

# KOMPTECH

magazine 1/2014



FUTURE  
**QUO VADIS RENEWABLES?**

PRACTICE  
**THE LAND OF STARS**

INNOVATION  
**THE NEW TOPTURN X55**



**KOMPTECH** PRESENTS:

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## THREE QUESTIONS FOR JOSEF HEISSENBERGER



*Josef Heissenberger,  
CEO and owner of the  
Komptech group*

***With the green efficiency® programme Komptech is once again breaking new ground. What was the motivation for this new innovation series?***

The secret of our success has always been that we listen carefully to our customers. Really, from day one we've developed everything together with customers. Now that we've grown into a global player, we hear more and more customers tell us that efficiency in terms of maximum economy is the most important thing. In combination with our motto "Technology for a better environment," that results in a whole new set of requirements as to how future machines should look and function.

***Is green efficiency® just something in the minds of the Development Department, or is it making its mark elsewhere in the company?***

Naturally it started in the Development Department. But it really took off only when all of our employees around the world picked up the spirit of green efficiency®. It

has become part of our company philosophy, whether in the photovoltaic array on the roofs of our production facilities, electric vehicles in our motor pool or just the way that everyone in the company tries to act sustainably and environmentally soundly.

***What specific benefits can users expect?***

We're off to a good start. Four machines already meet our demanding internal green efficiency® criteria. These require that machines not only use less fuel, but also deliver higher throughput or performance than previous generations and competitor machines. Noise is an ever more important issue, so they also have to have much lower noise emissions. And it goes without saying that these machines use the latest exhaust technologies. Our goal is to bring all of our machines to this level by 2020, and our developers have plenty of good ideas on how to make that happen.



**Someday our grandchildren will ask us what we did with their future. We're working on intelligent answers.**

Josef Heissenberger,  
CEO Komptech GmbH



# PROGRESS MEETS EXPERIENCE

The new Topturn X55 is finished. Finished? Not quite. It's still missing those last touches a machine can get only after being put through tough operational testing by a knowledgeable professional.

With over 5000 hours experience in the cockpit of a Topturn X53, Stefan Wieder is the ideal man for the job. And he's doing it in the ideal place - Stefan Wieder is responsible for the curing process of the organic fraction at the UDB mechanical-biological waste treatment facility in Oberpullendorf, Austria. With a density of 900-1000 kg/m<sup>3</sup> this residual waste compost is heavy going.



*The side panels turn into spacious working platforms.*

It needs to be turned twice a week, which works out to 5-6 hours of turning a day. Wieder has taken the wheel of the new X55 for a several-month test run, to see how well Komptech's development team did their job. For the machine, that means day after day of hard work, but for our technicians it means invaluable data in a short period of time.

## SHAKEDOWN TEST

Major changes were made to the cabin of the Topturn X. The development team went to great lengths to turn it into a comfortable workstation. Does the operator have a good all-round view? Is the console properly positioned? Does the AC fan blow too hard? Is the seat sprung just right? Important details that can only be worked out in actual extended use. The intensive communication between user and test technicians as the liaison to the designers makes it possible to eliminate potential trouble

spots before the machine goes into series production. For example, a door that takes excessive effort to close.

## OPEN TOPTURN!

But Stefan Wieder isn't just responsible for driving the Topturn. He's also in charge of its care and feeding, so he pays special attention to maintenance. "Air filter, oil filter - everything's easy to reach, and I can do it standing up."

It looks kind of spectacular when the Topturn unfolds to transform the panels to the left and right of the cabin into spacious work platforms. Ladders complete with railings unfold, and all maintenance points are easily accessible.

## "YOU REALLY GOT THE SERVICE ACCESS RIGHT."

*Stefan Wieder, Umweltdienst Burgenland GmbH*

Wieder has nothing bad to say about the most important criterion, the throughput. Indeed, he sees advantages.



*Stress test for the new Topturn X55: Even with heavy material, Stefan Wieder goes through considerably more than 1000 cubic metres per hour.*

"There's plenty of drive power. And now that the Topturn is bigger and heavier than its predecessor, it has better traction too. That's good, because we run it with a lateral displacement attachment, so it has a heavy load to haul."

Wieder thinks the machine is also better equipped to handle extreme situations. "Heavy compost, turning with lateral displacement, dust, the high temperatures we get here in the summer, they weren't always easy for the other turner to deal with. But with the new radiator system this one won't have any availability limitations," says Wieder, who has already gained a very high opinion of the new X55.

#### TAKING ON THE TOPTURN

It's the availability that matters most to Rudolf Haider, director of UDB. "To run our facility at top potential we need to time all processes very tightly, and keep operating costs as low as we can. A dependable machine with predictable costs is a big part of that," says Haider. He

knows what he's talking about - he and his colleague Helmut Löffler built the company into one of Austria's bigger waste treatment operations.

"We were already very happy with the Topturn X53 and with Komptech service. Now the 'old man' has got on in years, and we're looking for a replacement. Naturally I listen to what my employees tell me," says Haider. And that creates the motivation to try even harder. ■



**Umweltdienst Burgenland GmbH**

[www.umweltdienst.at](http://www.umweltdienst.at)

**Umweltdienst Burgenland GmbH  
Oberpullendorf, Austria**

#### Areas of business:

Disposal of household, commercial and industrial waste  
Regional partner for mandated collection systems (packaging, batteries etc.)

#### Facilities:

- 1 mechanical-biological separation system
- 2 composting systems
- 1 landfill

**Revenue:** 30 million euros



**Umweltdienst Burgenland GmbH**



# COMPOSTING IN THAILAND



A weed collection boat on Bangkok's main river, Chao Praya.

Waterways are important transportation routes in Thailand's cities. Aquatic weeds are a major threat to rivers and canals, but the Topturn X helps control them.

Bangkok literally means "Village in a plum grove." But this "village" is today home to over 15 million people. Canals known as "khlongs" and rivers have always been important in the Thai capital. Floating markets are even held in these waterways.

Of course, plants grow very quickly in Thailand's tropical climate - including aquatic plants. Long trailing weeds grow so fast in the channels that they quickly form solid mats that hinder or even prevent travel by boat.

So collecting the weeds is a constant job. Boats gather them and take them to shore, where they are chopped up.

They are then mixed into organic waste as green cuttings, composted and regularly turned by Topturns. This keeps the waterways navigable, while also turning nuisance plants into valuable soil improver. ■



The weeds are "harvested"...



... and offloaded on land for shredding.

4 Topturn X turners work at the Nongkhaem and Onnut composting facilities in Bangkok.





# THE LAND OF STARS

Page-one  
story

Switzerland has a particularly high density of dark-green Komptech star screens. A look at our newest customer, the Wiedag company in Oetwil on Lake Zurich. ▶

*Christoph Hess is "Lord of the Biomass."*

Christoph Hess is CEO of Wiedag Recycling und Denomie AG. So he gets up early. "My workday starts at 5 in the morning, and usually doesn't end until 6 or 7 at night," he says of his busy schedule. The facility in Oetwil, about 25 kilometres southwest of Zurich, treats around 20,000 tonnes of green cuttings and 10,000 tonnes of waste wood each year. It also processes driftwood.

### FOCUS ON BIOMASS PROCESSING

"Processing biomass into fuel has become an important part of our business, in addition to composting and anaerobic digestion," says Hess. This is due to the many heating plants in Switzerland, with their strong demand for fuels. After initial shredding, the fines (0-60 mm) go to anaerobic digestion, while anything larger goes on to be used as fuel. The high-speed shredder used previously produced more fines than necessary, so it made sense to add a low-speed shredder. "The new Komptech Crambo with direct drive fully convinced us," says Hess of one of the company's new machines. Using it, instead of 30 to 40 percent only 20 percent of the material goes to anaerobic digestion as fines. After shredding, the material is screened with a Multistar 2-SE stationary two-fraction star screen. Wiedag has been using it for some time and is very satisfied with it.

### ★ MULTISTAR STAR SCREENS



### STAR SCREENING AS A KEY TECHNOLOGY

"And because we liked the Multistar so much, the next logical step was to get a mobile one," adds Hess, referring to his new Multistar L3 and the efficient service he gets from GETAG, the Swiss distributor for Komptech.

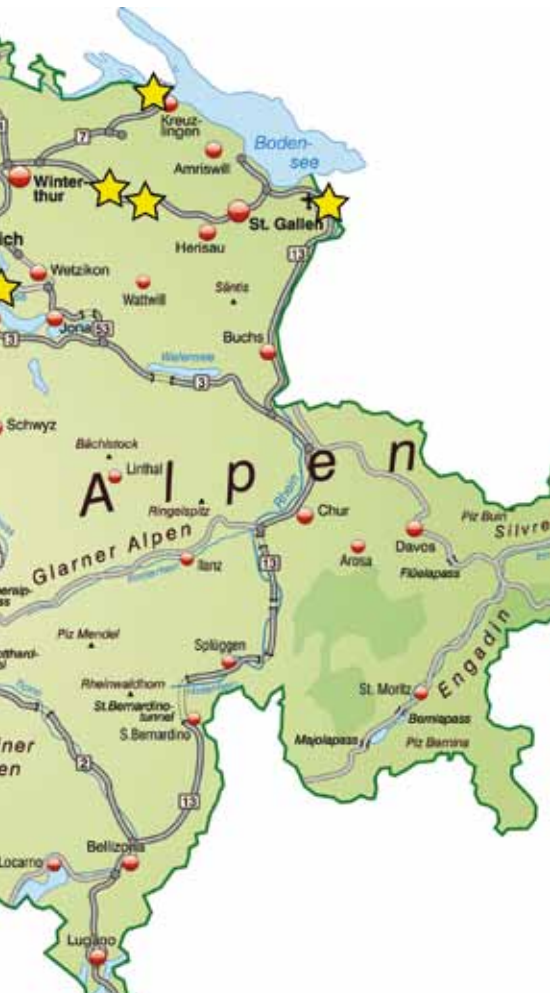
"With a mobile machine you're just more flexible when market conditions change," explains Hess. "And the machine is unbeatable for screening shredded the wood. Formerly we just shredded used wood, loaded it up and sent it away. Now with the mobile star screen we can make defined products."

The fines (0-15 mm) go to the cement industry as fuel, while the medium fraction (15-150 mm) is used as a biomass fuel or a raw material for particle board, depending on the quality. The oversize fraction is reshredded and goes back into the cycle. "By offering different products we have grown our market, and we're closer to my goal of making a saleable product out of any waste."

With his business resting on a broad base, a positive-minded Christoph Hess looks confidently to the future: "What we do, we do better than the others." And that seems to be quite a few things. ■



Switzerland has a very dense population of Multistar screens.



Wiedag Recycling und Deponie AG/  
J. Grimm AG



CEO: Christoph Hess  
Employees: 50

Materials:  
20,000 tonnes green cuttings  
10,000 tonnes waste wood  
Driftwood

Technologies:  
Anaerobic digestion (Kompogas system)  
Biomass processing  
Transport operations  
Collection service  
Dumpster service

Landfill:  
Inert materials, reactor, residuals

[www.grimm.ch](http://www.grimm.ch)

## THREE QUESTIONS FOR YVAN GREPPER



Yvan Grepper  
CEO GETAG AG



### Why are there so many Multistars in Switzerland?

The most important reason is their high flexibility. To get different particle size cuts you just need to change the speed of the rotating stars, instead of switching out the entire screening drum like on a trommel.

We've set up several service providers with mobile versions, and in stationary use the compact dimensions and high performance are a big draw. Also, Swiss composters have very high quality expectations, which can be readily met with Komptech star screens.

### What has it been like to work with Komptech?

GETAG has distributed Komptech products on the Swiss market with great success for many years now.

We're proud that little Switzerland has the world's highest density of Terminators - an all-purpose shredder that is perfect for our customers.

In recent years the demand has shifted more towards screening technology, especially the Multistar star screens.

### What are GETAG's plans for the future?

We're constantly expanding our services so that we can support customers through the entire machine life cycle. We set up our own customer service organization in 2011. That necessitated a new building in Fülenbach with workshop, spare parts stock and office space, which we moved into just over a year ago. Now we're ready to grow even more.

### More machine for the same price.

Anniversary promotion:  
Choose from six customer-specific packages free of charge.



**Multistar L3**  
mobile star screen



More information at [www.komptech.com](http://www.komptech.com).

# QUO VADIS RENEWABLES?

Page-one  
story

*An uncertain future for renewables in Europe.*

The EU Commission recently presented the renewable energy roadmap through 2030. Trade groups severely criticized what they called a "genuflection before the big energy companies."

The European Commission recently presented the renewable energy roadmap through 2030. The key points are:

- a) Mandatory greenhouse gas reduction of 40 percent (of the 1990 level) by 2030
- b) EU-wide, at least 27 percent of energy must be from renewable sources by 2030 (but without any national targets)
- c) Increased efficiency (likewise without specific targets)
- d) Creation of a competitive, affordable, secure energy system. For this, action plans for the member states were only suggested, not mandated.

## THE EU PARLIAMENT STEPS IN

The EU Parliament wants a more ambitious approach - a mandatory 40 percent reduction in greenhouse gas emissions by 2030. The representatives criticized the Commission's proposal as "short-sighted and too unambitious."

## "THE 2 DEGREE GOAL IS UNATTAINABLE"

While the big energy companies welcomed the Commission's proposal, as might be expected, the renewable energy associations had nothing but criticism for it.

For Heinz Kopetz, chairman of the World Biomass Association, a 40 percent reduction in greenhouse gases is a "reasonable minimum goal." He considers that emissions need to go down at least 50 percent by 2035 if a climate catastrophe

is to be avoided, and that the Commission's proposal on renewable energy is an "incomprehensible genuflection before the atomic energy lobby in England, France and a few other countries." He says that this makes the EU Commission "a global damper in the most important future technology," and that it would make the 2 degree goal unattainable.

## IN THE HANDS OF THE ATOMIC LOBBY?

The wind energy industry also had nothing good to say about the EU Commission's proposal. Stefan Moidl of Austria's IG Windkraft said, "The current proposed guidelines for state environmental protection subsidies, like the 2030 targets, read like a frontal assault on renewable energies. At the same time, commissioner Günther Oettinger called enormous subsidies for British atomic power plants 'worthy of study.'"

It can only be hoped that something is done to promote renewables. The outcome of this round of the energy policy debate remains uncertain. ■

# FUTURE TECHNOLOGIES FOR BIOMASS ENERGY



Dr. Ingwald Obernberger  
 BIOS BIOENERGIESYSTEME GmbH  
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[www.bios-bioenergy.at](http://www.bios-bioenergy.at)

**The use of biomass as a fuel has grown greatly in recent years. What does the future look like?**

Heating and cooling with biomass will continue to become more widespread. Highly efficient combustion systems with high calorific output and extremely low emissions will become the state of the art for small biomass incinerators. As regards emissions reduction, the focus will be on small heating systems with very low dust output; development is already underway.

**What will the focus be for medium and large systems?**

Higher efficiency and better control of heat distribution systems (district heating, consumers and heat recovery - edit.); there is great potential for improvement in existing and new systems. Process heat utilization based on bio energy and combined biomass / solar systems

will also gain in importance. In addition to heat generation, cooling and combined heating and cooling using biomass will also increase.

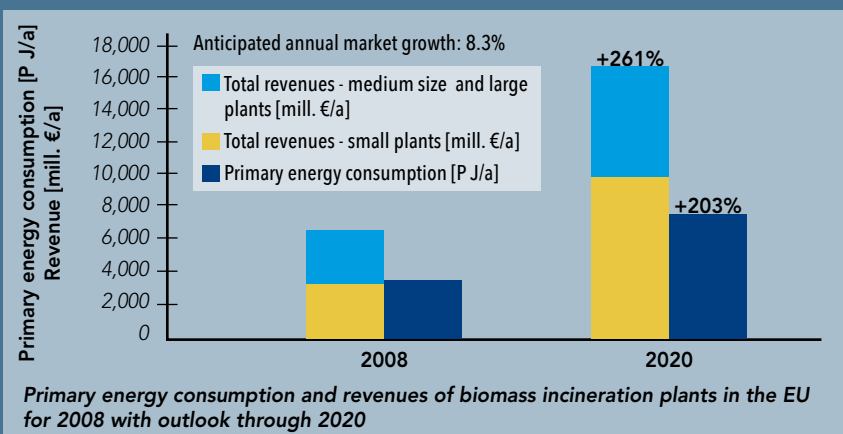
**The refinement or pre-treatment of biomass is becoming more and more important as biomass becomes an internationally traded fuel. Where is the international trade in biomass fuels headed?**

Higher, and standardized, energy density is an important issue. Torrefication or "roasting" of biofuels needs to be further developed and validated. Carbonation ("charcoaling") and liquefaction also have potential for future use. A second important area is the improvement in the combustive properties of non-woody biomass, for example agricultural waste, through additives that improve the usable fuel potential.

**After all the discussions about biofuels like ethanol, what do you foresee happening with biomass vehicle fuels?**

There is going to be more refining of biogas into natural gas and feeding it into natural gas networks. There is progress in the development and validation of technologies for the production of synthesis gas and fuels from solid biomass. These processes will become more and more important for large bio refineries that produce heat, power and fuel or raw materials from biomass.

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# READY TO GO

The Axtor 6010 is ready to set new standards. But before going out to customers, it must prove its capabilities in tough benchmark testing.

Since its market launch the Axtor has been one of the most flexible machines out there for biomass processing. Wherever the material is right for a high-speed chipper, the high-performance Axtor 8012 has demonstrated its versatility. Now it's getting a stablemate, the new Axtor 6010. With the same functionality but more compact while packing 590 hp of power, the Axtor 6010 is designed specifically for the medium to high output category.

## A NEWCOMER IN A HOTLY CONTESTED MARKET

Obviously we're not the only manufacturer going after this market, so there's just one way to find out who delivers the goods - with a benchmark test.

For the competitor we chose a machine by a well-known German manufacturer whose orange colour is familiar in the industry. So is its high-speed chipper, the heftiest model of which boasts almost 600 hp and has been in wide use for some years. We tested the machines in typical applications. In addition to throughput and consumption data, we looked at the "soft factors" - what using it is like for the operator and how easy it is to set up for different jobs, like screen basket or blade changes.

## BULKY GREEN CUTTINGS AS THE YARDSTICK

The importance of efficient feed function is immediately obvious in what is perhaps the most common application - shredding green



*Shredding or chipping - the new Axtor 6010 is ready*

cuttings. At this time of year cuttings consist mainly of bulky and woody branches and brush. The orange competitor often didn't feed these in well, making it necessary for the operator to actively push in the material. He lost his patience with a small rootstock that just would not go into the feed, and tossed it out of the



## green efficiency ON THE AXTOR 6010



### EFFICIENT WORKING

A large feed area, active intake, efficient cut geometry and many other details make the Axtor more efficient than competitors, in some cases by 40 percent.



### ONE MACHINE, TWO FUNCTIONS

The innovative tool change design makes the Axtor both a high-performance shredder and a thoroughbred chipper with lengthwise intake. It also has the best protection against contraries.



### LOW EMISSIONS

The engine has the latest exhaust-scrubbing technology (Euro IV / Tier 4f), can be maintained from the ground, and is noise-reduced so it is very quiet.



for either.

hopper with the gripper. (It's times like these when you know why they tell you to stay at a safe distance.) The upwards rotating drum with free-swinging impact blades works like a hammer mill and gives a fibrous shred. That's not at all a bad thing for composting, but less desirable when the woody component is intended for sale as biofuel.

### LESS BOTHER, MORE THROUGHPUT

Working with the Axtor helped the operator calm down, and he and the machine formed a team: He put the material in the hopper, and the Axtor did the rest. The fixed shredder blades gave the output the desired fuel chip shape, and also gave a remarkable difference in performance - almost 60 percent higher throughput, with almost 40 percent lower specific consumption.

On both machines, switching screen baskets for the subsequent bark processing was problem-free, and the neutral stopwatch showed that it even went a little bit faster with the orange candidate.

But the output was another story. Here again, the orange contender didn't give the bark the desired chip shape for use as a mulch for soil covering.

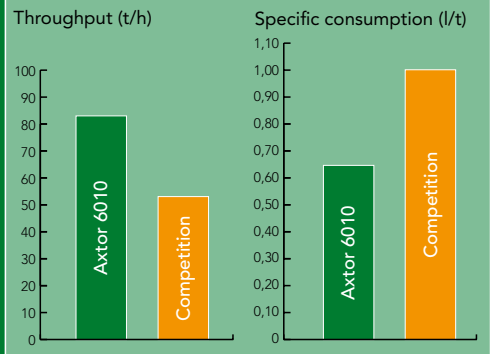
The two machines were neck and neck only with waste wood, but for this the Axtor was fitted with free-swinging blades. It took about three hours to change the Axtor from fixed to free-swinging blades; on the other hand, that made the Axtor a truly all-purpose machine.

### SUMMARY

The orange chipper is a tough, dependable machine, but is a little bit behind the times. It doesn't meet the requirements of the biomass market. This is the strength of the Axtor 6010, which delivers top performance as both a shredder and a chipper. It gets the green light to go to market as another green efficiency® machine.

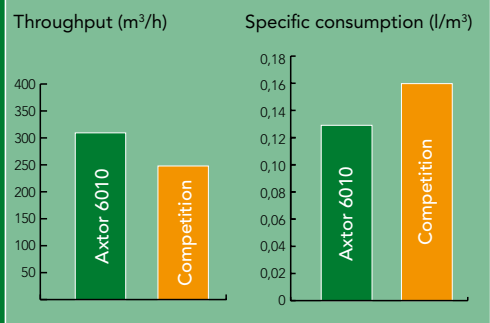
## SUPERIOR IN THE DETAILS

### APPLICATION RESULTS, GREEN WASTE



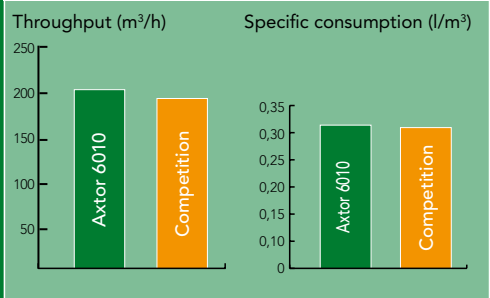
Big differences in shredding green cuttings: Looking at throughput in terms of weight, the Axtor 6010 was 60 percent better than the competition, while also using 40 percent less fuel per unit output.

### APPLICATION RESULTS, BARK



Differences in shredding bark: With 22 percent higher throughput and 19 percent lower specific fuel consumption, the Axtor won again. What's more, the competitor machine didn't deliver the product quality demanded by the market.

### APPLICATION RESULTS, WASTE WOOD



For waste wood, both machines were about equal, with impressive throughputs considerably over m³/h and low specific consumption (0.31 l/m³).

# AXTOR 6010

## Six reasons you'll love the new Axtor

The Axtor is one of the most flexible machines for biomass processing. In fast-running shredder mode with free-swinging blades, it produces material for composting. At low speed with fixed teeth, it turns out biomass fuel for heating plants.

The high-performance Axtor 8012 now has a stablemate, the new Axtor 6010. Its most important features: A low-emissions diesel engine in a maintenance-friendly underfloor position, wide-area forward-facing feed with aggressive intake, and a clearance of 850 mm. The Axtor 6010 can be on a 3-axle trailer, semitrailer or self-propelled tracked chassis.



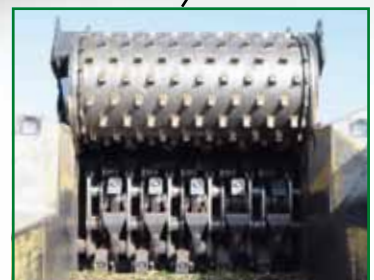
### 01 Please feed

Large 5.7 x 1.4 meter feed platform with tough chain conveyor and hinged hopper



### 02 Yellow power

CAT® C15 590 hp engine in maintenance-friendly underfloor position



### 03 Bigmouth

Active intake with large feed opening (1450 mm wide, 850 mm high)







**06 High output**

Green cuttings, bark, trunk wood, used wood - with throughput up to 300 m<sup>3</sup> per hour



**04 Always the right particle size**

Simple screen basket change by swinging it to the rear



**05 From shredding to chipping**

Change the blades from a comfortable working position, switch the speed, and go!



Johann Schirmbeck sees his way clear.

# CLEAR AS GLASS

**In practice**  
Schirmbeck  
Glasrecycling GmbH

A Terminator at Johann Schirmbeck Glasrecycling GmbH in Schierling near Regensburg, Bavaria has been given an unusual task - recycling safety glass. And it handles this with aplomb.

One of the places safety glass is used is car windshields. If a rock hits it or something else breaks the glass the vehicle occupants are protected from sharp edges and flying shards, because the pane might crack, but it won't shatter. That's because it's made of two panes of glass sandwiching a tough, elastic plastic film. A roller press pre-laminates two or more sheets of glass and a film, usually polyvinyl butyral (PVB) or ethylene vinyl acetate (EVA). This pre-laminate then goes to an autoclave where it is permanently bonded under high heat and pressure. Johann Schirmbeck, CEO of the Schirmbeck Group, got involved in glass recycling by accident. "At Johann Schirmbeck GmbH we've worked with everything that has to do with car parts since 1986.

That includes car glass, and that gave us the idea of glass recycling." It wasn't a bad idea, since his location near three "automotive metropolises" of Regensburg, Ingolstadt and Munich gave Schirmbeck an excellent opportunity to try it out. Alongside flat glass and hollow glassware, today it's the PVB flakes from safety glass that are the focus of the company's efforts. Johann Schirmbeck explains: "As great and indispensable as today's modern windshields are, it's awfully hard to separate the glass and film for single-material recycling. You need to know what you're doing, have the right equipment and have the experience to get the clean separation that is so important for high-quality recycling."

## THE TERMINATOR MAKES THE DIFFERENCE

The glass goes through a three-stage process. First, pre-reduction coarsely separates the glass from the film. The film is then shredded again, and then screened to separate small glass particles, glass splinters still stuck to the film, and the film itself. Johann Schirmbeck: "Due to the chemical composition of the film, it has the unpleasant property of clumping extremely quickly on exposure to air. Even for our big wheel loaders it's difficult to pick up loads of film from the pre-shredded piles and load them into the shredder." That's where the mobile Terminator comes in. "We tested it in Austria and it immediately had us convinced," says Schirmbeck.

NEW

## Terminator: XXF shredding unit



### EVEN FINER - EVEN BETTER

Shredding is the first step in processing almost every kind of waste, whether intended for recycling or fuel. The purpose is to get a defined, homogeneous material flow without overlengths for the downstream screening and separation steps. There is also more and more often the challenge of getting an incinerator-ready grain in just one shredding step. The new XXF shredding unit of the Terminator was designed to address exactly these goals. It features the proven blade mounting of the F (fine) system and a new tooth arrangement that puts the full shredding force on just one tooth at any given time. The precision cut is aided by a newly developed counter comb with a shredding gap of just 2 mm for a very fine grain, for example when shredding tyres.

### ADVANTAGES

- » Consistent particle size with high degree of shredding
- » High shredding force even with difficult materials
- » Easier drum tooth changes
- » Lower wear part costs
- » New applications



A Mustang drum screen screening shredded safety glass film.

As a low-speed single-shaft shredder, the Terminator easily handles this very strong yet elastic material. The hydraulic adjustment of the shredding gap between the drum and counter comb makes it possible to match the degree of shredding to the downstream processing steps. Screening out of the shredded film is done by a downstream Mustang trommel screen fitted with a 20 mm drum. The oversize fraction is sent out for incineration, while the 0 - 20 mm fraction goes on for further processing.

The PVB flakes thereby obtained are returned to the raw material cycle. When you consider that making glass from primary raw materials takes about 25 percent more energy than melting down used glass, it's clear that glass recycling is more than just responsible - it's the right thing to do. And it's the road Johann Schirmbeck is taking. It's nice to know that Komptech is helping him do it with the Terminator and Mustang. ■



Schirmbeck Glasrecycling GmbH

Schirmbeck Glasrecycling GmbH was founded in Schierling in 1992 as the first flat glass recycling operation in Bavaria. From the beginnings with 10 employees and two trucks processing 5 to 7 tonnes a year, the company has grown to around 200 employees and 85 trucks, with locations in Schierling and Immendingen in Germany and Kraubath an der Mur in Austria.

It processes about 400,000 tonnes of glass a year.

In Schierling, one of the most modern glass recycling systems processes hollow and flat glass from throughout southern Germany and Switzerland. Two more lines for hollow glass were commissioned in Schierling and Kraubath in March 2007. The output goes to glass manufacturers, while rejected material is properly disposed by waste disposal operators.

[www.recycling.schirmbeck.com](http://www.recycling.schirmbeck.com)

## THREE QUESTIONS FOR CHRISTIAN OBERWINKLER



think!  
**GREEN**

*Christian Oberwinkler,  
Product Manager for shredding and  
composting technology*

### **What technology is necessary in order to meet Tier 4 final (or Stage IV) emissions limits?**

To comply with the Tier 4 final emissions regulations takes extensive exhaust scrubbing. There are two ways to do it. One is exhaust gas recirculation (EGR) and diesel particulate filtration, the other is selective catalytic reduction (SCR), which uses ureic acid (AdBlue®) to reduce the nitrogen in the exhaust.

### **What is the technical challenge here?**

Since extensive treatment of the exhaust is necessary, you need extra components that require space to put them in and need cooling. All this has to fit without materially changing the dimensions of mobile machines.

Technically it's also important to make allowances for the different dynamics of the diesel engines.

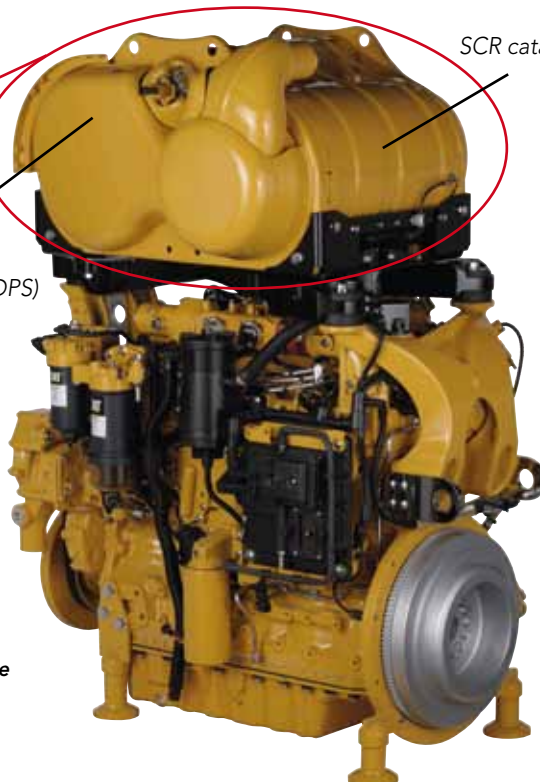
### **What is Komptech's solution?**

With a sustainable long-term solution in mind, Komptech chose a combination of the two systems. The combination of the SCR and DPF gives reserve exhaust treatment potential that will enable us to comply with the next level requirements. This will not be possible with SCR-only systems as they presently exist.

*Exhaust gas treatment*

*Diesel particulate filter (DPS)*

*SCR catalytic converter*



*The new CAT® engine*



*Clean and easy to get at - The new Crambo direct*

# CLEANIN

Sometimes innovation is driven not by the ideas of customers and developers, but by legal requirements. On the status of implementation of new exhaust regulations in Komptech machines.

### **COMBINED SYSTEM**

The use of the latest exhaust technology is one of the basic requirements for a machines' inclusion in our green efficiency® innovation programme. Komptech has settled on a combination of DPF (diesel particulate filter) and SCR with AdBlue®, in order to make use of the technical benefits of both systems and so offer customers a sustainable long-term solution. This solution will also allow Komptech to meet the next emissions limitation phase.

### **LET'S GET TO IT**

The new legal mandates made changes unavoidable, so the developers thought about what other changes could be made that would add customer value.



# G UP

On the Crambo, this led to a redesign and "clean-up" of the entire engine compartment. All maintenance and service points were moved to the outside, to make engine compartment access as ergonomic and safe as possible. Now all points are accessible either from the ground or from stable access platforms, making the annoyance of poorly-placed maintenance points a thing of the past.

## SPECIALISTS AT WORK

The reduction of noise emissions is more and more important, so when we revisited the engine we worked with sound designers to develop a completely reworked acoustic concept that cuts noise emissions by up to 50 percent. Usability specialists overhauled the controls, so that in future all Komtech machines with the new engine generation will have a uniform, logical and intuitive operating design. ■

## BACKGROUND INFORMATION

### THE LEGISLATION

Current exhaust regulations define permissible maximum limits for nitrogen oxides, hydrocarbons, carbon monoxide and soot particles. These limits are much tighter in Europe, the US and Japan than in the rest of the world. The last phase, Tier 4 final (or Stage IV), came into force at the start of the year and applies to engines from 55 to 560 kW. In the US, it will also apply to engines over 560 kW starting in 2015, while in Europe this power range will not be regulated.

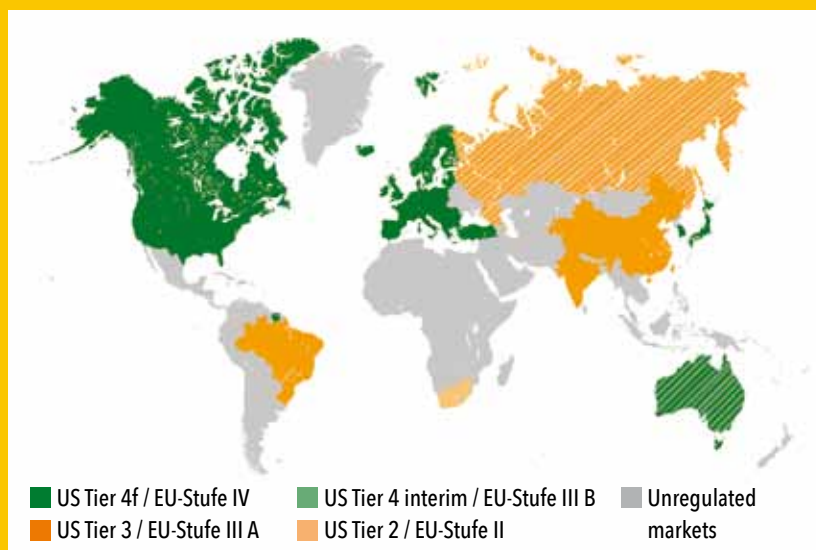
### DIESEL ENGINE TECHNOLOGY

Old diesel engines usually have mechanical fuel-injection systems, often lack turbocharging and have only simple exhaust systems. Tier 4 final or Stage IV engines have electronic control, variable turbochargers and at least one cooled exhaust recirculation system.

Their higher injection pressure of 2000 bar and above means lower NO<sub>x</sub> output. They also have complex exhaust gas treatment systems. The cooling systems are also much more sophisticated. Not only is their cooling performance dramatically better, they also keep the temperature within a certain range to maintain the performance of the exhaust treatment system.

### EXHAUST GAS TREATMENT

The exhaust systems of conventional engines primarily serve to reduce noise. But new exhaust treatment systems also reduce the pollutants in the exhaust. Particles are removed by a diesel particulate filter (DPF) while an SCR catalytic converter reduces the nitrogen oxide (NO<sub>x</sub>) level. These technologies require extra space and control devices.



Power P <sub>n</sub> kW	NO <sub>x</sub> g/kWh	HC g/kWh	CO g/kWh	Particle g/kWh	Date from year of mfg.
Tier 2 / EU Stage II					
130 ≤ P <sub>n</sub> < 225		6.6	3.5	0.2	2003
225 ≤ P <sub>n</sub> < 450		6.4	3.5	0.2	2001
450 ≤ P <sub>n</sub> ≤ 560		6.4	3.5	0.2	2002
P <sub>n</sub> > 560		6.4	3.5	0.2	2006
Tier 3 / EU Stage III A					
130 ≤ P <sub>n</sub> ≤ 560		4.0	3.5	0.2	2006
P <sub>n</sub> > 560	No tighter limitations				
Tier 4 interim / EU Stage III B					
130 ≤ P <sub>n</sub> < 560	2.0	0.19	3.5	0.02	2011
P <sub>n</sub> > 560	3.5	0.4	3.5	0.10	2011
Tier 4f / EU Stage IV					
130 ≤ P <sub>n</sub> < 560	0.4	0.19	3.5	0.02	2014
P <sub>n</sub> > 560	3.5	0.19	3.5	0.04	2015

# A PARIS SHOWCASE PROJECT

System technology

Since its founding in 1967, French family-owned company Hantsch, situated in the Alsace region, has developed and created complete solutions in the environmental industry. As a well-known partner for both public and private solid waste treatment companies, Hantsch together with machine manufacturer Komptech have been key actors in the development of composting and biomass sites in France.

The French company SMITOM - Syndicat Mixte Intercommunal de Traitement des Ordures Ménagères de Centre Oueste Seine et Marne - treats household waste from 67 towns with a total of 300,000 inhabitants to the southeast of Paris. Its site in Réau is the newest project at SMITOM LOMBRIC. It contains three complete systems for household waste - a composting plant for green waste, a transfer station and a waste collection park. In 2009 SMITOM launched a public tender for the development of a progressive, durable solution meeting the highest quality requirements of the industry. The choice fell on a group of companies, with Hantsch as the supplier of processing equipment. Other companies were Eurovia and Verdoia (a Vinci Group company) for construction and an architecture agency for planning. The plant was commissioned in July 2013.

The goal is to treat 30,000 tons of green waste and produce 10,000 tons of compost and 500 tons of woody biomass per year, with a focus on modern environment-friendly technology and high production quality. "To achieve these goals, we had to rely on our years of experience and the feedback of our customers and partners," explains Christophe Hantsch. The company's compost aerating systems are in place at over 100 sites, and 600 of its compost treatment machines are at work in over 350 facilities in France.

Alain Guégan, who heads the Hantsch engineering department, adds, "And as always, our machine and stationary systems partner Komptech assisted us with solutions that are innovative, compact and proven effective in composting and biomass." A special feature of the site is its smart implementation in an urban area sensitive to odour emissions. This created the need for a closed production process, from reception of green waste to composting in the Biodomes®.

The outgoing air is sent through a bio filtering system, both horizontally and vertically depending on the odour contamination. This is a first in France for a green waste composting plant. Another remarkable feature is the biological treatment of water through a macrophyte bed for recycling on site. Dirty and clean process water and rain water are all separately collected and treated, to minimize the volume of water going through the bio-filtering system. ■



The facility in Réau treats the waste of 300,000



residents on the southern outskirts of Paris.

COMING SOON



Sigmund Schernthaner uses the Hurrifex to get stones and plastic out of biomass fuel.

# TEST LAB

Sigmund Schernthaner had a problem he wanted solved. We listened, thought about it, and built a new machine - codename "Hurrifex." A look at Komptech's open-air lab.

For years the Schernthaner company in Munich has been a trendsetter for efficient use of resources. From biogenic waste they make compost for substrates, and from the woody fraction it makes biomass fuel for heating plants. Official acceptance of the fuel is still a legal grey area, but the recycling process has become established.

"Nothing else is practically feasible," says Sigmund Schernthaner with conviction in his voice.

"The additional revenues are already figured into disposal rates, and many heating plants depend on it as a cheaper alternative to chips." But only with consistently high quality can the company succeed as a fuel producer, so for some time it has used cleaning technology from Komptech.

Schernthaner always has an eye out for things that could stand improvement. "After leaving the star screen, the medium fraction goes to the Stonefex stone separator and then to the Hurrikan windsifter to get rid of the plastic. It should be possible to combine stone separator and windsifter in one machine," says Schernthaner and names space savings, easier transportation and lower energy consumption as compelling benefits.

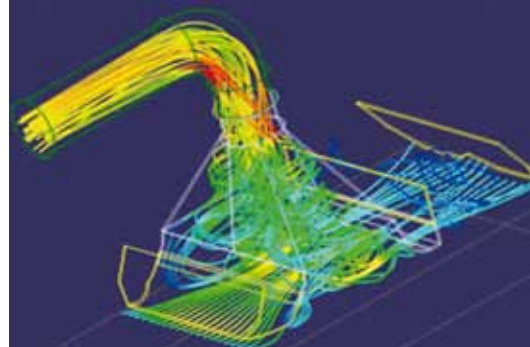
Implementing the idea turned out to be more complicated than first assumed. But now the physics and the engineering are in sync, and the Hurrifex reliably removes stones and light materials. "I can get almost everything clean, and also get a higher price for the fuel," says Schernthaner, who is sure that the Hurrifex will pay for itself quickly. ■



"Form follows function" - The design of the new Hurrifex

## THE CHALLENGE

Extensive computer air flow simulations, followed by construction of a prototype and tweaking during use were necessary to gain command of the complex processes inside a Hurrifex. But now the Hurrifex reliably separates out stones and light material, both with a separation rate of about 90 percent.



Suction air flow simulation



# DEN OUDEN

TECH

CRIBUS 3800 |



## SUSTAINABILITY AS A WAY OF LIFE

In practice  
Den Ouden Groep

Innovative, effective and sustainable at the same time: The three foundations of the company philosophy of Den Ouden in Holland. Naturally, that's a great fit with Komptech's green efficiency® idea.



At the plant in Schijndel a Cribus 5000 and Cribus 3800 help with the production of biomass.

The Netherlands are thought of as the land of tulip fields, dykes, meadows, windmills and bicycles. About a fourth of the country is below sea level, and it is one of the world's most densely populated countries. Yet when you think of the Netherlands, you think of green meadows and tidy little villages with long tree-lined roads.

Green is also the dominant colour of the website of the Den Ouden group, located in Schijndel north of Eindhoven. The first word on the website is "Naturally..." A simple word with many meanings, but most

of all a word that has a lot to say about the green activities of the Den Ouden group. The company offers a wide range of services, almost all of which have to do with "soil" and "nature." The most important services are the testing, cleaning, processing, improving and fertilizing of soil, as well as green waste recycling and consulting.

Marcel den Ouden, grandson of the founder, can describe it much better. "We grew up around work with soil and nature. Our grandparents Tein and An den Ouden laid the foundation

for the company when they started contracting out tractor work for farmers around Schijndel. A little later they added a thresher so they could take on other jobs. Another important step was the recultivation of the local household waste landfill Vlagheide. That started in 1976 and gave us our first, very important experience in earthmoving, environmental care and the use of the right equipment. After that we got into composting. The colour green played a big part in that."

#### GREEN CUTTINGS: THE IDEAL RAW MATERIAL

Until 1988 all waste in the Netherlands was landfilled. But when separate collection was introduced things changed dramatically, including for Den Ouden. "My father and his four brothers realized that green cuttings were much too valuable to landfill. So in 1988 they started composting green cuttings on our own land right next to the Vlagheide landfill. At first the compost was sold to farmers, which wasn't difficult, but soon they started thinking that they should be able to do more with it."

*green efficiency® – sustainability is part of daily life at Den Ouden.*





Founded: 1948

A family owned and operated company in the third generation

Employees : More than 150

Subsidiaries:

- Den Ouden Aannemingsbedrijf (civil engineering & agricultural technology)
- Bodac (munitions disposal services)
- Den Ouden Groenrecycling (green waste; six places in Schijndel, Haps, Helmond, Muiderberg, Zegge and Rosmalen)
- Den Ouden Materieel (maintenance and repair)
- Den Ouden R.O.C. (silo maintenance, bagging)
- Ferm O Feed (organic fertilizer pellets out of poultry manure, sold worldwide)

Vision: "We solve our customers' problems."

Mission: Protect natural resources

[www.denoudengroep.com](http://www.denoudengroep.com)

The first steps were modest from a machinery point of view. The windrows were turned with a bulldozer. The company got its own trommel screen, but shredding was at first outsourced. It started with just 3000 tonnes, but now the company processes around 350,000 tonnes of green cuttings at six sites.

## "WITH THE CRIBUS 3800 I CUT MY FUEL COSTS IN HALF."

Marcel Den Ouden, Den Ouden Groep

But the output doesn't just go to compost, as Marcel den Ouden proudly emphasizes: "In 2006, the chips in intermediate storage at our Haps facility gave us the idea to look into biomass more closely, and we've continued with that." That gave rise to a huge variety of certified products - substrates for roof gardens, orchards and ornamental plantings, tree soil with different composition, natural, humus and other composts, leaf compost and mulch, soils, bark, wood chips and biofilter materials, not to mention the various fertilizers produced and marketed by the subsidiary "Ferm O Feed" company.

Along with lots of knowledge and experience, this kind of variety requires special machines that don't just meet the various product requirements, but also offer more - long life, easy operation, energy efficiency and economy. Those are things that matter, for Den Ouden and for Komptech.

### THINK SUSTAINABLY – ACT SUSTAINABLY

As Marcel den Ouden remembers, it was 1999 when the company got its first Komptech trommel screen, a Magnum. That Magnum was followed by another Magnum, then several Mustangs, and in 2004 by the first electric star screen, a Multistar L3. In 2006 came a Multistar XXL and in 2007 the first Crambo 5000.

A Crambo 6000 wasn't long in following. In 2011 the company got another Crambo, electrically driven like the Multistar L3 purchased the same year. In 2013 an electric-drive Cribus 5000 replaced the Magnums, and two Cribus 3800 also came on board. The machines work an average 2000 hours a year!

"It's been a long and very positive relationship," says Marcel Den Ouden, "that also has a lot to do with the very committed service of Komptech's local sales partner, Pon Equipment. But there's more to it - clearly with Komptech we're on the same wavelength in terms of sustainability." This is evident in the electric drive machines. Lower noise, lower emissions, lower fuel use - the Cribus machines cut fuel costs in half. With these compelling arguments Komptech is a perfect fit for Den Ouden's company philosophy. "Sustainable thinking is one step, but truly sustainable action is another," says Marcel Den Ouden.

### GREEN EFFICIENCY® - A FIT

Komptech and its green efficiency® are a perfect fit. green efficiency® by Komptech is an innovation programme that gives our machines higher performance with lower consumption, and also uses the latest exhaust scrubbing technologies. The reward is twofold: Our customers save on operating costs, and the environment - and with it all of us - benefit from reduced CO<sub>2</sub> emissions and resource use. This is exactly the approach Marcel den Ouden takes: Electric cars, trucks with Euro 6 engines, hybrid wheel loaders and Komptech machines are part of the company's everyday work and show that here, sustainability isn't just a phrase, but a way of life. ■

## Full power.

Now with



green efficiency

Energy Bonus!



The energy costs for up to **1500 operating hours** are now included in the price of the basic machine.\*



### Cribus 2800/3800/5000

electric drum screens

\* corresponds to an energy bonus of 7200 euros for the electric-powered Cribus 5000.

# GARBAGE TO GOLD

What was once buried as garbage has a whole new significance as a source of raw materials. Old landfills are the resource deposits of the future. A situation report.





**In recent years the environmental damage from primary extraction of raw materials, especially petroleum, dwindling natural resources and the consequences for future technologies have become the focus of international discussion.**

When you consider that in a country like Germany there is 100 tonnes of garbage in landfills for each person, it becomes clear what the potential is for secondary raw material extraction. Europe has much less in the way of natural mineral deposits than, say, China. Given the amount of certain materials that will be needed in the future, this is clearly a potential limitation on development. The importance of rare earths, precious metals and non-ferrous metals must not be underestimated.

### **HUNGRY FOR RAW MATERIALS**

The worldwide hunger for raw materials is already having effects; for instance, the price of copper has more than quadrupled in the past decade. This has been in the news as thieves have started to strip copper wire from rail lines, causing trains to come to a stop.

Currently Germany reclaims about 100 kg of gold and 1 tonne of silver every year through recycling, reducing the strain on these valuable primary raw materials. Experts estimate that reclamation of the copper currently in landfills could meet Germany's needs for 1 or 2 years.

### **THE MINES OF THE FUTURE**

The reclamation of household and industrial waste landfills, also called "landfill mining," and the reclamation of valuable resources could open up whole new opportunities, but there is still some work to do. "Too expensive, too complicated, too dangerous because it can release toxins, not yet technically feasible," say many experts who have looked closely at the topic.

But that also implies that conventional mining of primary raw materials is not so cost-intensive as to be prohibitive, although it's clear to everyone that in terms of environmental and work

safety it is unsustainable. Each year Germany exports scrap metal worth almost 7 billion euros, again implying that it "doesn't pay" to mine old landfills.

The reclamation of special ores from mining tailings might be a different matter. In the past, these were often ignored or not even noticed as mining operations went after more urgently needed ores. Large amounts of valuable materials can also be found in the mass landfills containing household and suburban waste; this includes ferrous and non-ferrous metals like aluminium and copper, as well as plastics and high-calorific materials like paper and wood.

### **RESEARCH IS UNDERWAY**

Komptech is involved as a partner in a research project aimed at determining the potential secondary raw materials in Austrian landfills. For this purpose, the chair of waste reclamation technology and waste economics at the Leoben Mountain University in cooperation with the state of Styria in Austria and many other industrial and municipal partners created the research project "Landfill Mining Austria - Pilot Region Styria." Since early 2013 researchers in the project have been examining the types and amounts of waste as well as the composition of selected landfills, using manual sorting analyses and mechanical preparation tests. The results will be used for landfill reclamation concepts and projects, processing, sorting and recycling technologies, processes for the secondary raw materials industry, normative and legal requirements (ordinances, guidelines, laws) and business models for landfill operators.

The "treasure hunt" in yesterday's garbage has only just begun. We will need to make the best of it, for the sake of people and the environment. ■

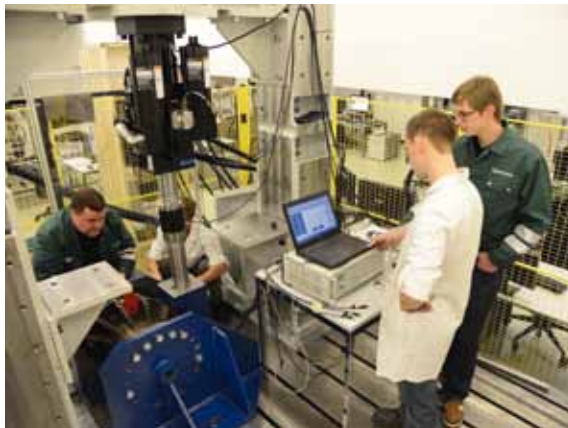


# Q & A

Customers have questions - Komptech's specialists have answers.



**Christoph Guster**  
(Product Division Manager  
Low Speed Shredders) answers:



Wear part test bench

*Komptech wear parts are still relatively expensive. How do you justify these higher prices?*

*Simon J., by telephone*

We are constantly working to improve the quality and longevity of our wear parts. For example, we've made a major improvement in the drum teeth for the low-speed Terminator and Crambo shredders. Working with a university well-known for material science and with testing on a wear test stand we developed, we have extended their service life by 30 percent, without increasing manufacturing cost or price. This makes Komptech machines another little bit more economic.

A current project is working on improving the wear resistance of the Crambo shredder drum, with the goal of doubling its service life.

*Does Komptech also refurbish used machines?*

*Ron B., by mail*



**Manfred Harb**  
(Group Service Manager)  
answers:

Naturally; we do it often. For example, in Austria last year we switched out a Topturn X60 compost turner from 2003 for a new machine.

After a comprehensive overall, where we literally left no bolt unturned, we offered the old Topturn as a used machine in perfect condition. Naturally this level of refurbishment requires much knowledge and full documentation.

After the overhaul the machine was in such good condition that we sold it to Australia, despite that country's strict import regulations, and it is now working to the full satisfaction of its new owner. This underlines the high value retention and quality of Komptech machines, which also give you the security of a big brand, i.e. a full-coverage worldwide service network.



**Bernd Thielepape**  
(CEO Komptech Umwelttechnik Deutschland mbH)  
answers:

*I'm currently using a Komptech mobile trommel screen. Now I'm planning a stationary screen system. Do you have a compact system I can set up quickly and without a lot of effort?*

*Jørgen D., online*



*Mobile trommel screen in stationary application*

We've already converted several mobile trommels for stationary applications, since their advantages over purely stationary machines are undeniable. The integrated feed hopper is ideal for wheel loaders or conveyor feed. On mobile machines the control is integrated, cleaning and maintenance are much better, and it's also very easy to switch out the drum. They usually don't take up much space, so project planning is simple. Set-up time is short, so cold and warm commissioning and theoretically even handover can all happen on the same day. Also, as customer you can naturally test a mobile machine ahead of time more easily, unless you already have experience with them as in your case. Our project department will be glad to provide more information.



*The Topturn before ...*



*... and after general refurbishment.*

# Just arrived.

**NEW**



**green  
efficiency**



**Shredding and chipping  
made easy: the Axtor 6010**  
Universal shredder



**Perfect design:  
the Topturn X**  
Compost turner



**green  
efficiency**



**Less fuel, more power:  
the Crambo direct**  
Dual-shaft shredder



**The NEW MUStang:  
the Nemus 2700**  
Drum screen

Of course we're not the only people helping to make the world a greener place. But we're still very proud of our solutions for handling waste and biomass!



**KOMPTECH**  
TECHNOLOGY FOR A BETTER ENVIRONMENT