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Focus
on the environment

Positive developments in challenging times!

The entire world is currently experiencing challenging times. The impacts of the COVID-19 pandemic are still being clearly felt, and since March people have been on tenterhooks as the conflict unfolds in Ukraine. Against this background, we wish to stress that respect for human rights is imperative for us and that we strongly oppose all forms of violence. We feel a sense of solidarity with all people who are currently suffering as a result of the conflict.

From a business perspective, we are faced with previously unseen challenges. For instance, the pandemic requires a high level of flexibility as we often have to absorb unexpected days of sick leave among our workforce. Supply chains are disrupted almost everywhere and we are frequently experiencing unforeseeable delays in deliveries from our suppliers at short notice. The situation on the procurement market is becoming complicated, with many of the raw materials that are essential for our sector, such as steel, either unavailable or only available at extortionate prices. The situation often changes considerably due to ongoing disruption because of the pandemic as well as the daily political decisions concerning the conflict in Ukraine. For this reason, at the moment we are unable to provide a reliable forecast for the next few months. All of these factors are having a significant impact on our work. Despite all our efforts, these factors cannot be entirely compensated, which means that unfortunately we have to pass some delivery delays on to our customers.

Nevertheless, we continue to focus on the environment, and the energy transition – which we consider to be of great urgency, not just for climate-related reasons – is rapidly picking up speed. Besides damaging the environment, fossil fuels are also becoming increasingly expensive. Although the higher energy costs are a problem in the short term, this is creating significant medium- and long-term opportunities for our industry. They are another reason why we should throw our own energy into achieving the goals agreed as part of the European Green Deal. This includes the action plan for the circular economy, which targets using fewer materials and recycling more product components. Waste avoidance is thus supported by a well-functioning market for secondary raw materials.

Waste management makes an essential contribution toward climate protection, which can no longer be disregarded – especially now. A particularly interesting factor is the treatment of mixed waste streams such as residual and domestic waste or bulky and commercial waste. In many parts of the world, a lot of this





waste is not treated, or it is only treated to a limited extent, let alone forwarded for material recycling. At the Komptech Group, we see huge potential in the future for this application, which is reason enough for us to focus this magazine on the topic of mixed waste.

We also look at the demand for increasingly efficient and environmentally friendly drives, which is why we also shine the spotlight on the electrification and continuous improvement of our service offering.

Over the next few pages, we want to present what we have developed and are continuing to develop in this respect. Of course, we'd like to show you in person too, and after a long break, the world's leading trade fair for environmental technologies – IFAT 2022 – will take place at the end of May. We would be delighted to welcome you to our exhibition stand (B6.405/504).

Warmest regards,

Heinz Leitner
CEO

I hear people say: “That’s not possible” So I think: “Let’s take a look at it.”

Prof. Roland Pomberger and his team at the University of Leoben are researching the potential of waste management technology. We spoke to him about the trends in the waste management sector.

PROFESSOR POMBERGER, WHAT DO YOU UNDERSTAND BY THE TERM ZERO WASTE?

I think it’s a great term. But you need to put it in the right context, as believing that the world will one day generate no more waste is an illusion. I define zero waste as “no wastage and instead doing something useful with it.” If we therefore understand zero waste to mean that no more waste enters landfill or disposal, and that all waste is recycled instead, this is a goal worth striving for. Pursuing this interpretation is a good approach.

IN YOUR OPINION IS WASTE UNAVOIDABLE?

Indeed. There are three main principles in the waste industry. Firstly: “Every product becomes waste. It’s simply a question of when.” People who work in the waste industry do not need to worry. Their jobs are very secure against crises. Secondly: “Everything that can be contained in waste is in fact in it.” Each time waste is sorted, it will undoubtedly contain something that doesn’t belong there. Companies need to be prepared for this. And thirdly: “Waste disposal is carried out depending on what is legally permitted and not necessarily what is most sustainable.”

WITH THE LAST PRINCIPLE, DO YOU MEAN THAT RECYCLING IS NOT WORTHWHILE WITHOUT QUOTAS?

No, there are two drivers in the waste industry: environmental protection and the value of raw materials. The latter is regulated by the market price. Nobody needs a recycling quota

” There are always topics relating to waste management that are of interest to companies in the industry, and for which we can provide support through research

for gold waste. The same is also true of scrap. A quota is always required wherever recycling doesn’t happen despite demand in the market and therefore a minimum standard needs to be prescribed. This means that 65 % of municipal waste must be recycled in the future. If this standard is not applied, then it will not happen. With most waste – and this is a really sad fact – the value of raw materials doesn’t cover the entire costs that are required upstream and downstream of the waste treatment process.

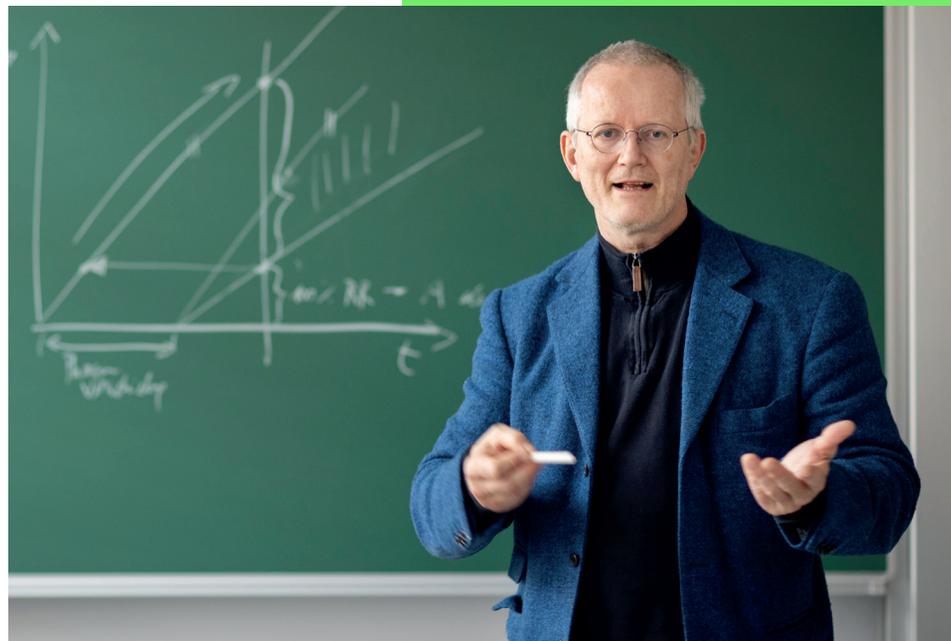
Collection, sorting, and recycling are beneficial, but economically speaking they often don't cover the costs involved. However, we need to do it because the environmental benefit to society is very high and therefore essential. It is difficult to monetize. This is why we need regulations such as taxes, specifications, quotas, and deposit systems. But on its own, this wouldn't work.

KEYWORD: DEPOSIT SYSTEM WHAT IS YOUR TAKE ON THE FOLLOWING HYPOTHESIS: "MODERN PROCESSING TECHNOLOGY IS SO GOOD THAT THE MODEL FOR SEPARATE WASTE COLLECTION IS OUTDATED"?

That is wishful thinking. It is not how the separation of mixed waste works. First of all, the materials in the waste do not stay the same as they were when they were thrown away. They affect each other. For instance, take plastic food wrap which ferments in biowaste. It becomes soiled and its molecular structure may even be affected. Whatever gets thrown into the mixed waste container is not the same as what comes out later. Secondly, if the waste has been separated beforehand, a company operating a plant will achieve greater output with higher purity. The explanation is quite simple: a plant is a one-stage process. With prior separate collection, we have a two-stage process. There are pre-sorted fractions that are sorted once again. This is better of course. In our view, the people who hold an item of waste in their hand and decide where to dispose of it, represent the most valuable link in our sorting process.

WHERE DOES THE ENERGY RECOVERY TAKE PLACE? WILL RECYCLING RESULT IN A SHORTAGE OF SUBSTITUTE FUEL?

One thing I often hear is: "We'll recycle in the future, as eventually incineration will no longer be needed." That's incorrect. There will certainly be less of the classic waste incineration where non-separated waste enters the furnace directly following collection. But we'll even see more industrial utilization – whereby processed materials are used as a fuel, replacing fossil fuels.



Prof. Roland Pomberger is Head of Chair of Waste Processing Technology and Waste Management at the University of Leoben. After graduating as a mining engineer, he spent twenty years in leadership positions at various companies, specializing in areas such as material flow and production management as well as substitute fuels. In 2011, he was appointed by the University of Leoben where, together with a 33-strong team, he researches topics relating to waste management. Some of the institute's developments include the ThermoTeam plant for substitute fuels in the cement industry as well as a system for recycling lithium-ion batteries.



Thermal utilization and recycling are not opposites. On the contrary: increased recycling leads to more substitute fuels that end up in industrial incineration. Recycling and high-quality, thermal industrial utilization form a symbiosis. In Austria, 80 % of the energy required by the cement industry, for example, is covered by processed waste. It makes absolute sense to substitute fossil fuels with waste.

WHERE DO YOU SEE FURTHER ECONOMIC POTENTIAL FOR THE WASTE INDUSTRY?

There's a great deal of optimization potential for controls within and around plant. Sensor-based sorting is where I see the greatest



potential and the issue of how to integrate and exploit automatic sorters in existing plant or plant in general. This goes hand in hand with sensor-based monitoring. Plant operators should know more about what is happening

“ Recycling and high-quality, thermal industrial utilization form a symbiosis.

in their plant. For instance, whether the belt occupancy is correct, as the machines don't adjust themselves to the material, but instead

are adjusted externally. Studies have shown that many sorting plants only operate in the optimal range for 30 percent of the time.

The rest of the time, they are either running empty, or with too much or too little material. By homogenizing the material flow alone, a lot

“ Whatever gets thrown into the mixed waste container is not the same as what comes out later.

more could be achieved in this area. As part of one project, for example, we have measured the performance of a mobile machine and informed the operator that – by readjusting here and there – they can increase the machine's performance by up to ten percent and improve quality levels.

LET'S TAKE A LOOK BEYOND THE BORDERS OF EUROPE: WHERE DO YOU SEE THE GREATEST CHALLENGES IN EMERGING COUNTRIES ON THEIR JOURNEY TO A REGULATED WASTE INDUSTRY?

Each country has its own special challenges. The waste industry must be developed and adapted to the country. In doing so, there is one error that must not be committed, in my opinion: reducing the waste industry to purely technological issues. It isn't as simple as that. Waste is also a matter of wealth. Countries need to be able to afford high-quality waste management. Therefore, we must always look

“ Countries need to be able to afford high-quality waste management.

at how much money is available in a country for waste management activities. Here in Austria, this stands at EUR 200 per inhabitant per year, but in Dhaka, the capital of Bangladesh, the amount is only EUR 2. If little money is available, then very little can be done.

But in emerging economies, small mobile facilities can be a good start in rural regions, in order to develop a decentralized waste industry. I see an opportunity and a great need here.

WHAT DO YOU THINK OF THE STATEMENT: “IT MAKES NO SENSE TO WANT TO TRANSFORM AN UNDEVELOPED WASTE INDUSTRY INTO A WELL-ESTABLISHED ONE IN ONE STEP”?

I fully support this statement, which is backed up by many examples. It must be done step by step. Setting up a highly automated plastic sorting plant in a country that does

” Nobody needs a recycling quota for gold waste.

not even have decent landfill will not work. It’s not possible to copy other countries and say: “It works for us, so it will work for you.” In my view, this approach is doomed to failure.



The future is electric

Carbon emissions continue to rise internationally. All the available statistics leave no doubt. The combustion of fossil fuels is a major contributor toward this. If you compare the impacts of combustion-powered drives with electric drives, it is clear that electrification combined with the use of renewable energies is paving the way to a more sustainable environment.

At Komptech, we are continually working on new products in order to offer our customers technologies that are more efficient and therefore more environmentally friendly.

At 42 %, the generation of electricity and heat is by far the largest contributor toward global carbon emissions. Further emission-intensive areas include transportation at 25 % and industry at 19 %. Bearing this fact in mind and the need for a climate-neutral future, it is no wonder that electrification is becoming increasingly important.

often understood as a transformation process with the aim of moving away from fossil fuels such as gas, oil, and coal, and toward electric drives and systems. This should enable the use of electricity from renewable sources in order to reduce carbon emissions and, in the best possible case, to completely prevent them.

But what does electrification actually mean? Depending on the context, the term is used to describe various technological processes. Originally it referred to the general development of the infrastructure for supplying electrical energy to businesses and homes. Today, it's

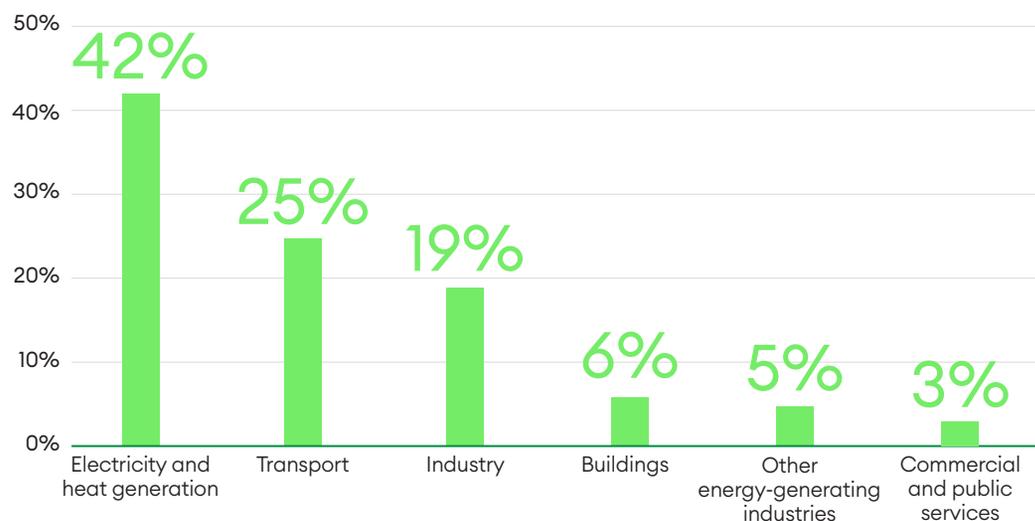
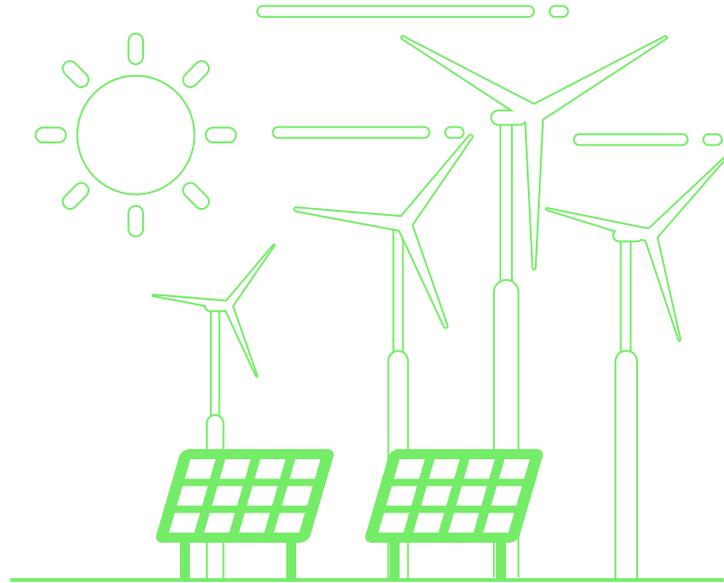


Figure 1: Carbon emissions by area (as at 2018)



WHY IS THE TREND MOVING TOWARD THE ELECTRIFICATION OF DRIVES?

This article intentionally does not focus on the general issue of the best substitute for combustion motors or alternatives to fossil fuels. Instead, it provides an overview of what electric drives enable and what benefits they offer. It is limited to the consideration of electrification in this specific context. Table 1 compares classic combustion-powered drives with electric drives. It clearly illustrates the major benefits of electric drives in terms of efficiency, maintenance effort, and torque and power delivery. What's more, an electric drive does not emit any environmentally damaging exhaust gases.



Common combustion technologies on the other hand are beneficial when it comes to the storage of energy that is required for the process. Due to the significantly higher energy density of fuels such as diesel and gasoline, compared with modern lithium-ion batteries, they are especially beneficial in this respect in fully mobile applications. For reasons of space and weight, a fuel tank is much easier to integrate than a battery with the same energy content.

Table 1: Comparison of combustion-powered and electric drives

++ very good O neutral -- very poor
+ good - poor

	COMBUSTION-POWERED DRIVES	ELECTRIC DRIVES
Efficiency	--	++
Structure/moving parts = maintenance	-	+
Torque delivery	O	+
Maintenance-free downtime	O	++
Emissions	--	++
	FUEL	BATTERY
Energy density	++	--

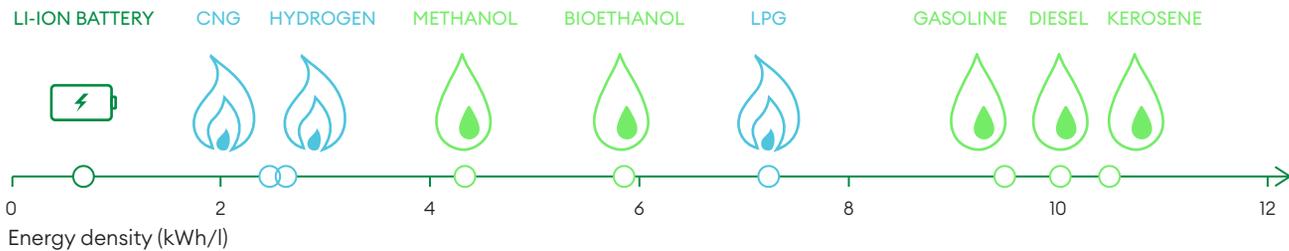


Figure 2: Comparison of the energy density of different energy carriers

SOURCE:
<https://de.statista.com/statistik/daten/studie/167957/umfrage/verteilung-der-co-emissionen-weltweit-nach-bereich/>
https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

ELECTRIFIED/HYBRID KOMPTECH PRODUCTS

Komptech has been driving forward the development of energy-efficient machinery for many years and develops solutions for a wide variety of customer requirements. In stationary technology, our electric drives have for a long time been state of the art. In future, we will continue to optimize the electric components and drives that are used and develop purely electric direct drives in order to exploit the maximum energy potential. The Terminator direct SL is the latest machine in Komptech's portfolio for stationary shredding technology and offers maximum performance and efficiency.

As part of its e-mobile series, Komptech develops innovative semi-mobile concepts with an electric main drive. The benefits of a mobile machine – in particular flexibility – are coupled with those of a stationary machine, notably high energy efficiency. The machines can quickly change the place of use and can be operated on-site using renewable energy sources. The first shredding machines of this kind are the Crambo and Terminator e-mobile. Further models are under development.

” With electrically driven machines or hybrid variants, companies not only avoid ever-increasing fuel prices, but also exploit the maximum energy potential and thus make a positive contribution toward the environment

Christoph Feyerer (Director Product Management & Marketing).

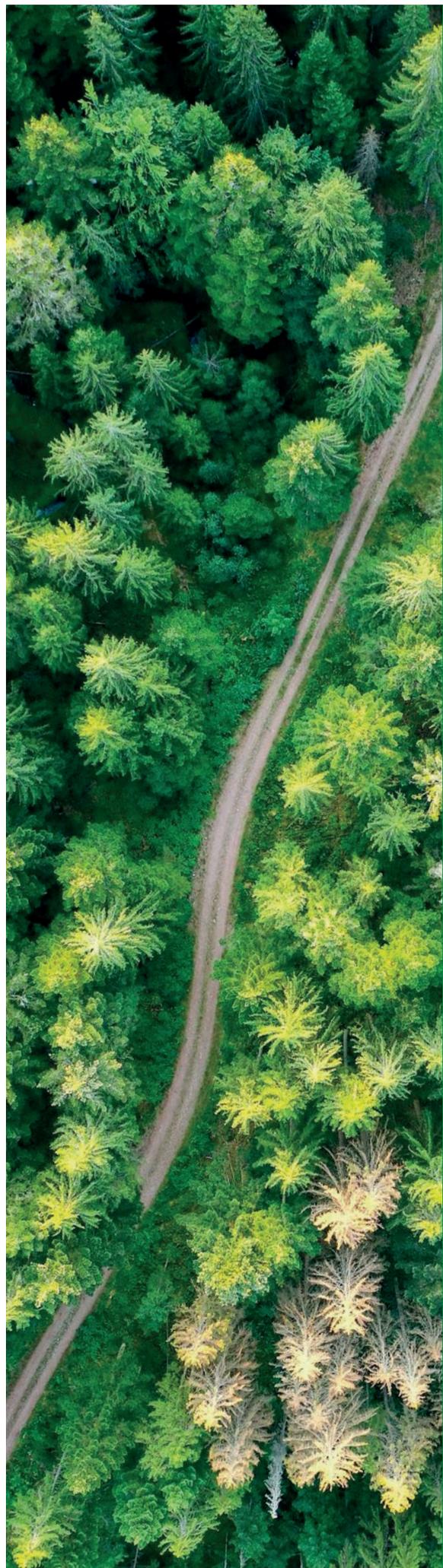
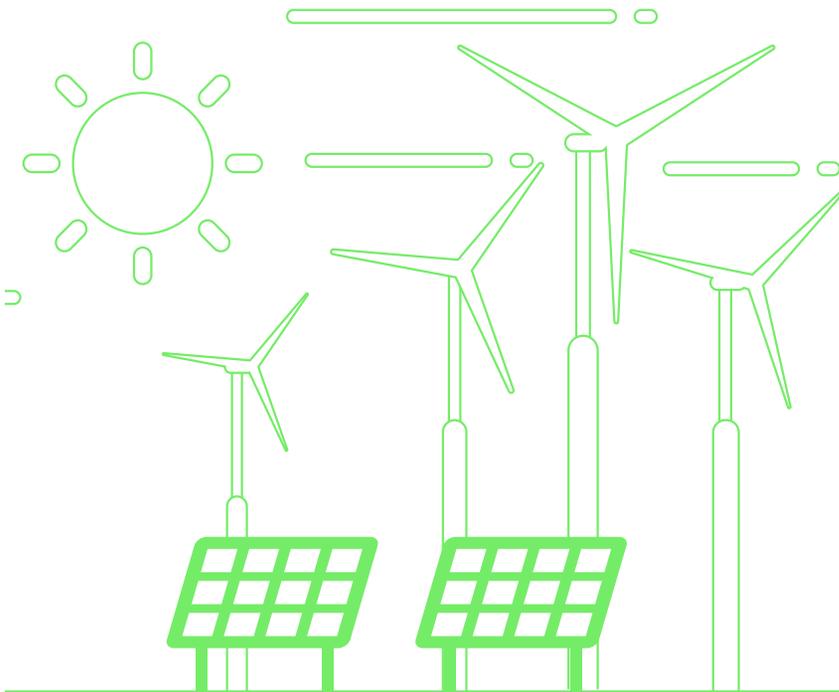


DID YOU KNOW?

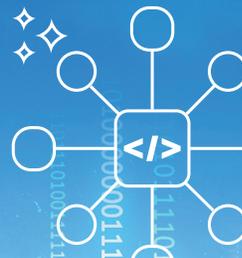
Komptech also offers the most extensive product portfolio of hybrid machines for screening and separation technology in the industry. These drum and star screens, wind sifters, and stone separators are distinguished by highly efficient, fully electric drive systems and enable direct operation from the local power supply system. For decentralized use – at locations where a power supply cannot be provided – the drive can be powered by a diesel generator. This means unlimited flexibility.



Comparison of a diesel-powered (left) and an electric-powered (right) shredding machine.



ReWaste F Intelligent waste treatment of the future





The EU is pursuing the goal of achieving widespread transformation toward a circular economy.

This includes, in particular, increased recycling of materials from municipal and packaging waste. This should lead to far better use of resources, including recycling, and thus also contribute directly and indirectly toward reducing climate damaging greenhouse gases such as CO₂.



The ReWaste F research project is focused on how much sensors, digitization, networking, and artificial intelligence can improve the overall treatment processes for mixed material flows. The research work is led by a multi-disciplinary consortium of representatives from science and industry, including Komptech. Within the scope of this project, scientific work – in particular dissertations and master theses – will also focus on waste management and technology, which will further strengthen and give visibility to Austria's pioneering role as a research and industrial location.

BETTER RECYCLING RATES THANKS TO DIGITIZATION

The fundamental idea behind ReWaste F is to enable real-time communication between waste quality and plant, thus allowing the processing steps to be dynamically adapted to the targets. The data delivered via optical and physical sensors are networked and forwarded to process control. In the second development step, a waste treatment plant can self-optimize through machine learning. A requirement for this type of intelligent waste treatment – and the content of ReWaste F – is the creation of a comprehensive database. As a technology expert, Komptech takes part in test series, both

on a real and a laboratory scale, as well as simulations that record the impact of different influencing factors on the treatment process. The aim is to create a database that maps all the parameters for mechanical processing.

OUTLOOK

The waste treatment system of the future requires flexibility in terms of the structure of waste flows and greater, quality-assured technical capability (on an international scale) to recycle valuable secondary raw materials. Tools from Industry 4.0 provide the necessary basis for this.

As part of ReWaste F, new technology solutions are emerging from the interdisciplinary collaboration between science and practice. These solutions are available to our customers worldwide for the optimization of waste treatment.





The four-year research program ReWaste F was launched in 2021 under the direction of the Chair of Waste Processing Technology and Waste Management at the University of Leoben. The program is implemented by a consortium of four scientific institutes and 14 companies including Komptech. As part of the project, Christoph Feyerer, Head Product Management & Marketing at Komptech GmbH, is also preparing a dissertation. The total cost of EUR 4.85 million is being covered by funding from the Austrian Research Promotion Agency (FFG), the province of Styria, and the project partners involved.



The 101 of facility planning

On everyone's wish list: the perfect waste processing system. But depending on the specific needs, it must meet a wide variety of requirements.



Gottfried Reither (left) and his team have been working in plant construction around the world for many years.

The composition of waste, performance expectations, country-specific criteria, and legal specifications are just some of the aspects that need to be taken into consideration when planning a facility that satisfies all requirements. At Komptech, we don't simply hit the ground running. Instead we follow the path with our customers step by step. Gottfried Reither, Head of Plant Engineering at Komptech, leaves nothing to chance during the planning process.

“A higher recycling rate with better degrees of purity for the separated materials or the adaptation of a substitute fuel system for

greater yield are some of the typical demands that we receive,” reports Reither. In order for the facility to ultimately be suitable, there are many questions that need to be addressed first of all: “This is how I obtain a precise picture.” To ascertain which recycling materials can potentially be recovered, he finds out whether the collection procedure is clearly defined, whether there is a separate collection or if all kinds of waste are thrown into just one waste container, and what the waste that is

to be processed consists of. “I usually then ask whether the market is already developed for these recycling materials and whether it involves acceptance of legal requirements or threshold values for secondary products,” he continues.

In many countries, there is a high proportion of organic material in mixed municipal waste. This also needs to be taken into account. Should this proportion of waste be composted after separation in order to be sold as fertilizer? Or is it possible to deploy a more complex solution such as fermentation in order to create biogas and subsequently generate green energy?



Sometimes, due to its properties, the organic fraction can only be sent to landfill after first being stabilized, so as to prevent the formation of environmentally damaging emissions such as methane.

THE FORMULA FOR SUCCESS



For Gottfried Reither, the first phases of facility planning are decisive. In his view, all issues need to be worked through and nothing should be rushed.

Issues regarding the place of use and its infrastructure also need to be clarified: Is it on undeveloped land, possibly even near a landfill site, or does it border an inhabited area? And what emissions parameters need to be taken into account? We also check whether the power supply is reliable or whether fluctuations and even power outages are likely. “And finally, of course, we want to know what the expectations are in terms of the facility’s throughput performance. It’s important to know this,” says Gottfried Reither who concludes:

“Companies that do their homework will avoid errors during the development phase and can then optimally combine all the components in the facility.

What does an optimal combination look like? When it comes to the key components of the plant, Komptech relies on in-house production. “This provides security with regard to the configuration – both for the company setting up the facility as well as the customers,” explains Reither. What cannot be produced in-house is purchased from suppliers with whom Komptech has enjoyed many years of good relations, therefore we are well assured of their competence. Mutual trust is essential for Reither. “Even after precise clarification,

certain assumptions have to be made, which potentially also have a major impact on dimensioning aspects in the next preparation step. We’re able to rely on our many years of experience as well as that of our partners,” emphasizes Gottfried Reither.

QUESTIONS?

Our planning department develops the ideal machine or plant concept for each of our customers. In doing so, they take into account the composition of the input material as well as the quality requirements of the recycling sector, in order to achieve the best possible results.

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Komptech-Plus Productivity at a glance

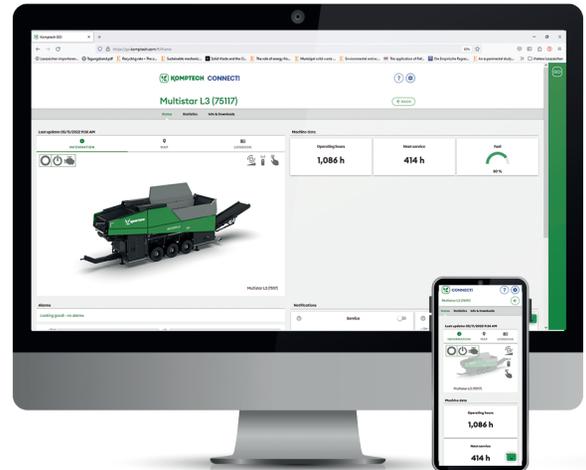
The Connect! app offers Komptech's customers transparent administration, optimized job planning, and continuous monitoring of their machines. Important information on the machine condition, a variety of statistics, the current machine location, and much more is available in real time via the app.

An update is available for Connect! as of mid-April.

Besides general improvements, it is now possible to:

- clearly export the statistical data that are displayed
- compare up to ten machines of the same type
- call up the version history and optimized help page.

**DOWNLOAD THE UPDATE
AND OFF YOU GO.**



Numbers, dates, facts Solutions in use around the world

More than 4,000 customers in over 80 countries around the world work with Komptech solutions – in Brazil, the USA and Austria, as well as Ghana, Japan, and New Zealand. They all play their part in maximizing the opportunities that are presented by waste and thus protecting the environment. We would like to take this opportunity to thank you for your understanding for any extended waiting times and delivery bottlenecks that you may have experienced over the last year and a half.

4,000
customers worldwide



Market watch Iceland

Iceland is a pioneer when it comes to sustainability – whether in the area of energy, infrastructure, water, or waste. This makes being able to contribute to further improvements all the more of an honor, and at the end of summer 2022, we will supply Iceland with its first screening and separation line for processing cleaner compost. It comprises a star screen, wind sifter, iron separator, and separator, and rids the structural material of contraries and foreign matter before returning it to the composting process.

The customer was impressed with the flexible adjustment options for the star screen of the Multistar, which enables different particle sizes to be created from the compost materials. However, above all, it was the collaboration with our local



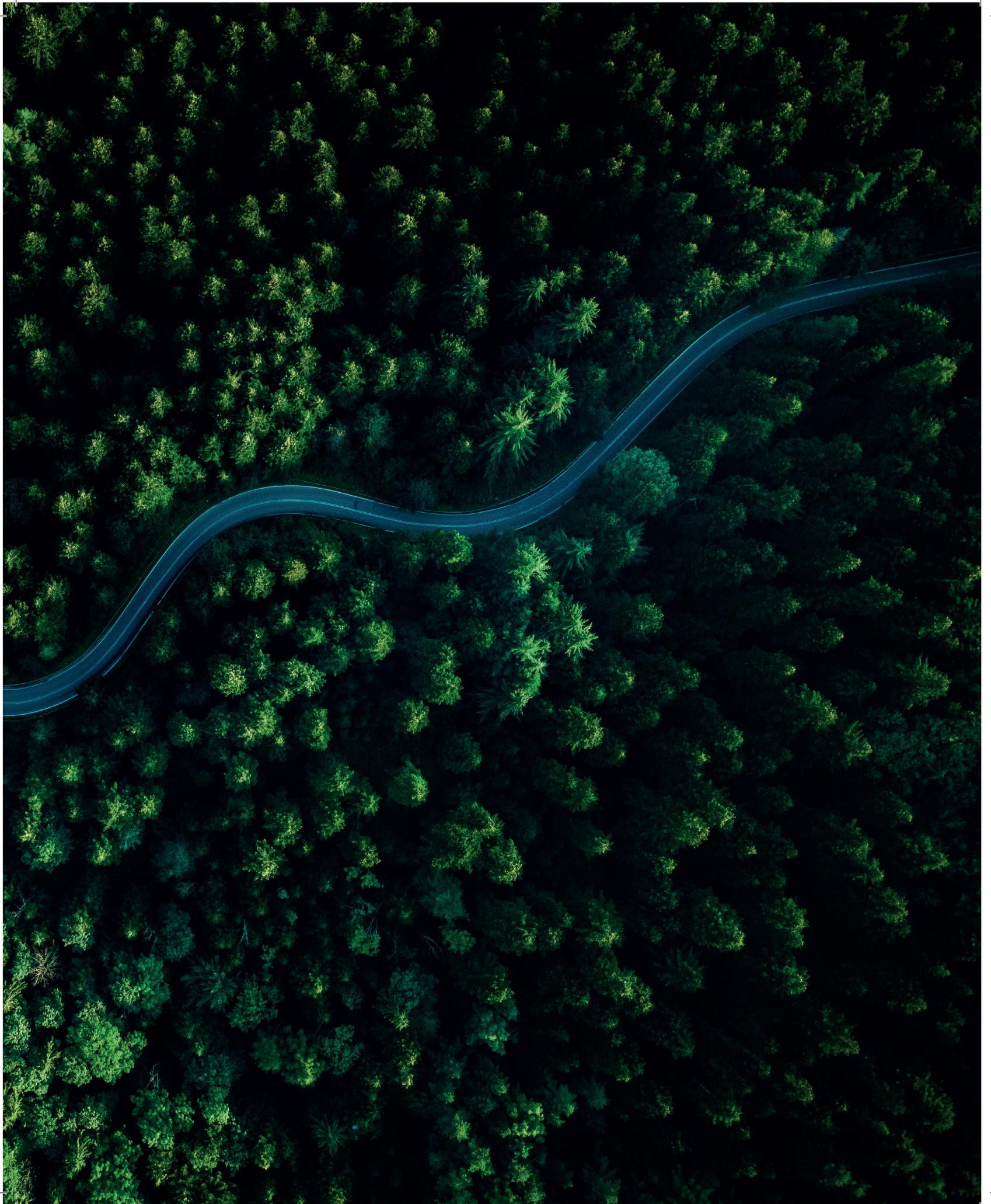
partner, Velfag, which ultimately led to the decision to purchase. Despite the long distance between our company and Iceland, thanks to Velfag the customer will have quick and easy access to after sales as well as the availability of spare parts, making this an effective collaboration.

Inside Komptech Responsibility for tomorrow

To live up to our claim as a company that takes our social responsibility seriously, we have developed an in-house CSR program. FAIR is a combination of People, Planet, Prosperity and the 17 Sustainable Development Goals of the United Nations – also known as Agenda 2030. Thus, we are combining a holistic approach with concrete goals to promote sustainable development.

To demonstrate our intentions and progress in these areas, every year we publish an ESG report that examines the topics that are particularly close to our heart. You can find the latest edition in the “Sustainability” area of our website. We wish you an enjoyable read!





Rebranding From machine manufacturer to solution provider

For the last 30 years, we have been offering technologies for mechanical and biological recycling of waste as well as the processing of woody biomass. We supply our solutions to more than 4,000 customers in over 80 countries around the world. Ever since our company was founded, ensuring customer satisfaction and striving for a more sustainable environment have been at the core of everything we do.

Year after year, we have gained more and more experience in the area of waste processing and are now far more than just a machine manufacturer. With our expertise, we can offer customers complete solutions and show them how they can generate maximum value from waste.



We see waste as an opportunity – after all, waste is simply recyclable materials that are in the wrong place. Through our solutions, we help our customers maximize these opportunities while improving the environment.

Heinz Leitner, CEO of Komptech GmbH

WHERE THERE IS WASTE, THERE IS OPPORTUNITY



HOW WE CREATE VALUE FOR YOU



JÜRGEN ZAHNHÖFER,
DIRECTOR SUPPLY CHAIN MANAGEMENT

WE PROVIDE SOLUTIONS BY ...

... sharing our expertise and experience with our customers. Besides our high-quality machines, this also comes to the fore in consultations on topics such as process technology or financing. What's more, we strive to modernize and optimize our production steps through new ideas and approaches – with a focus on progress.

LOOKING AT THE BIGGER PICTURE IS ESSENTIAL, BECAUSE...

... together we can achieve more. It's important to me that we at least leave the Earth in the same condition that we found it as we pass it on to future generations. This is why, together with my colleagues, I'm all the more delighted to make a professional contribution toward a more sustainable future.

FOR ME, "NEVER WASTE AN OPPORTUNITY" MEANS...

... seeing the positive side and maximizing opportunities.



MANFRED HARB,
DIRECTOR CUSTOMER SERVICES

WE PROVIDE SOLUTIONS BY ...

... focusing on the benefit to the customer. In concrete terms, besides maximum planning security, this also means offering an extensive portfolio of services, from machine maintenance through to full service solutions and inspections. It is worth pointing out our widespread network, which – even during times when worldwide shipping and travel is challenging – enables us to swiftly supply customers with service options and spare parts.

LOOKING AT THE BIGGER PICTURE IS ESSENTIAL, BECAUSE...

... we have the opportunity to contribute toward solving problems that are causing global environmental pollution – for instance, through our commitment in countries where waste management is not yet sufficiently established, or through the sustainable use of resources.

FOR ME, "NEVER WASTE AN OPPORTUNITY" MEANS...

... continually looking for opportunities and solutions through which our customers can overcome upcoming challenges – so we can be successful together.



**CHRISTOPH FEYERER,
DIRECTOR PRODUCT MANAGEMENT & MARKETING**

WE PROVIDE SOLUTIONS BY ...

... constantly striving to be a perfect service provider for all our customers. In doing so, we always focus upon their needs and aim to find the best solution. This way we can become part of the overall solution.

LOOKING AT THE BIGGER PICTURE IS ESSENTIAL, BECAUSE...

... there are huge opportunities to tackle what is probably the biggest overarching challenge – climate change. All around the world, we must consciously use raw materials sustainably and reduce carbon emissions. The corresponding treatment of waste also makes a significantly contribution toward a more sustainable environment.

FOR ME, “NEVER WASTE AN OPPORTUNITY” MEANS...

... never missing out on an opportunity, whether in relation to personal development or in a professional context working on new solutions.



**EWALD KONRAD,
DIRECTOR SALES**

WE PROVIDE SOLUTIONS BY ...

... listening closely to our customers’ needs and requests, understanding their problems and requirements, and on this basis developing individual and economically viable solutions – in line with the motto “Helping you make the most of a great opportunity”.

LOOKING AT THE BIGGER PICTURE IS ESSENTIAL, BECAUSE...

... we have a responsibility toward our environment and future generations. As the old saying goes: “We have not inherited the Earth from our parents, but borrowed it from our children.” Our actions and our solutions are therefore geared toward contributing as much as possible to achieving the sustainability goals, including through electrification, digitization, and greater energy efficiencies in order to minimize carbon emissions.

FOR ME, “NEVER WASTE AN OPPORTUNITY” MEANS...

... always having a watchful eye and having the courage to strike out in new directions.





DANGER STAND CLEAR 9m (16-4ft)
KOMPTech CRAMBO 5200



FENDT

FENDT

FENDT

FENDT

AP 36



Komptech at IFAT 2022 Never waste an opportunity

The EU Action Plan for higher recycling rates presents the waste management sector with major challenges. At IFAT 2022, we will show how plant operators can respond flexibly to the changing conditions and thus maximize every opportunity.

COMPETENCE: MIXED WASTE

The separation of mixed material flows is undoubtedly the most challenging task when it comes to waste processing. Efficient mechanical processes can contribute significantly toward targeted separation accuracy. As a supplier of complete solutions, we will present plant concepts that perform specific recycling tasks while accounting for the composition of the input material and the quality requirements.

INNOVATIONS

At the VDMA Demonstration Days, we will showcase the Crambo e-mobile and the next generation Multistar L3, along with other machines, and solutions for separation contraries from biowaste. In the VDMA Biomass Zone, we will present the Lacero 8010 and Axtor 4510. In the VDMA Crushing Zone, a Nemus 2700 will demonstrate the processing of light construction waste.

SUSTAINABLE SOLUTIONS

We will also provide information about our service offering as well as rental and purchase options. Last but not least, we will be focusing on emerging markets and demonstrating processing solutions for regions that are just getting started with systematic waste management. Our program will be rounded off by the “Sustainability” Experience Area. Come along – sense, feel, and experience sustainability.

WE LOOK FORWARD

TO SEEING YOU!



**CTO CHRISTIAN OBERWINKLER
EXPLAINS THE LATEST
INNOVATIONS IN MORE DETAIL
OVER THE NEXT FEW PAGES.**

Hall B6, Booth 405/504

VDMA Demonstration Days – Biomass

Preparation Technology

VDMA Crushing Zone



Innovation Terminator direct SL





The new Terminator direct SL was developed in line with the motto **“Maximum flexibility with maximum efficiency.”** One highlight is the brand new electric drive system that ensures **“direct electric”** and therefore extremely efficient power transmission to the shredding drum. The flexibility corresponds with that of a hydraulic system, as this enables stepless speed control, effectively combining the best of both worlds.

This level of flexibility allows the machine to optimally adapt to a wide range of input materials, which is why this feature is also included in the name.

“ SL stands for StepLess.

The combination of these advantages leads to maximum flexibility with the highest efficiency.

Water-cooled synchronous reluctance motors are used, which together with frequency converters enable variable speed setting. The drive motors are connected with the planetary gear via a multi-plate clutch. As a result, the drive train is well protected, even in the case of overloading – such as with a drum blockage triggered by large contraries. The combination of drive motor and planetary gear ensures a high torque at the shredding drum, whereby even the most difficult materials can be easily shredded. The flexible speed setting enables optimal adjustment to the materials being processed. A further advantage is the direct mounting of the motor on one or both sides of the frame, such as with the dual drive (S versions). The design remains compact and thus simplifies the direct integration of the Terminator into a plant chain.



Thanks to the two different performance levels, the machine can be optimally adapted to the requirements. The performance levels range from 220 kW with the Terminator 5200 direct SL to 264 kW with the Terminator 6200 direct SL, which is the most powerful design. Designs F and XXF are available as a shredding unit.



Innovation Lacero 8010





Maximum throughput capacity and robust design are the main features of the new Lacero 8010. At the core of the machine is the solid shredder rotor, combined with the 800 HP CAT® C18 motor that complies with the latest exhaust Stage V emissions standards. With this machine, **almost any kind of green cuttings and wood can be shredded in the most efficient way.**

Performance values of 400 m³ per hour in applications for treated waste wood and green cuttings with the simultaneous creation of a highly homogeneous material quality P63 F10 (Austrian standard EN ISO 17225-1) speak for themselves.

“ Everything perfectly coordinated

The huge feed area with active intake in the form of a sectional steel belt transports the material to the large feeder opening measuring 760 x 1,520 mm. The rotor design has 16 armored wear plates and enables use on both sides, thereby doubling the service life. It is driven by a belt drive ensuring maximum efficiency. The necessary clutch operations are performed by an easy-to-operate hydraulic clutch. Thanks to a two-part screen basket system, the machine can be perfectly adjusted to the desired material quality. The screen basket carrier also has an interfering material system that triggers upon contact with solid contraries, thus protecting the machine against further damage.



The high-performance discharge system with a discharge height of almost 5 m is used to transport the material away. The transport is ensured by a robust chain chassis with a 500-mm-wide running gear. Besides low bed transport, the dolly chassis is an alternative option. The machine is equipped as standard with the Komptech condition monitoring system “Connect!”. It can be enhanced to include the fully integrated measurement of volume throughput – giving you an overview of your machine at all times.



Innovation Multistar L3 “New Generation”





With the L3 “New Generation”, Komptech is introducing the third generation of the three-fraction star screening machine in a **large format**. We developed it in collaboration with our partner Anlagenbau Günther. The machine concept has been completely revised and all areas of the machine have been further improved to offer an **ideal all-in-one package**. The task remained unchanged:

” To produce three high-quality fractions composed of a wide variety of input materials, such as compost, waste wood, and biomass, with the simultaneous ejection of contraries.

The feed takes place by means of a generously dimensioned hopper measuring up to 7 m³. A scraper chain conveyor moves the input material evenly toward the dispensing drum. The stepped coarse screen deck ensures high throughput performance and can optionally be supplemented by an oversize fraction wind sifter to further improve the separation result. The medium and fine fraction is then fed to the 7 m² fine screen deck. At the end of the screen segment, there is the option to use a wind sifter for the separation of film. A speed control is built in as standard for the individual segments. The Cleanstar System provides perfect screening results with very damp material. Medium and fine fraction extraction conveyors are a further highlight. With the new design the discharge direction can be selected ex works. Leakage materials are reduced to a minimum.



The machine allows a compost windrow to be piled up directly. Other than a few exceptions, all the components are electrically driven. The machine is available as a 2-axle trailer, a semitrailer, or with chain running gear. It is intuitive to operate thanks to the large 7" color display. Last but not least: with our Connect! condition monitoring system you have an overview at all times.



An important link in the value chain

THE HUNGARIAN WASTE
INDUSTRY BIDS FAREWELL
TO LANDFILLING



The modern processing facility in Szeged has the capacity to process 70,000 tons of domestic waste every year.



Over the last 15 years, more than 3,000 landfill sites and disposal sites have been closed. But there is still work to be done to meet the agreed EU targets. A waste recycling facility in Szeged, southeast Hungary, plays a part in this. It creates secondary raw materials for a new manufacturing process and for the provision of energy. Facilities such as this are an important link in the value chain of the circular economy.

With 364 kg of domestic waste per capita, Hungary is significantly below the average for the EU member states, which is 505 kg (Eurostat 2020, EU 27). Nevertheless, the national authorities responsible for waste management are aware of the further considerable improvement potential. The central intermediary organization for public waste management organizes the waste management sector in a way that is both transparent and controllable. Primarily this involves the collection, treatment, and recycling of waste that must be transferred to a public waste management organization for disposal.

waste since last year. “The new processing facility is designed to cope with 70,000 tons of mixed domestic waste, which is the equivalent of the waste of 245,000 residents,” explains Áron Biacsi Schön.

“ This enables us to reduce the amount of waste in our catchment area that goes to landfill by a third.

As Operations Manager, he is responsible for the entire facility with the processing of commercial waste and composting of green cuttings as well as the landfill site with gas collection and cogeneration plants.

KEY TO SUCCESS

Environmental technology specialist MUT Hungary, which represents Komptech in Hungary, was awarded the contract to supply the technology. “It’s logical for us to place our trust in Komptech products for shredding and separation,” explains Attila Kiss, who is responsible for the Komptech product range at MUT. “The Terminator and Ballistor are key components for the overall process flow. We’re familiar with these machines from previous projects, so we can fully rely on their performance and function.” The company Redwave – a specialist in sorting technology – was also involved as a partner. In the Austrian town of Gleisdorf, not far from Komptech’s headquarters, Redwave develops sorting systems for the efficient recovery of recyclable materials.



Operations Manager Áron Biacsi Schön (right) and Attila Kiss (MUT Hungary) in front of the Terminator. The machine is responsible for the first treatment step – shredding.

REDUCING LANDFILL WASTE BY A THIRD

Domestic waste from communal collections is a classic example. A waste recycling facility in Szeged, the third largest city in Hungary, has been generating maximum value, both in terms of materials and energy, from this mixed



The automated sorting machines from Redwave provide Áron Biacsi Schön with precise information about the sorting performance.

AN IDEAL COMBINATION

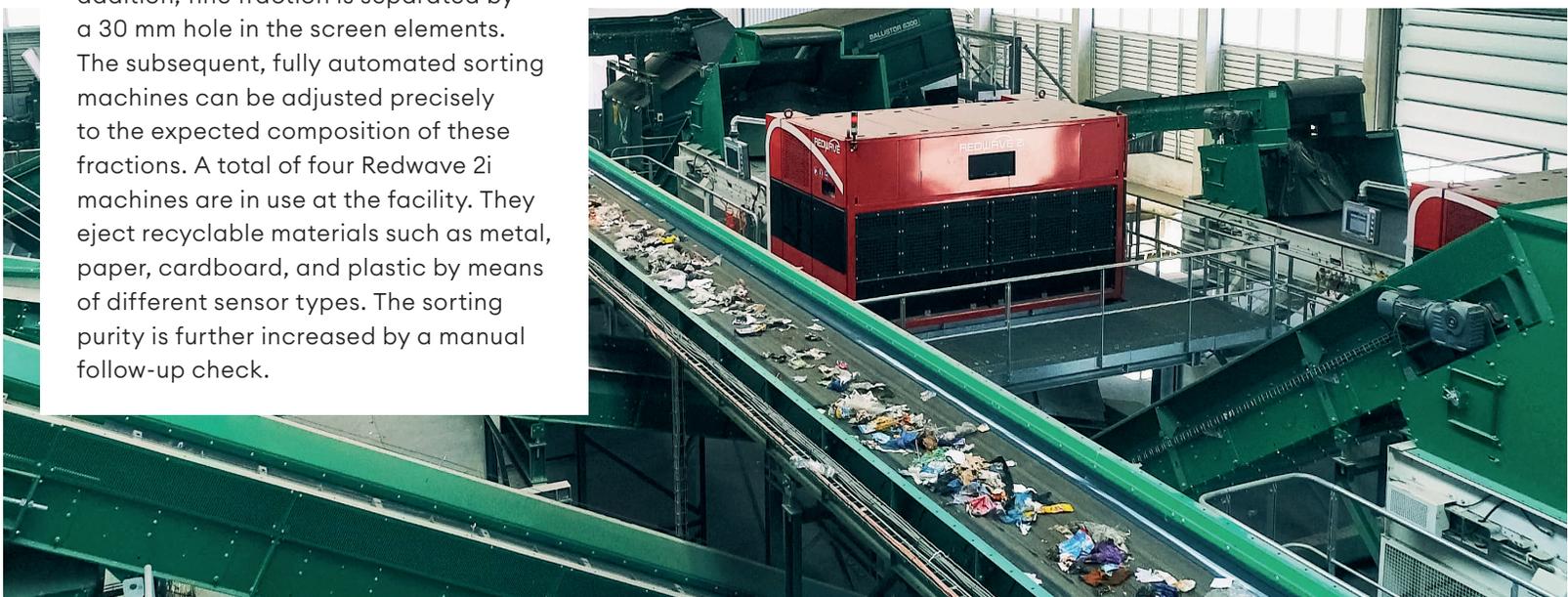
After pre-shredding and the separation of the organic fraction by means of a drum screen, the process steps for separation and sorting commence. Using a ballistic separator significantly increases the efficiency of the subsequent sorting stage. In the Ballistor, the material flow is divided into a 3D (cubic) and a 2D (flat) fraction. In addition, fine fraction is separated by a 30 mm hole in the screen elements. The subsequent, fully automated sorting machines can be adjusted precisely to the expected composition of these fractions. A total of four Redwave 2i machines are in use at the facility. They eject recyclable materials such as metal, paper, cardboard, and plastic by means of different sensor types. The sorting purity is further increased by a manual follow-up check.



This system is flexible: we can focus on recycling recyclable materials or on producing substitute fuels.

If we adjust the system for the latter, it separates the materials containing PVC from the calorific fraction by means of a sorting machine, and using the remaining material it generates fuel for cement factories by means of fine shredding.

Áron Biacsi Schön



A future-proof combination: mechanical processing from Komptech and automated sorting technology from Redwave.



MUNICIPAL WASTE

Municipal waste is defined as waste from private households and comparable establishments, as well as domestic-like waste from commerce and industry. Besides glass, paper, and biowaste, which are collected separately and are already recycled to a large extent, mixed municipal waste such as domestic waste, commercial waste, or bulky waste also has a high recyclable material potential.

Municipal waste in kilos per capita, EU-27, selected countries (data from Eurostat 2020)

	2020
European Union (EU 27)	505
Belgium	416
Denmark	845
Germany	632
Finland	596
France	535
Greece	524*
Italy	503*
Netherlands	534
Austria	588*
Poland	346
Portugal	513
Romania	287
Sweden	431
Slovenia	487
Spain	455
Czech Republic	507
Hungary	364

RECOVERY OF MUNICIPAL WASTE BY EU 27

24 %



Landfill

28 %



Energy recovery

48 %



Material recycling
(Eurostat 2020, EU 27)

EU TARGETS

From 2025, at least 55 % of municipal waste must be recycled; as of 2030 this will increase to 60 % and from 2035 to 65 %. (EU Waste Framework Directive 2018/851)



The ideal solution for every use

The waste and recycling industry is dynamic. New business opportunities turn up, old ones disappear, and order volumes rise and fall.

For our customers to make the best of these changes, we need to be more flexible in how we provide access to our machines. For this reason, we are continually developing our business models, changing them, and recombining them. As a result, customers have access to new, used, and rental machines. We also offer machine refurbishment services and combined solutions such as rental to purchase.

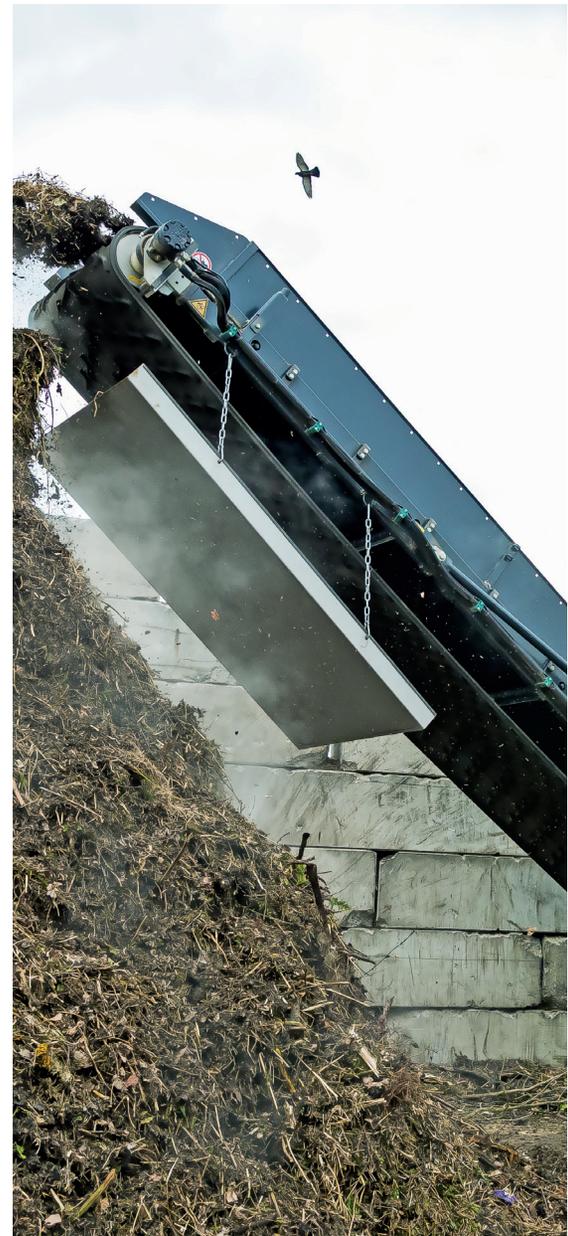
We consider it our responsibility to work with the customer to find the solution that provides the greatest benefit for

them. This not only means providing the customer with a Terminator for treating mixed waste – we also show them “how”.



Each of these business models has individual strengths

For each of the solutions, we asked our customers why they decided upon the specific purchasing model and what benefits they derive from it.



NEW

The purchase of a new machine with all the latest innovations is ideal for continuous utilization offering maximum performance and a high level of operational reliability.

- + High degree of innovation
- + Maximum reliability
- + Latest operating concept



Burkhardt Jänicke (right) of Hallesche Wasser und Stadtwirtschaft together with Komptech Area Sales Manager Karsten Runge (left).



“ The machine at our facility is to be used continuously and on a long-term basis, therefore robust and reliable technology are essential. This is one of the reasons why we opted for a new machine from Komptech. For us, the advantage is that the machine has not been exposed to wear and tear, and it shows no possible defects resulting from prior use.

By concluding a warranty extension in combination with maintenance contracts, all the possible prerequisites for long-term, uninterrupted, and calculable usage have been met. What further impressed us with purchasing a new model was the additional option to transfer data via a GPRS tool, which means, for instance, that we can monitor the condition of the machine and the operating hours. This makes it considerably easier to operate the machine efficiently.

Burkhardt Jänicke, Area Sales Manager/Material Flow Management at Hallesche Wasser und Stadtwirtschaft GmbH



USED

A used machine is the ideal choice when a company does not want to compromise on quality but is unable to purchase a new machine for financial reasons, or if the utilization rate is low.

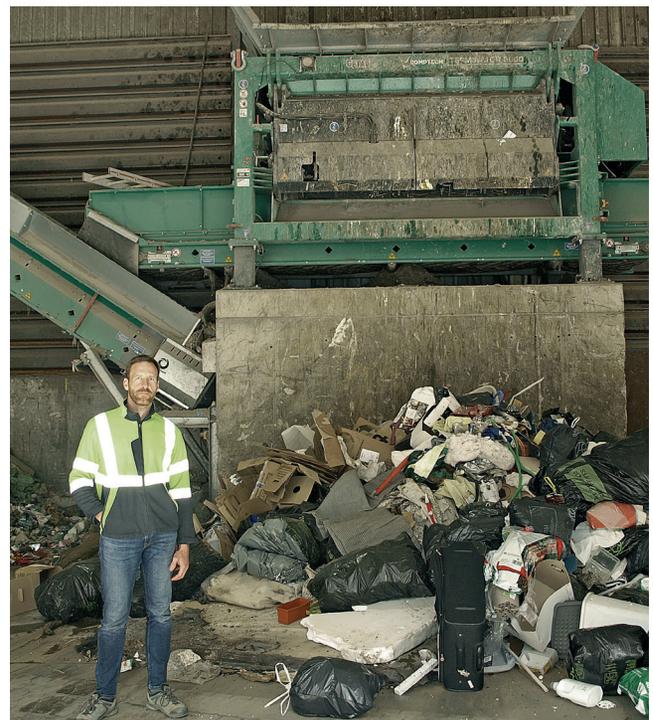
- + Lower purchase costs
- + Very cost-efficient
- + High level of reliability



We decided to purchase a used Terminator machine because it was available quickly and the price was attractive compared to a new machine. I was convinced a long time ago by the concept of the single-shaft shredder.

Another decisive factor was the excellent collaboration with GETAG, which began when our company was founded. We've grown together so to speak, and we know we can rely on them. Together, we've mastered challenges that can arise with the purchase of an electro-stationary machine, such as the adaptation of the electrical power connection. Therefore, in the end, we opted for a tailored solution and purchased a used machine.

Tobias Zurfluh, Deputy Managing Director of EZB AG



Tobias Zurfluh of EZB AG in front of the Terminator.



RENTAL

The rental machine is a convincing alternative when it comes to covering peaks due to the order situation, trialling new technologies, or tapping into new business segments.

- + High flexibility
- + No long-term investment
- + Rapid availability



“ Due to cost cutting measures, we had to rent the machine. The clear advantage for us is therefore in terms of cost savings, although we also benefit from the flexible choice of different machines and easy operability. The collaboration is very easy for us, as Komptech responds quickly to customer requests, whether in relation to a fast solution for malfunctions or the desired date for the rental machine.

Gerhard Neubauer, Head of the Compost Facility/Sorting Facility at Wiener Neustädter Stadtwerke und Kommunal Service GmbH

The rented Terminator in action at Wiener Neustädter Stadtwerke und Kommunal Service GmbH



REFURBISHED

An aging machine is checked thoroughly. As part of this process, the required, yet reasonable, scope for the refurbishment is defined, components are replaced, repairs are made, and defects are rectified. The machine is then ready to be used for many more years.

- + Low costs
- + Rapid availability
- + Long service life



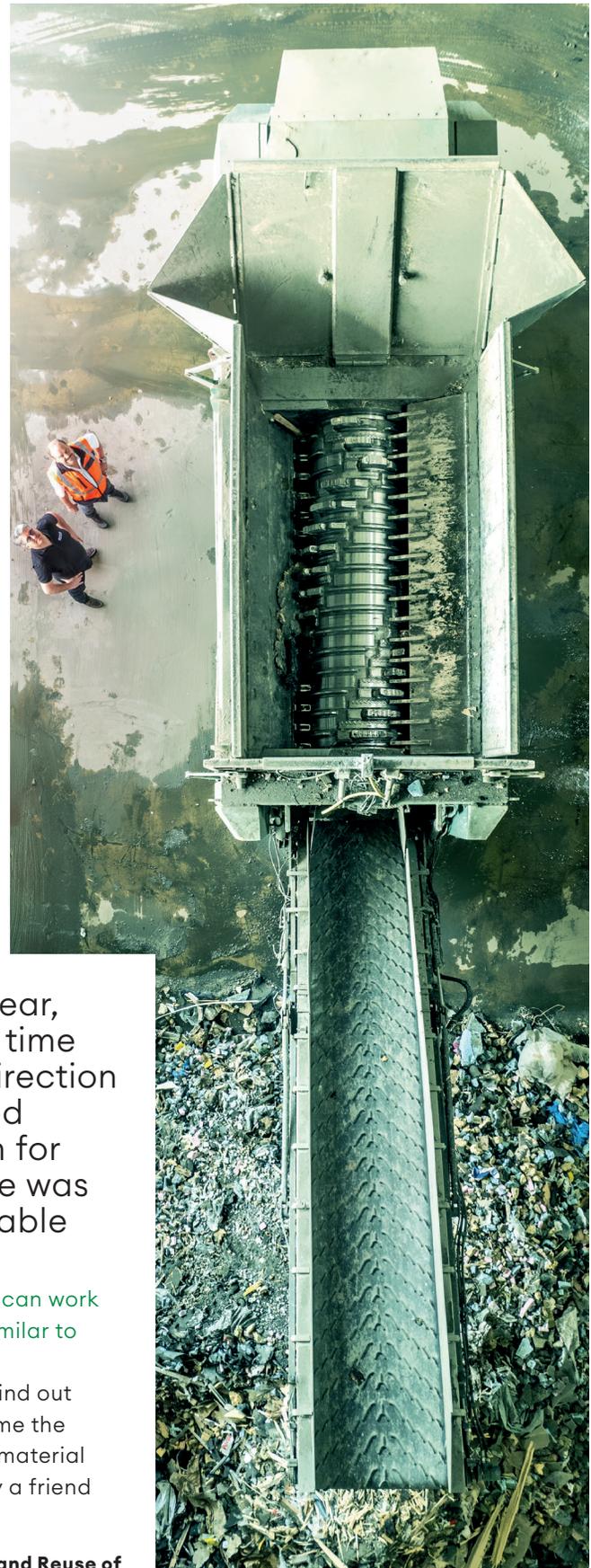
Eric Morier (right) at Henry Transports SA with Maurizio Mannarelli, Customer Advisor at GETAG Romandie SA (left).

” We opened our sorting center last year, and we had to give this new project time to develop and to understand the direction and requirements. Investing in a used machine was a more suitable option for this new activity. Another advantage was the fact that the machine was available immediately.

As the machine has undergone a general overhaul, we can work to a high standard. The machine is just as quiet, and similar to new machines it has a built-in Caterpillar engine.

After visiting several sorting centers in Switzerland to find out what solution would work best for us, what convinced me the most with the Terminator was the flexibility in terms of material shredding. Komptech was also recommended to me by a friend who spoke positively of the collaboration.

Eric Morier, Head of Department for Collection, Recycling, and Reuse of Waste at Henry Transports SA





COMBINATION

Here, purchasing options can be combined, for example with rental to purchase, whereby a long-term rental concludes in a purchase.

- + Maximum flexibility
- + Optimum availability
- + High degree of innovation



” After the EBS system burned out, we needed a quick replacement in order to continue serving our customers. Komptech immediately provided us with a Terminator and a Nemus as rental machines, enabling us to quickly continue processing waste.

As was the case with the previous model, we were very satisfied with the performance, which is why we decided to purchase the machine after the rental expired

Matthias Schuller, Head of Operations at Oswald Hackl e.U.

Matthias Schuller of Oswald Hackl e.U. talks about his experience of rental to purchase

Focus on the environment

On workdays, around 500 trucks operate on the 260,000 m² site of Wurzer Umwelt GmbH in Eitting near Munich. The waste disposal facility offers a wide range of services supporting the circular economy, ranging from disposal services for composting and biogas production, through to the processing of waste wood, municipal, and commercial waste, as well as logistics and landscape conservation. The fact that an increasing number of Komptech machines are being used is thanks to the impressive combination of technology and service.

“ We master all levels of recycling complexity by adopting a holistic approach.

Deputy Head of Operations at Wurzer, Johannes Schlosser, explains this approach. And in fact, when you stand in the vast area between the arrival point for recyclable materials and the compost windrows, you get a sense of what the circular economy means in practice. Naturally, this includes a huge machine fleet with lots of innovative technology.



“We operate in many areas.” Johannes Schlosser has a diverse range of activities.

35 YEARS OF STABLE GROWTH

Wurzer Umwelt was founded in 1984 by Franz Wurzer. Self-taught, he started out by taking on landscape conservation work for the municipal authorities, which then led him to start his own composting business. Two years later, the company founder opened his first professional composting plant, and after another two years he began to supply packaged compost throughout the region. In 1992, the ultra-modern composting plant

finally opened in Eitting. This was followed by the biogas facility, the hall for waste wood, and a system for processing commercial waste. The most recent addition is a new sorting system for recyclable materials.





Customer story: Germany



The processing of biowaste and the recycling of waste wood are just two of the many services provided by Wurzer Umwelt GmbH near Munich.

BIOWASTE WITH TECHNOLOGY FROM KOMPTECH

Komptech machines are used at Wurzer Umwelt to process biowaste. Initially, a visual incoming check takes place in order to first remove coarse foreign matter. Pre-shredding is carried out by a Crambo 6200. The combination of bio cutter equipment and XXL basket has proven to be particularly effective here: plastic bags that do not belong in a biowaste bin are torn up but are not shredded into pieces. After the subsequent screening process with a star screen, the plastic ends up in the oversize fraction. The clean undersize fraction is forwarded to the fermentation system, whereas the oversize fraction is sorted again depending on its properties, or is disposed of by means of waste incineration. For Head of Composting Hysen Gashi, the Multistar XXL2 dual fraction star screening machine is the “right choice” as the shredder and the screen work together in “perfect harmony” in relation to throughput. He also adds: “We opted for a screen section that’s slightly larger than 100 mm, as this is ideal for our process.

Thanks to the speed of the star shafts, throughout the course of the year we can respond to the different properties of the input material and to the changing content of the foreign matter.”

To allow a machinist to operate the Crambo and star screen combination alone, a machine with longer outfeed conveyors was ordered.

CERTIFIED COMPOST SINCE 1992

The biogas that forms in the fermenter is processed and converted into green energy. The solid matter from the fermenter is squeezed, dried, and further composted together with the green cuttings. Composting takes place in the open air on triangular heaps or in the hall. Hysen Gashi is proud of the compost quality that is produced: “Our company was first awarded the “Kompost” quality mark by the professional association of Bavarian compost manufacturers in 1992. We supply our compost to plants that use it to create products for private and commercial gardening. Their biowaste is possibly collected again by us – thus completing the circle.”



“Through fermentation, biogas is obtained from the biowaste and is used as green electricity to power our electric vehicles. The biowaste is also used to produce high-quality compost, of course,” says Hysen Gashi Head of Composting, who knows what he’s talking about.

CONNECTION WITH CUSTOMERS AND THE REGION

Wurzer's success story is also thanks to its close connection with the region. The company attaches great importance to stable, partnership-like relations with customers and suppliers. In turn, it is vital for a reliable service provider to protect its own operational capability. For Wurzer, this includes a secure supply of spare parts, rapid support in the event of servicing, and competent partners for all technical or process-related requirements. The fact that more and more Komptech machines have been deployed at Wurzer is also thanks to the services provided by Komptech's sales partner Rottenkolber Umwelttechnik GmbH. There are no more than 30 kilometers between the sites of both environmental companies. But naturally, the technology needs to be "truly state of the art" for Wurzer, explains Daniel Schischek, who supports the sales partner in his role as Komptech Area Sales Manager.

Besides the Crambo and star screen, Wurzer Umwelt also uses a Multistar One star screen and a Nemus 620 drum screen machine. "We're currently in talks about a Terminator, which could be used in many areas as a universal shredder," Daniel Schischek tells us.



Hysein Gashi (right) and Komptech Area Sales Manager Daniel Schischek discuss the best settings for the machines.

INNOVATION FOR THE ENVIRONMENT

When Wurzer built its fermentation plant in 1997, it was one of the first biogas plants in the German-speaking region. From the very outset, it was prepared to invest in new, innovative technology. Today, the waste disposal company covers its own energy needs, for example, primarily using green electricity which is self-generated by means of fermentation and photovoltaic technology. Wurzer is also a pioneer in the sector in this respect. Head of Operations, Schlosser:

“ Naturally, e-mobility is important for us. However, at the moment, our options are limited here as our machines are often deployed to external sites. This makes operating the machinery efficiently all the more important. With Komptech, we feel we are in good hands.

