

**LINDNER**



**SYSTEM SOLUTIONS  
PLASTICS RECYCLING**

**GET THE BEST  
OUT OF IT.**





# I'LL MAKE YOU SQUEAKY CLEAN.

That's the motto of MKD-69 Recycling in Bulgaria. Sophisticated shredding and washing technology breathes new life into plastic waste. This all-in-one solution, consisting of shredding and washing equipment, sets new quality standards. A Micromat shredder continuously supplies the following process with 1.2 t/h of material, 24 hours a day, 7 days a week. And has been doing so for 30,000 hours and counting.

'This all-in-one solution's performance, particularly its throughput and particle quality, completely won us over. Hence we also chose Lindner for our second production line.'

**Asparouh Asparouhov**  
Sales Director  
MKD-99 EOOD  
Bulgaria



# PARTICULARLY VALUABLE.

## FROM TRASH TO TREASURE.

### ZERO WASTE POTENTIAL

Lindner’s plastic recycling solutions are all the rage: thanks to an ever-increasing demand for polymers and the worldwide desire to use valuable resources more efficiently, higher-quality recyclates are highly sought after. The key to meeting these quality requirements is to prepare the material to be recycled as well as humanly possible. For this reason, the Bulgarian company MKD-69 is also using Lindner’s state-of-the-art shredding and washing solutions for their second production line.

### POST-CONSUMER PLASTICS RECYCLING

Post-consumer waste is created by consumers, e.g. individuals and households. The field of post-consumer plastics in particular demands high machine standards since the material might not only contain abrasive matter but also food scraps. The foreign object-resistant shredder and the high-end washing technology ensure a homogeneous product ready for extrusion. Manufacturing companies can then turn the resulting lenticular plastic raw materials into the final product. Waste is transformed into a new product, saving energy and resources.

#### END PRODUCT CHARACTERISTICS\*

Particle size	< 50 mm
Moisture content	5–8%
Materials	PP, PE, PE-HD, PE-LD, PE-LLD, etc.

### IN-HOUSE RECYCLING FOR EFFICIENT PRODUCTION PROCESSES

Offcuts and other production waste are important raw materials in the manufacturing of plastic products. With some preparation it is possible to return them to the production cycle to increase production efficiency. Especially in the field of hard plastics, particle sizes of <10 mm are required for recycling. Since the material is often bulky and slightly contaminated, it is not possible to use the material directly. That’s where the primary shredder comes in, splitting the materials to protect the granulator or extruder and minimise the costs of downtime.

#### END PRODUCT CHARACTERISTICS\*

Particle size	< 10 mm
Output	> 4 t/h
Materials	PP, PE, PE-HD, PE-LD, PE-LLD, etc.



## INPUT MATERIALS

### MIXED PLASTIC WASTE



### FILM



### PRODUCTION WASTE



### GATING





# WHEN ONLY THE BEST WILL DO.

## POST-CONSUMER PLASTICS RECYCLING



### 1. SHREDDING

Shredding is an essential step in a smooth-running process chain. Untreated plastic waste either in baled or loose form is fed into the machine with wheel loaders or a conveyor belt. The output is consistent, the cut precise and 90% of the output will be smaller than 60 mm with a throughput of up to 5 metric tons per hour.

### 2. PRE-WASHING

The requirements for prewashing are clearly defined. Pre-shredded plastics are often heavily contaminated and loaded with foreign matter. The rafter's well-engineered technology effectively separates abrasive matter and prepares the material for all following processes.

### 3. FRICTION WASHING

Efficient washing through friction. The Lindner WashTech friction washers clean even the smallest particles very effectively. The machine size can be adjusted to the customer's specific throughput requirements, achieving rates of up to 4 metric tons per hour. The machine's screens and paddles are also customisable.

### 4. GRANULATION

Now free from foreign matter, the material is granulated using a wet granulator that screens the material to the preferred particle size to make recycling particularly efficient.

### 5. SEPARATION

Categorising plastics according to their specific weight. This step is executed with Lindner WashTech's gravitator, a machine that combines state-of-the-art features with the tried-and-tested sink-float method. In this process, not only is it important that the output material is homogeneous, but the machine's construction must also be compact and efficient.

### 6. DRYING

The shredded and washed material is fed into a centrifuge where the plastic flakes are dried under controlled conditions. The resulting centrifugal forces contribute to cleaning and drying the material. Finally, the material is thermally dried and can subsequently be transferred for extrusion.

Lindner's multi-stage processing line for post-consumer plastic is in a class of its own. Perfectly matched components guarantee high output quality. Robust high-end shredding, washing and drying components ensure smooth 24/7 operation with low maintenance and consistently high throughput. It has never been so easy to guarantee the ideal input for subsequent processes.



# FIT FOR MORE RECYCLING.

MICROMAT

## GIVES PLASTICS A NEW LEASE OF LIFE:

As a new, high-quality product, for example. That's the aim of the plastic recycling company OKUV Blaimschein GmbH. Customisable processing options and low downtimes are the main requirements for plastic recycling companies. This shredder from the Micromat series with now over 13,000 operating hours is an essential part of the recycling process. When shredding stops, subsequent processes also come to a halt, so a reliable machine is essential. Even at higher recycling rates and increasing throughputs, there's no stopping this shredder – it just keeps on producing up to 2,000 kg/h of output.



'Never praise a machine – but for the Lindner Micromat I'll make an exception.'

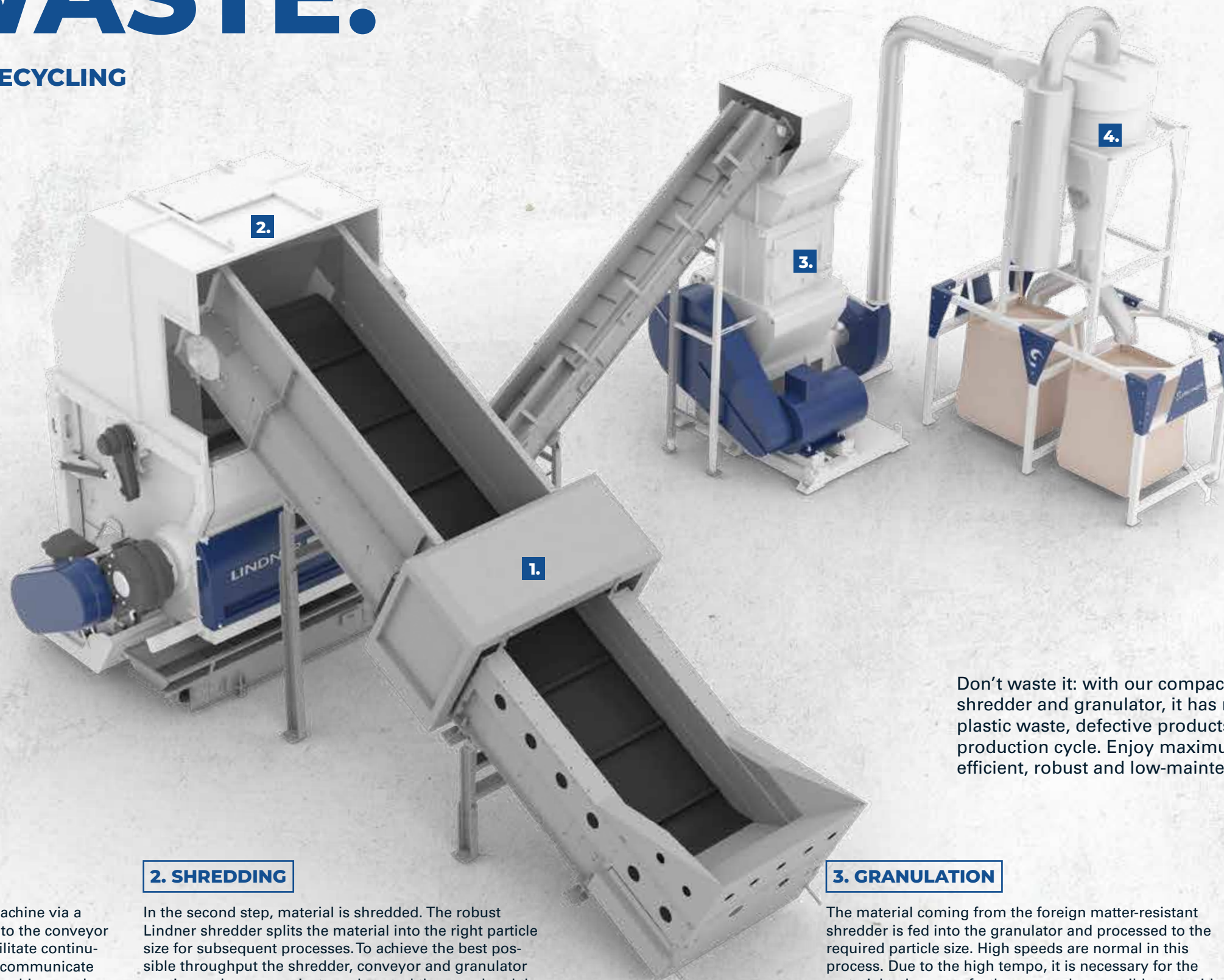
**Karl Blaimschein**  
CEO

OKUV Blaimschein GmbH  
Austria



# NOTHING TO WASTE.

## INHOUSE PLASTICS RECYCLING



### 1. FEEDING

In this step, the material is fed into the machine via a conveyor belt. Materials can be supplied to the conveyor belt via a wheel loader or a forklift. To facilitate continuous feeding, our shredders permanently communicate with the conveyor belt and subsequent machines such as granulators or extruders.

### 2. SHREDDING

In the second step, material is shredded. The robust Lindner shredder splits the material into the right particle size for subsequent processes. To achieve the best possible throughput the shredder, conveyor and granulator continuously communicate and control the speed and the amount processed.

### 3. GRANULATION

The material coming from the foreign matter-resistant shredder is fed into the granulator and processed to the required particle size. High speeds are normal in this process. Due to the high tempo, it is necessary for the material to be as perfectly prepared as possible to avoid the granulator malfunctioning.

### 3. GRANULATE COLLECTION

In this step, the material that has been processed by the granulator to a particle size of 8–10 mm is sucked into containers like big bags or directly transported for further processing.

Don't waste it: with our compact solution combining primary shredder and granulator, it has never been so easy to make plastic waste, defective products or offcuts ready to re-enter the production cycle. Enjoy maximum productivity with our highly efficient, robust and low-maintenance components.



# DO IT BETTER.

**UNIVERSO | MICROMAT | ANTARES**

## UNIVERSO SERIES

Designed for continuous operation, our Lindner Universo 2200 and 2800 are real universal talents. Whether you are processing contaminated waste or plastics, our Universo is the machine for your every need thanks to its robust cutting system and innovative features. The standard safety clutch and tried-and-tested gearbox drive make our machine powerful and resistant to foreign objects. You also have the option to select feeding by wheel loader or conveyor.



Universo 2200 | 2800

## ANTARES SERIES

The Antares series provides access to all the advantages of innovative shredding technology – implemented with economic efficiency in a compact machine. The wide range of sizes allows you to adapt the shredder to your exact output requirements. The numerous features, smart functions and Lindner's standard robust construction ensure a smooth production process under any conditions.



Antares 1300 | 1600 | 1900

## MICROMAT SERIES

The Micromat Series: the answer to your individual shredding needs. Our powerful shredder is designed for low energy consumption and high efficiency – without compromises. Our tried-and-tested concept makes a wide range of configurations possible, meaning the machine will always suit your individual requirements. This innovative solution allows recycling companies to enjoy one-step shredding with high output rates and uptimes of up to 24 hours a day.



Micromat 2000 | 2500



# WE HAVE IT ALL WRAPPED UP.

## WE GO THE EXTRA MILE.

Innovation as a principle. This basic principle has informed Lindner's actions ever since the company was founded in 1948. As a specialist in shredding technology, we produce ground-breaking solutions for waste processing at three modern production sites in Austria. You will love the results: state-of-the-art machines and system components – with ultimate output quality, productivity and efficiency. You want to plan and execute a large project? No problem. Because one thing is certain: with us, you are always that crucial step ahead.

## YOU CAN COUNT ON US.

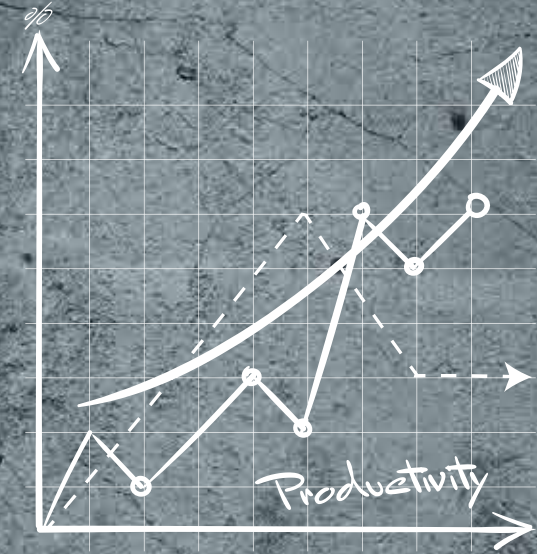
Heavy-duty machines, experienced and reliable first-class service worldwide. Whether you need quick assistance with your technical problems or professional maintenance: we will be there for you and do everything it takes to extend your system's life and operating time with our expertise in shredding technology and our high-quality, signature Lindner spare parts.

## THE COMPLETE PACKAGE

- Commissioning and training by skilled, qualified staff
- Individual fine tuning of your machines on site
- Professional service hotline, quick technical support
- 100% Lindner, 100% original: quality spare parts that are readily available worldwide
- Tailor-made service and wearing parts packages
- Machine cleaning and tool reconditioning services
- Professional maintenance of electrical components by ABB-certified personnel

## MIS – FOR OPTIMISED PROCESSES

Control at your fingertips! The machine information system (MIS) presents all relevant production data from the system clearly, thereby giving you an overview of the daily process flow. Optimise the system's performance and increase productivity online – 24/7, worldwide.





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