PBDEs, which includes Deca-BDE, no global agreement could be reached.

Different points of view

"In Geneva, simply too many different points of view came together," says Chris Slijkhuis looking back. "As recyclers, we understand that these materials are persistent and therefore upper limits make sense. However, they should not be set so low that recycling plastics from electronic waste becomes impossible. For this reason, the EU upper limit of 1,000 ppm was considered sensible after a lengthy discussion phase." However, environmental NGOs had demanded limit values of 50 ppm - a value that can only be verified with incredible effort and cost. This would mean that a vast amount of plastics would have to be incinerated instead of being recycled. Slijkhuis finds it incompre-

hensible that some country representatives agreed with this demand and thus prevented the setting of a limit value: “Considering how much energy, raw materials and CO_2 emissions are saved by recycling, nobody should be interested in setting such low limits. It is more important for the environment to find a wise balance to eliminate these pollutants and still be able to recycle plastics.” Because no agreement could be reached and every compromise proposal was rejected, the next COP in 2021 will again address this issue. In the EU, the 1,000 ppm Low POP Content threshold value will remain in force at least until then.

Fight against plastics in the seas

A second point of particular relevance for recycling companies which was discussed and also agreed in Geneva, concerns the cross-border transport of plastics. At the COP on the Basel Convention, the Norwegian delegation had made a move to put a stop to the pollution of the oceans by plastic waste in future. To this end, the cross-border transport of plastic waste should also be more strictly controlled.

In Switzerland it was agreed that the following points would come into force at the beginning of 2021:

1. Plastic waste may generally only be cleaned and transported separately to other countries.
2. If mixed plastic fractions are shipped across national borders, notification is required and the authorities of both countries must be involved.
3. If the transported plastic is contaminated, the shipment will be given a new waste code for hazardous waste.

Many question marks remain

However, the third point still raises some question marks, as neither substances nor valid limits for contamination have been set. If plastic waste were to be declared as hazardous waste with this regulation for certain contaminations, a new regulation for plastics recycling plants would also be necessary, because plastics plants are generally not licensed to accept hazardous waste. “This is particularly important for our MGG Polymers plant, where we currently process plastics, which would then possibly be given such a code for hazardous waste,” explains Chris Slijkhuis, who sees a huge need for discussion here. “This also raises the question of whether these regulations apply to deliveries within the EU or only for export to a non-EU state.”

In any case, answers to the open questions must be found by January 2021. Until then, the arrangements made within the European Union and the Organization for Economic Cooperation and Development (OECD) must be cast in legal form - here too, the Müller-Guttenbrunn Group will continue contributing its expertise and advocate sensible solutions.

“It is more important for the environment to find a wise balance to eliminate these pollutants and still be able to recycle plastics.”

"With China a huge market has disappeared, so we have a surplus of raw materials in Europe. That's why buyers are currently dictating terms."

The important **factor**

As Managing Director of Metran Rohstoff-Handels GmbH, Martin Kriegl is responsible for purchasing and sales in the MGG group of companies. Every year, he ensures that around 80,000 tonnes of recycled metals are delivered to the buyer. In the interview he explains, among other things, why China recently turned the market upside down and why he is now travelling more than ever before.

Mr. Kriegl, your start at Müller-Guttenbrunn was somewhat unorthodox, if you will.
MARTIN KRIEGL: Yes, I applied to Müller-Guttenbrunn in 1995 because I thought I would be able to finish my studies quickly. But that was not the case and I then hired on the basis of my thesis. I also got a taste of the scrap business. The diploma thesis and a bit of scrap business finally turned into a permanent position.

How did your area of responsibility change afterwards?
KRIEGL: My tasks have changed constantly. At the beginning I did a lot of public relations work, including the production of our company's newsletter and brochures. Subsequently, I was allowed to set up the first ISO quality and environmental management systems. I even completed a radiation protection course. Many things that nobody wanted to do over the years somehow ended up with me.

In the end you focused on buying and selling. This is a very important area for recycling companies...
KRIEGL: Buying and selling are definitely decisive factors for MGG. Like typical sales representatives, our buyers go from door to door - in this case to scrap dealers and industrial companies - to offer our services there: "We take your scrap, your waste. We set up a container for you and pick it up. We offer you disposal security, because we have all permits for proper disposal - and ideally we even offer you money for the waste!" We are in fierce competition with other companies.

But even tougher is currently the sale of recycled materials. Why is it so difficult to sell aluminium, copper, brass and other valuable raw materials at the moment?
KRIEGL: Until three years ago, there was actually a great demand for the recovered metals. But since China stopped importing most waste materials, everything has changed. A huge market has disappeared and therefore we have a surplus of raw materials in Europe. In addition, more material comes from America, because you can't export to China there either. So at the moment the buyers dictate the conditions - like quality and price. We recyclers have to get in line and negotiate well. I have been in this industry for 24 years now, but I have never travelled that much!

So personal contact is the key here?
KRIEGL: Face-to-face is of course much easier than over the phone - especially since the contracts are often very complicated. Over the years I have built up a broad network. Real friendships have developed with some buyers and sellers. Since I generally like to have contact with people, I really enjoy this work - a combination of having fun and doing business at the same time. The typical Austrian sense of humour, which is appreciated abroad, certainly helps me.

Aren't there already a lot of business done via digital platforms these days?
KRIEGL: Yes, the younger generation prefers to do their buying and selling transactions via apps, which allow you to set quantities and prices and order with a click. This sometimes works, sometimes not. What counts most is quality - and often not the best price. In the industry they say: A deal is only complete when the quality of the material is confirmed and the money has been transferred. In personal contact you can talk about certain conditions, make compromises and find solutions. If only more computer systems are used, these social contacts are lost and I don't know if this can be the last word on the subject.

With so many different activities and tasks over the years, you have certainly learned a lot personally. What were the most valuable lessons?
KRIEGL: The most important thing is probably not to take yourself too seriously and not to take business personally. For example, I cannot get angry if a customer has a claim. I strictly separate acquaintances and friendships from business. I haven't done business with some of my friends in the industry for years because the conditions simply don't fit. Nevertheless we can look each other in the eye. Another point is contract loyalty. We at Müller-Guttenbrunn fulfill contracts that have been concluded - even if the contract is disadvantageous for us. Our partners appreciate this loyalty to the contract very much because they know that they can rely on us. For me personally, I have also learned over the years that it is important to go on vacation for more than ten days, to switch off and enjoy the days with the family. My colleagues in the office already take care of the most important things. However, I have to admit that I also want to know what's going on when I'm on holiday and so I check my mobile phone at least once a day to see what's new.

It is obvious that you enjoy your work - we wish you continued enjoyment and success in your work!

One for **all cases**

MGG Metran has been using a flexible shredder since last year. It is not only mobile, but can also shred different waste fractions.

To be able to recycle waste, it must be collected, shredded, separated, etc. An important step in this process is often the shredding. At Müller-Guttenbrunn there are specially designed shredders (e.g. for old cars, electrical appliances). These are usually permanently installed and often specialized in certain waste fractions. However, it is precisely this challenge of shredding and separating different groups of waste in rapid succession that MGG Metran repeatedly faces.

The Bobby Car as a starting signal

Especially for the so-called Bobby Car project an efficient shredder was needed, to separate composites of plastic and metal in order to recycle the individual components. A flexible but reliable solution was therefore sought.

After an intensive search for a suitable device, the decision was finally made in favour of the Miura shredder produced by the Austrian manufacturer Lindner. “We tested a demonstration model at our factory for one week. After this week, we were convinced that this shredder would enable us to master many of the new challenges,” says Daniel Forstner, responsible for production and development at MGG Metran.

For a quick change

The mobile shredder on a 3-axle trailer is equipped with a 275 kilowatt shredder unit. A quick-change system allows the rotors to be exchanged for different materials. This allows different fractions - from various plastics to light scrap - to be shredded in rapid succession. Contaminants can do little harm to the shredder and thanks to a specially developed secondary crushing bar, it is now possible to achieve maximum crushing of the individual parts.

Satisfactory balance

After the first few months of live operation, MGG Metran is satisfied with the results, as Daniel Forstner confirms: “With the Miura shredder we can react more flexibly, especially when it comes to processing complex material flows. This flexibility also enables us to respond even better to customer requirements. Above all, we can further increase the high quality of our secondary raw materials.” In addition, the company is convinced that such a flexible shredder can close even more material cycles and increase recycling rates.

Word of this positive experience spread to the Romanian colleagues in the Müller-Guttenbrunn Group. A test with a mobile shredder was also carried out in Romania and the shredder impressed everyone. It was quickly clear to those responsible: We also need a mobile shredder!

"With the Miura shredder we can react more flexibly - especially when it comes to processing complex material flows. This flexibility also enables us to respond even better to customer requirements."

Due to its mobility, the Miura shredder is not only used at MGG Metran, but can also be used in the other Mostviertler plants of MGG Metrec or MGG Polymers.

Up to now, the shredder has been used for the combinations of the following fractions:

- Hard plastics from the municipal collection (barrels, IBC containers, ...)
- Plastic fractions from e-waste
- Printed circuit boards
- Cables and copper composites
- Light scrap

“We tinker every day!”

Manfred Tüchler has been with MGG Polymers in Kematen since the very beginning. In an interview, the 48-year-old plastics technician talks about the ups and downs of plastics recycling at the plant and explains why it is important to fall flat on one’s face sometimes.

Mr. Tüchler, you have been with MGG Polymers since the very beginning of the company. What were your first experiences in 2005?
MANFRED TÜCHLER: It was exciting back then, because there were only the halls where the first machines were installed. For the laboratory and everything else, all the furniture and equipment had to be installed first. Of course it was also interesting when the machines were put into operation for the first time. What was on the paper did not work right away. We had to turn a lot of screws to make sure that what we had in mind actually came out.

Meanwhile our colleagues claim that they know every single screw in the company – that is, every screw that can be turned…
TÜCHLER: (laughs) Almost every screw! As a plastics engineer, my focus is mainly on extrusion and injection moulding, but of course I have gained a lot of experience over the years. So many details are important in plastics recycling: How high is the temperature during processing? How well has the material been processed? Which polymer combinations are processed? We actually fiddle about every day - and that’s when you can really fall flat on your face. Nevertheless, trial and error is so important, because it’s the only way we’ve been able to gain a lot of experience in the company.

You are a trained plastics technician. How did you come to MGG Polymers in the first place?
TÜCHLER: That’s right, I completed my apprenticeship as a plastics technician and attended vocational school in Steyr. Afterwards I worked for 20 years at the company Maderthaner in Amstetten. When I then heard that Müller-Guttenbrunn wanted to open this plant with an American partner, I was tempted to take on a new challenge.

What exactly attracted you?
TÜCHLER: The fact of creating a new product from a pile of electronic scrap. When you see today what you can make out of recycled material, it is impressive and very motivating. It goes without saying that this is not always easy. For example, customers in the automotive industry set very high standards. To meet these demands and requirements is a huge task. In any case, it is worthwhile to contribute something to environmental protection.

Was the work as expected?
TÜCHLER: Yes and no. I was aware that the first few years would not be easy because there was a lack of experience. But then it was very different from what was originally presented. The truth is that today we are still facing new challenges every day to deliver the most consistent, optimum quality possible - but that’s the exciting thing. In any case, it never gets boring! You never stop learning. That’s why I enjoy my work. I enjoy having colleagues who all pull together so that in the end everything works out fine.

What does your work actually look like?
TÜCHLER: Basically, I am responsible for the quality of the production. This means that I am always behind the fact that planning and production is carried out correctly. I have to coordinate with the production and shift managers and find solutions for problems. When it comes to quality control, I take special care that everything fits

"Every day we face new challenges, to deliver the most consistent, optimal quality possible."

during extrusion – the process when the molten recycled plastic is pressed through the tool – and injection moulding. There is also a bit of development work and coordination with logistics.

Let's focus briefly on quality control: What exactly is done in this field?
TÜCHLER: Our employees in the laboratory of MGG Polymers are of course constantly testing our material so that the quality of the almost 90 tons of plastic granulate that we produce every day is fine. For example, in injection molding, we make 120 test rods for each batch. These rods are thoroughly tested. Since we are also constantly developing, we now also have a laboratory extruder where we can produce small quantities and test them immediately.

Is development work currently one of the biggest challenges?
TÜCHLER: Yes, the development work of reprocessing new types of plastics is of course a major hurdle. At the moment we are even challenged to constantly refine the quality of our latest new development - PC/ABS. We also have a lot of homework to do on our new, fourth line - but the same was true of the other three extrusion lines.

You have now been with the company for 15 years. Are there any moments that you especially remember?
TÜCHLER: Here I am aligned with my last answer that it always took some time until the systems were running as desired - especially at the beginning. It was terrible, because there was a big gap between theory and practice with the first system. At the opening ceremony nothing was working perfectly - but we had to keep the plant running somehow. Somehow we managed to do that - and when you see what has become of it today, on the one hand you have to smile about it, on the other hand you are proud that it is running so well now.

Finally, the question about the private person Manfred Tüchler: Does he have a lot in common with the fiddling plastics engineer at MGG Polymers?
TÜCHLER: Absolutely, because even in my free time I simply can't stop tinkering. However, I also like to do sports and so I go mountain biking or hiking in the great outdoors. Nevertheless, I am passionate about building many things on my own. I have my own small workshop, where I build my model airplanes, I like to fly with. At the moment I am working on a very special project - a motor glider in 1:3 scale. In this project I design and build everything myself.

Then we hope you enjoy doing handicrafts - inside and outside the company. And of course, enjoy the high-altitude flights with the motor glider after completion!

The most modern shredder in Austria

End-of-life vehicles, scrap metal or waste containing metal - the large shredder at the Müller-Guttenbrunn Group's plant in Amstetten shreds bulky waste so that it can be recycled. After almost 35 years, a new unit was installed.

Recycling, environmental and climate protection are on everyone's lips again at the moment. In order for waste that is rich in raw materials to be recycled, it first has to be shredded many times. For this reason, the large shredder at the MGG Metrec plant (formerly Metall Recycling Mü-Gu) is a core component of the Müller-Guttenbrunn Group. Since 1984, the plant in the east of Amstetten has been shredding large metallic waste into fist-sized pieces for further processing according to the hammer-and-anvil principle. Until recently, the country's second oldest shredder was located in Amstetten - now the most modern shredder plant in Austria is located there.

Modernisation in many steps

The replacement of the shredder unit in autumn 2019 marked the completion of a modernisation project that has been carried out in many small steps over seven years. "You can't simply shut down a plant of this kind, convert it and then start it up again. That is why we installed a new magnetic sorting system, a noise protection enclosure and modern air-treatment and dust filters in partial steps", says Michael Grimm, Managing Director of MGG Metrec. "With the new unit and the completion of the work, we have finally made the leap into the future."

As a pioneer in the recycling industry, the Müller-Guttenbrunn Group regularly invests in modern plants. For example, the final shredder conversion alone cost around 3.7 million euros - and brings with it numerous advantages and improvements. For example, the modern drive system increases efficiency and reduces energy consumption. In addition, shredded material can be separated more quickly by a second screen grate. The maintenance crew also finds it easier to carry out daily inspections and weekly maintenance work, as the new shredder is much better positioned within the noise protection enclosure.

What goes into the shredder?

In total, the shredder will process around 100,000 tonnes of waste annually. Of this, about ten percent are currently end-of-life vehicles, but the mammoth amount consists of so-called shredder input material (sheet metal scrap, dismantled steel structures, metallic waste, etc.). The iron parts of the processed material are separated in Amstetten and then transported by rail to steelworks, where they are remelted to crude steel. The remaining fractions are further processed at MGG Metran and MGG Polymers in Kematen, where the various metals and plastics are recycled into secondary raw materials. In this way, the Müller-Guttenbrunn Group is making an important contribution to environmental and climate protection: the work in the three plants in and around Amstetten alone can save more than 250,000 tons of CO_2 emissions per year compared with the new production of raw materials.

Video on the topic

A YouTube video with exciting footage of the final modernization steps of the large shredder at MGG Metrec can be found at https://bit.ly/388haDg

Or you can simply scan this QR code:

"You can't just shut down a plant like this, rebuild it and then start up again. That's why we did the upgrade in stages."

"In spite of all the hustle and bustle, safety always comes first, because after all large and heavy things are moved."

"The bigger the machine, the better!"

Leopold Kranl uses the excavator to move tonnes of recycling material around the MGG Metrec factory premises in Amstetten every day. For an extensive interview, however, the 46-year-old from Mauer climbs out of his driver's cab and briefly leaves his 186 hp workplace.

There are probably many boys who dream of one day becoming an excavator driver. Was that also one of your childhood dreams?
LEOPOLD KRANL: Yes, you could certainly say so. It was already like that for me as a little boy: The bigger the machines, the better. However, I first completed an apprenticeship as a tiler before I really switched to the big machines.

What was your journey from tiler to excavator operator here at MGG Metrec?
KRANL: After my apprenticeship I worked as a truck driver in civil engineering. I was there with a crew that connected gas lines to the houses. So 21 years ago I operated my first excavator - still relatively light at 1.5 tons. I enjoyed it so much that I became a full-time excavator driver. In spring 2011 I was looking for a new professional challenge and found it here at MGG Metrec in Amstetten. It is simply fun here, with the big machines.

What's the fun in that?
KRANL: You would think that after so many years, a lot of things would already be routine. But here, every day is a new challenge, every situation, every material is different. Right now I'm also a jumper, which is why I don't just ride one particular excavator. I have the pleasure of driving different excavators. At the moment I am sitting on the scrap shear, where the working radius is limited by the fixed installation.

What is your daily routine on the scrap shear?
KRANL: I start at 7 in the morning. First of all, all maintenance work has to be carried out and the hydraulic oil checked. Then I clarify with my colleagues which material is currently needed before I sit down in my cabin and the work really starts. Then I have to fill the shear and make sure that the settings are correct. If everything fits properly, the shear do the job by itself. All I have to do is make sure that it is filled and runs smoothly - until 5 pm in the evening. Then, before I can enjoy the evening, I have to top up the oil and lubricate everything properly.

How much does the weather bother you in your "office" on the excavator?
KRANL: Well, we excavator drivers at MGG Metrec can really consider ourselves lucky. The machines are all equipped with air conditioning. Whether tropical temperatures in summer or sub-zero temperatures in winter, it is always pleasant on the excavator.

You said that you work with many vehicles. Do you also have your "own" excavator?

KRANL: Yes, only when my colleagues are on vacation, then I also sit on other equipment. With my 29-ton Liebherr LH 30, I normally work at our large shredder. I unload the trucks, lift the material into the shredder and of course load shredded material on trucks or wagons.

With the excavator at the large shredder, there are certainly other challenges than on the scrap shear - aren't there?
KRANL: Yes, that's where the car wrecks are dismantled. It can happen that cars with gas tanks or hybrid vehicles, which are not suitable for such a scrapping, are delivered. So you have to think carefully about how to lift them from A to B with a grab. In spite of all the hustle and bustle, safety always comes first, because after all large and heavy things are moved.

That is why the cooperation with the colleagues is very important?
KRANL: Yes, communication works optimally thanks to company radio. If necessary, we excavator operators always have a mobile phone with us. But the most important thing is the personal conversation in the morning. After all, the materials have also changed in recent years. Due to the new shredder for electrical and electronic equipment the quantity has also increased considerably. This brings new challenges, which can often only be mastered through good cooperation.

What do you wish for the future at MGG Metrec?
KRANL: As already mentioned, the bigger a machine is, the more exciting it is for me. Therefore, I would naturally wish for a 90-ton excavator. But seriously: There are no big wishes except to stay healthy - that is still the most important thing.

For health, the balance to work also plays an important role. Hence the final question: How do you enjoy your free time?
KRANL: My two big hobbies are fishing and asphalt stick shooting. For me, a fulfilled life also includes good food - even if it's perhaps not quite as healthy. So I simply can't resist a cup of coffee and a piece of cake.

Then we wish you continued pleasant hours of work on the large machines and, to compensate, the one or other sweet temptation to coffee!

New and electric

MGG is constantly looking for new environmental improvements and has decided to use an electric material handler for the hydraulic shear. The advantage is that no diesel is needed to operate the machine and therefore no exhaust gases are produced. In addition, the vibration-free drive system and extremely low operating noise increase the comfort for the operator. Furthermore, the Müller-Guttenbrunn Group team expects lower operating costs, not only due to the electrical operation of the machine, but also due to significantly longer maintenance intervals and lower maintenance costs compared to diesel engines.

You can see more of the new electric material handler in this YouTube video: https://bit.ly/2TnkqpS

Or you can simply scan this QR code:

Design + Recycling = important!

At a PolyCE workshop in Amsterdam, experts exchanged views on how design can help to increase the use of recycled plastics. There was also a debate on the demands that designers and manufacturers place on recycled plastics. An exciting interplay that plays a decisive role in a sustainable future.

Location: Philips Global Headquarters in Amsterdam. Time: Mid September 2019. Objective: to create a business case for recycled plastics. Involved: representatives from all sectors of the electronics value chain in the EU. This is how the PolyCE workshop entitled "Circular Design of Electrical and Electronic Equipment - the challenge of post-consumer recycled plastics" can be summarized in a few words. At this workshop, 40 participants discussed how post-consumer recycled (PCR) plastics from electronic scrap can be processed in applications and products that place high demands on aesthetics and material quality. To this end, some best practice examples were examined.

MGG Polymers shared its wealth of experience

MGG Polymers showed some examples of how PCR plastics can be processed in products that are well accepted in the market. Chris Slijkhuis, a member of the MGG family, represented the European Electronic Recyclers Association (EERA). He showed how legislation can hinder the development of a recycling economy and what measures are necessary to prevent such difficulties. As a concrete example, he cited the international disagreement on flame retardants in used plastics, which caused many problems last year.

This PolyCE workshop also highlighted ways to stimulate the market for recycled plastics. The aim is to encourage companies to use more recycled plastics in their products. In addition to timely delivery in sufficient quantities, the use of PCR plastics must always take into account that the technical properties of the materials differ as little as possible from those of virgin materials. For this reason, the exchange of experience is a decisive success factor in the various design phases.

Various working groups have been working on new designs using PCR plastics. For example, the University of Ghent presented some convincing test samples of the various polymers currently being recycled in Europe. The representatives from Ghent pointed out many of the design decisions to be taken into account: surface properties, bonding mechanisms, physical properties and so on.

Lots of potential

The workshop in Amsterdam showed the potential of design with recycled plastics in new electrical and electronic equipment (EEE). The workshop also provided convincing and economically sound arguments why the use of recycled plastics is ecologically and especially economically sensible. The most important finding: The hurdles for the use of PRC plastics in new high-quality electrical and electronic products can be overcome - especially with well elaborated design!

"Companies should be encouraged to use more recycled plastics in their products."

PolyCE
PolyCE stands for "recycled high-tech polymers for recycling management". In this EU-funded project, 20 companies and organisations are working to strengthen the value chain for recycled plastics in the EU. This is urgently needed in view of the ever-increasing amounts of plastics waste!

Exciting project partners
Important OEM manufacturers such as Philips and Whirlpool are involved in this project, as are researchers from the Fraunhofer Institute and the University of Leuven. PolyCE also involves several design brands (Pezy Group, Imagination Factory) and of course collection and recycling organisations for electrical and electronic equipment waste (Ecodom, Sitraplas). And of course, Austrian pioneer MGG Polymers is also on board for this project.

Strengthening recycling
The participating PolyCE experts want to promote the use of recycled plastics in order to reduce the consumption of new plastics at the same time. Currently, they are trying to close the "missing link" of the recycling economy. This "missing link" is the connection between the recycler and the producers of electrical appliances - in the specific case of plastics. The project partners regularly exchange ideas on how best to design electronic products so that they can be recycled more easily and effectively. They also work together to find the best way to reuse plastics recycled from WEEE in new electronic equipment.

International **E-Waste Day**

It is estimated that by 2019, 50 million tonnes of e-waste have been generated worldwide. Half of this is personal devices such as computers, monitors, smartphones, tablets and televisions, the rest are larger household appliances, heating and cooling equipment. However, only a fifth of these old devices are recycled. This is just one aspect that the International E-Waste Day on the 14th of October drew attention to.

Only 20 percent recycled worldwide!

For two years, the E-Waste Day has been drawing the attention of the public especially on the correct recycling of electronic waste (WEEE). More than 50 organisations from over 40 different countries worldwide have been demonstrating the importance of correct WEEE recycling with initiatives on this day. Currently, only 20 percent of the world's electronic waste is recycled. This means that 40 million tonnes of old electrical and electronic equipment are either disposed of in landfills, incinerated or illegally traded and not properly dismantled every year. This represents an enormous danger to people and nature - and also a loss of valuable raw materials!

Even in the EU, which is the world leader in recycling electronic waste, only 35 percent of waste is officially reported as collected and recycled. The lack of awareness in society makes it impossible to develop closed loop recycling systems for electronic equipment. Chris Slijkhuis, the new Managing Director of MGG Polymers, in his role as a board member of EERA, the Association of European Electronic Recycling Companies, draws attention to this in a video message.

There is much to do

"The fact that around two thirds of electronic waste is not recorded is a huge problem. After all, this waste is still processed - often under inferior conditions and with poor results. In the interests of all those involved as well as future generations and the environment, this situation must be improved," Slijkhuis is convinced that something must be done. The big goal is of course to recycle all electronic and electrical equipment properly. Therefore, Slijkhuis demands that standards in this area must be defined and made mandatory.

To this end, easier cross-border transport between the facilities of official recycling companies should also help (keyword: fast-track notifications). Chris Slijkhuis is certain that this is the only way to really make the concept of recycling management a reality: "Hopefully the numerous initiatives on the 14th of October will help to make the whole society aware of the great importance of recycling electrical and electronic waste for all of us!"

Video on the topic

MGG Polymers Managing Director Chris Slijkhuis, as a member of the European Electronics Recyclers Association (EERA), sent a video message to the public on the occasion of the International Day of Electronic Waste on the 14th of October: https://bit.ly/2RcYpaI

Or simply scan QR Code and watch the video:

From accountant to recycler

In 1991 the Czech MGG subsidiary Metfer Trading was founded. The plant in Plzen developed hesitantly before Radek Mašek took the reins as managing director almost six years ago. In an in-depth interview, the 43-year-old looks back on his beginnings as an accountant, the challenges and, of course, the future of the company.

Mr. Mašek, you worked for the energy company RWE for eight years. Why did you decide to move to MGG Metfer in 2008?
RADEK MAŠEK: I built up the controlling department at the RWE branch in Plzen. But then I realised that I would need a change at some point. Anyway, I wanted to work as an accountant again, which I had already done for several smaller companies during my studies. That was always fun for me. That's why I finally responded to an advertisement from Metfer, because they were looking for an accountant. However, I did not know exactly what to expect there.

Were the first few days then a culture shock for you?
MAŠEK: Of course I was aware that Metfer cannot be compared to a large corporation like RWE. But the first day was a surprise. At RWE I had a typical office on the 6th floor, at Metfer I was actually standing at the scrap yard. The first few days I had to take inventory and I walked around the area in my suit. That was something completely different and I must honestly admit that I wondered whether this was a good decision.

What then convinced you of MGG Metfer?
MAŠEK: After the first few weeks the picture quickly became very positive - I completely forgot that I have worked in a scrap yard. On the contrary, that's when I really realized that we are doing something positive for the environment. That was a subject I hadn't thought much about myself before. But when I saw what materials we recycle, it was a good feeling and the culture shock was quickly digested. I also got to know the Müller-Guttenbrunn family very soon. That improved my point of view once again, because I noticed that the managing directors see their employees as equal partners. Of course, that's quite different from working in a large corporation!

So how did things progress for you personally?
MAŠEK: After the first months I understood how our company works. After all, I felt the need to do more than just bookkeeping - I wanted to establish a controlling department and develop management skills myself. Until then, I had only done what was absolutely necessary in this area. There was no top-down view of Metfer's costs and development.

Was that one of the reasons why the company was not flourishing at that time?
MAŠEK: Our company was indeed in great turbulence at the time. While other MGG subsidiaries developed because they invested, our results were not positive. We are constantly lagging behind them because we had not developed any new ideas and had not invested anything. On top of that, there was a general crisis in those years, which further intensified the effect of the lack of investment. At Metfer we also worked almost exclusively with iron and only a few non-ferrous metals at that time. So we were only an insignificant player in the market. I realised then that we could only be successful if we made fundamental changes. That is why I started to analyse the situation in detail: What are the reasons for the lack of success? Why does the

company not have good results? I did not just look at the bare figures, but also at other aspects such as the customer or purchasing portfolio.

This process has ultimately led to the fact that you, as Managing Director, have been steering the fortunes of MGG Metfer Trading since the 1st of January 2014. Were you surprised by this step?
MAŠEK: No, not really. I was appointed an authorized signatory relatively soon and was thus able to influence the development of the company to a certain extent. Since my predecessor was about to retire, it was a logical development somewhere.

What were your beginnings as Metfer managing director?
MAŠEK: The beginning was complicated due to the aforementioned background. The market knew MGG Metfer Trading only as a company that buys and sells iron and perhaps makes small demolitions. Nobody had us on the radar as a partner for the recycling of non-ferrous metals. My colleagues were convinced that it was already too late to gain a foothold here. So the beginning was quite complicated.

So how did you manage it all the same?
MAŠEK: Fortunately, we also had the help of colleagues from the Müller-Guttenbrunn Group - for example Martin Kriegl, Günther Höggerl and Gunther Panowitz. With this help we were able to realize a large deal with an incineration plant near Prague, among other things. At that time, we more or less only took over the logistics for the slag, and the material was finally processed in the plant of MGG Metran. That made a few things clear to me: Firstly, I realized that it really is a great advantage to belong to a real recycling family like the Müller-Guttenbrunn Group, where they have a wide variety of technologies and also help each other. Secondly, I noticed that although many companies in the Czech Republic trade in iron, no one can process such slag. So it was clear to me: we have to venture into new areas if we want to write positive figures.

Which area did you then venture into with MGG Metfer?
MAŠEK: As so often in life, chance has come to our aid here. We have a new neighbour: a big company that recycles PET bottles. Since we have a weighbridge that the company wanted to use, we got into conversation. We found out that the pressed waste packages from Germany will contain not only PET bottles but also foil and aluminium cans. As our neighbouring company only produces PET flakes, it was clear that the cans would be left with the remains of the PET bottles as well as the films. I saw a big chance and said: "Okay, we'll buy this waste and separate it so that we can sell the aluminium cans sorted by type." We had up to this moment absolutely no experience with cans.

So how did the project become a success?
MAŠEK: At first, my employees and I puzzled over how this could work on the factory premises. We really had no idea how to separate everything. At first we did the separation manually with leasing employees, but at some point the amount exploded. I was on holiday in Italy when I suddenly got a photo on my mobile phone by our site manager. A huge mountain of unsorted material and our five leasing employees. Of course I started to think for a moment, but again help came from Austria from our recycling family. We were able to rent an old separating plant from MGG Metran and quickly put it into operation - and this plant still works today with minor modifications.

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"Therefore it was clear to me: We must venture into new areas if we want to write positive figures."

What volume can currently be handled with it?
MAŠEK: We currently produce around 100 to 140 tons of cans per month. In the meantime, we have also invested in our own press so that we can press the material and transport it in a space-saving manner. In addition to aluminium cans, thanks to our own separating plant, we have also been separating special iron cans since this year, of which we also produce 100 tonnes per month.

Have you made any further investments?
MAŠEK: For me, it was very important that we renovated and re-fastened a large part of our plant area. For this purpose, we also built new boxes for the individual fractions. Although we invested a lot of money in new technology such as our shredding plant with an over-magnet, of course these basic conditions must also be right at the grassroots level, after all we also process car wrecks. So it is particularly important that the underground is really in perfect condition.

Speaking of car wrecks and car recycling: the laws in the Czech Republic have been changed in recent years. How did you perceive these changes?
MAŠEK: The changes came into force pretty much at the same time as I became Metfer managing director. Until 2014, every small scrap company was able to process car wrecks - often under very bad conditions. This has changed radically with the new regulations. Now the whole car has to be handed over to a certified company so that no individual parts end up in a wild dump somewhere. For the companies, this now means keeping exact records of how much of the cars is recycled and what happens to the individual fractions. This also means that the storage of wrecks is closely monitored. Therefore, car wrecks are now recycled in a much more organised way. Another change was that scrap can no longer be paid for in cash. Many people thought at the time that this was a bad decision, but I think exactly the opposite is the case: it means that a lot of things can be understood immediately and we do not have to worry about cash every day. That is very gratifying.

The development at MGG Metfer Trading over the past few years is also very gratifying. How do you see the current situation?
MAŠEK: Of course, it was important that we have come into the profit zone in recent years. We have invested a lot and expanded our portfolio and services for customers. We can now even prepare e-waste. We currently produce around 2,000 tonnes of recycled material per month - of which 300 tonnes are non-ferrous metals. The new facilities we need for this naturally bring new challenges and also new obligations. In the meantime, we have 25 permanent employees in Plzen plus our jobbers when we have to cover peaks. Therefore, it is important to be open for new things in the future, because otherwise the competition will overtake us.

A question about the employees: There is full employment in the Czech Republic. Can you find suitable employees on the job market?
MAŠEK: We are fortunate that we do not have a large fluctuation. Some employees have been with us for many, many years. It is important to me - as is generally the case in the Müller-Guttenbrunn

Group - that the employees identify with the company. Some of our employees asked me when I took over as Managing Director whether I would dismiss the team. Of course, leasing employees would be cheaper at first glance, but they have no relationship to the company, the machines, or their colleagues. That's why they are not so attentive to the equipment and don't bring in their own initiative. That's why our own employees are already worth their weight in gold, and that's why I've never thought about laying off employees - especially when many have been with the company that long and have so much experience in this business. But it is true that there is practically no unemployment at the moment and it is almost impossible to find new employees. But with the growing range of products and new facilities, it will be important to find new employees in the near future.

You have already mentioned the cohesion within the Müller-Guttenbrunn Group several times. How is the cooperation with the owners and MGG colleagues in Austria?
MAŠEK: Of course I am in daily contact with the MGG headquarters in Amstetten. We also regularly explore business opportunities together. There are times when we do a lot of business together, and there are times when we don't. I really enjoy a great autonomy. This is another big advantage for me, because there are many large groups where a lot is dictated to the subsidiary from above. I can make my own decisions and still have a whole group behind me to support me when necessary.

Do you notice any differences between the Czechs and the Austrians?
MAŠEK: I think many of the differences are due to history. As a result of the time under communism, we Czechs certainly still have a different point of view in some areas than people in the West. For example, it is much more important to people in the West that they have enough free time or live in a clean environment. Values such as environmental protection are not yet so firmly anchored here, but the younger generation is much closer to the West. But I also notice other differences: In Austria, dissenting opinions are addressed much more casually to superiors. In the Czech Republic, it is often the case that you tell your superiors what they want to hear, even if you yourself have a completely different opinion. This makes you realize that we don't have as much experience with freedom as people in the West.

Let us return to MGG Metfer Trading in conclusion. Where do you think the company will develop in the next few years?
MAŠEK: We definitely need to grow - we need more space to store all the different materials and sort them accordingly. Since all the neighbouring plots have already been allocated, the situation around the existing plant site looks bad. However, there are already considerations to develop a new area not too far away. I also see an opportunity for new separation plants, because in Plzen, for example, there is no shredder for electrical waste. As I have already mentioned, we will definitely have to enlarge our team to be able to handle the new volumes. My team already often works beyond its limits, but in the long term we have to change that. I would also like to focus more on types of scrap that are of no interest to other companies - such as more complex waste stream compositions. Here, MGG Metfer is set to play a pioneering role in the Czech Republic, that is my vision for our company.

We wish you and your team every success in the coming years. Thank you very much for the detailed interview!

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