


LINDNER



**SYSTEM SOLUTIONS
SOLID RECOVERED FUELS**

**TURN UP
THE HEAT.**



I'LL SQUEEZE EVERYTHING OUT OF YOU.

One million metric tons of high-calorific SRF (solid recovered fuel) from municipal solid and mixed commercial waste, for example. That impressive amount is how much ThermoTeam, a subsidiary of Saubermacher Dienstleistungs AG, has been processing since the start of its SRF production line in 2003. The Lindner primary shredder alone, used at the start of the production line, has over 70,000 operating hours under its belt. The premium end product is mainly used for co-incineration at the Retznei and Mannersdorf cement plants in Austria. In addition, more than 27,000 metric tons of scrap metals and 5,000 metric tons of PET plastic waste were separated and sent for recycling. With Lindner high-end machines you invest not only in the best energy recovery efficiency, but also in maximum throughput and the perfect output quality. Add to this the machines' unrivalled low energy consumption and you won't get another ounce of energy out.

'We have been working successfully with Lindner for over 15 years now. Lindner has always been an innovative and very committed partner.'

Gerhard Ziehenberger
Member of the Executive Board, COO
Saubermacher Dienstleistungs AG
Austria

POWER HOUSE.

TURN WASTE INTO A RESOURCE.

IN GREAT DEMAND IN CEMENT WORKS.

Quality is king. Solid recovered fuels produced by Lindner machines are in great demand because they meet the high requirements for incineration in the main burner. The cement industry is ablaze with interest, the sheer quantity produced at the ThermoTeam facility in Retznei, Austria, alone proves that. Over the last 10 years, 1.2 million metric tons of carbon dioxide (CO₂) have been saved in the adjacent cement facility, which would otherwise have been generated by using hard coal or lignite.

2D, HIGH IN CALORIFIC VALUE AND PRECISE – PREMIUM SOLID RECOVERED FUELS FOR MAIN BURNERS

Premium solid recovered fuels (SRF) are mainly used for co-incineration in the main burners of rotary kilns. As a substitute for primary fuels such as oil, coal or gas, the solid recovered fuel must be composed of precisely defined particles. This is the only way to achieve the high temperatures required to form the desired clinker minerals (approx. 1,450 °C) in the kiln’s sintering zone.

CEMENT KILN – MAIN BURNER FUEL CHARACTERISTICS*

Particle size	< 30 mm, two-dimensional
Calorific value	> 22-25 MJ/kg
Density	< 150 kg/m ³
Moisture content	< 15%

COST EFFICIENT – SOLID RECOVERED FUELS FOR CALCINERS

Compared to the main burner, the calciner in the cement kiln requires fuel of lower quality, especially in terms of particle size and calorific value. Since only the CO₂ locked within the limestone has to be extracted, much lower material temperatures are necessary than in the sintering zone of the rotary kiln (approx. 800-900 °C).

CEMENT KILN – CALCINER FUEL CHARACTERISTICS*

Particle size	< 80 mm
Calorific value	> 12-16 MJ/kg
Density	< 250 kg/m ³
Moisture content	< 20%



INPUT MATERIALS

MUNICIPAL SOLID WASTE



BULKY WASTE



PRODUCTION WASTE



MIXED WASTE



FOCUSED ON PER- FORMANCE.

MULTI-STEP PROCESSING OF PREMIUM SOLID RECOVERED FUELS



1. PRIMARY SHREDDING

The process starts with untreated waste from households, commerce and industries being fed – often via wheel loaders, diggers or dosing conveyors – into the primary shredder. The aim is to obtain homogeneous, sortable material ready for the next step in the process.

2. MAGNETIC SEPARATION

In the second step, an overbelt magnet is used to securely extract ferromagnetic parts such as scrap iron and other ferrous scrap metal. Ferrous scrap metal in premium solid recovered fuels is said to spoil its quality. Once separated, it can be recycled.

3. SCREENING

The screening technology selected is matched to your exact requirements and includes drum screens, strainers, vibrating screens or disc screens. Depending on your needs, it is possible to extract different fractions in this process stage, such as fine particles of < 10 mm and oversized fractions to obtain high-quality, medium-particle premium SRF.

4. HEAVY FRACTION SEPARATION

Heavy fractions might cause increased wear or downtime in the secondary shredding process, which is why such fractions are sorted out. The material stream is fed continuously into a wind sifter where it is hit with an air current while it is in free fall. In this way, light materials are transported by air to the conveyor belt, whereas heavy materials fall to the ground to be discharged. Thanks to the circulating air, hardly any fresh air supply is needed.

5. SECONDARY SHREDDING

In the final stage of the process, the material is shredded a second time in a process called fine shredding. The material that is now free from foreign objects, heavy fractions and ferrous metal is fed into one or more secondary shredders depending on the system's throughput capacity. The output is then known as premium solid recovered fuel (SRF). Systems typically generate up to 40 metric tons of final premium SRF per hour.

IT'S AS GOOD AS ITS WORD.

POLARIS

'Everything, really, everything we were promised in terms of performance was true. Foreign objects are absolutely no problem and if so, access via the maintenance door is very easy. I am impressed by how quickly we are able to continue with production afterwards. And what's most important: we are so happy with the throughput.'

James Wheeldon
Managing Director
Wheeldon Brothers Waste Ltd.
United Kingdom

ONE SHREDDER FOR EVERYTHING – INVEST IN THE FUTURE

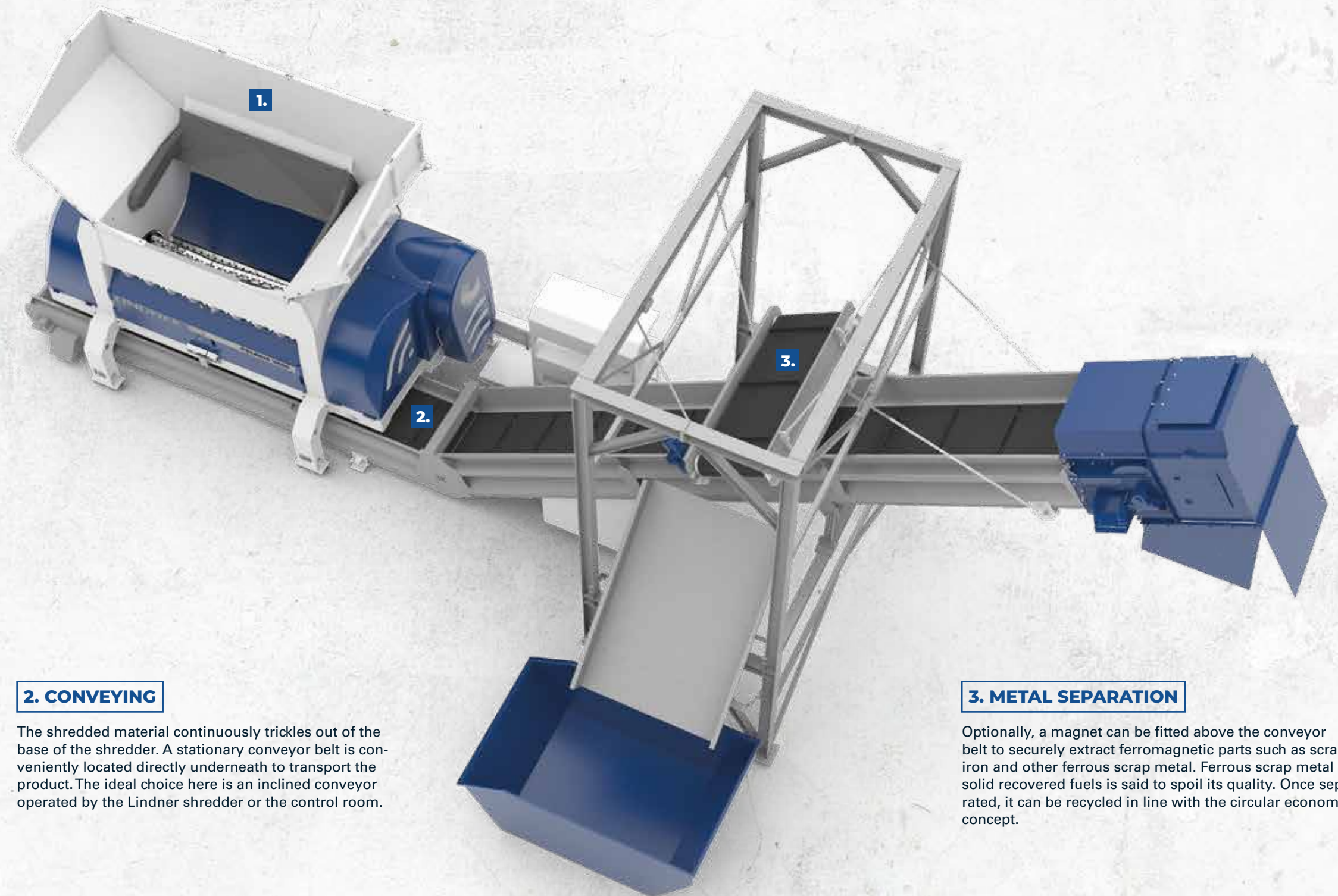
Wheeldon Brothers Waste Ltd. is a leading regional recycling and waste handling company with sites in Bury, Oldham, Failsworth and Ramsbottom in the UK. What the alternative fuels plant in Ramsbottom lacked was a powerful yet energy-efficient 50 mm single-step shredding solution. Contacting Lindner-Recyclingtech was the key to success in their search for the perfect shredder for SRF production. The new Polaris 2800 one-step, stationary shredder replaced two other shredders in the plant and immediately satisfied the Wheeldon Brothers' requirements.



A PROFICIENT ONE-STEP PROCESS.

SINGLE-STAGE PROCESSING OF SOLID RECOVERED FUELS

The Lindner Polaris makes short work of shredding, a real one-stop solution. This makes the production process more streamlined and cheaper compared to other technologies and also ensures an output quality so outstanding that it was given its own name: polaris material. And what's more: the shredder technology is so innovative that it created a new market segment – one-step processing.



1. ONE-STEP SHREDDING

In one-step shredding, the focus is on the shredder as a single-step solution. Untreated municipal, commercial and industrial waste is mostly fed into the primary shredder directly via wheel loaders, diggers or dosing hoppers with the aim of obtaining an end product ready for use.

2. CONVEYING

The shredded material continuously trickles out of the base of the shredder. A stationary conveyor belt is conveniently located directly underneath to transport the product. The ideal choice here is an inclined conveyor operated by the Lindner shredder or the control room.

3. METAL SEPARATION

Optionally, a magnet can be fitted above the conveyor belt to securely extract ferromagnetic parts such as scrap iron and other ferrous scrap metal. Ferrous scrap metal in solid recovered fuels is said to spoil its quality. Once separated, it can be recycled in line with the circular economy concept.

NO APPETITE FOR RISK.

JUPITER | ATLAS | KOMET | POLARIS

JUPITER SERIES PRIMARY SHREDDING

Primary shredders set the pace for all subsequent processes and must continuously produce homogenous, sortable output from input material that is often partially mixed with foreign objects. The Jupiter has everything that efficient shredding technology needs: high reliability, low energy consumption, precise cut, easy operation and maintenance. A real powerhouse that takes 24-hour operation in its stride.



Jupiter 1800 | 2200 | 3200

ATLAS SERIES PRIMARY SHREDDING

Nothing can stop Lindner's Atlas: its asynchronous twin-shaft system ensures continuous output and therefore maximum efficiency – even with difficult materials. This endurance athlete of the machine world is perfectly suited to primary shredding in SRF production thanks to its ripping action and robust cutting frame.



Atlas 5500

KOMET SERIES SECONDARY SHREDDING

Since the material has already been cleaned, a high-speed shaft shredding system is usually employed as a secondary shredder. The Lindner Komet sets new standards in this segment: its robust design, precise cutting tools and smart comfort functions ensure maximum throughput with maximum availability – 24/7, 365 days a year.



**Komet 1800 | 2200 | 2800
Komet PK 1800 | 2200 | 2800
Komet HP 2200 | 2800**

POLARIS SERIES ONE-STEP SHREDDING

The Lindner Polaris is a highly specialised single-shaft shredder with enormous power. Bulky waste in different shapes and sizes is a piece of cake for this robustly engineered machine sporting low operating costs and 24/7 stamina. With a particle size between 40 and 120 mm, the end product can be used right away for co-incineration in calciners in cement kilns, or as fuel for fluidised beds.



Polaris 1800 | 2200 | 2800

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.

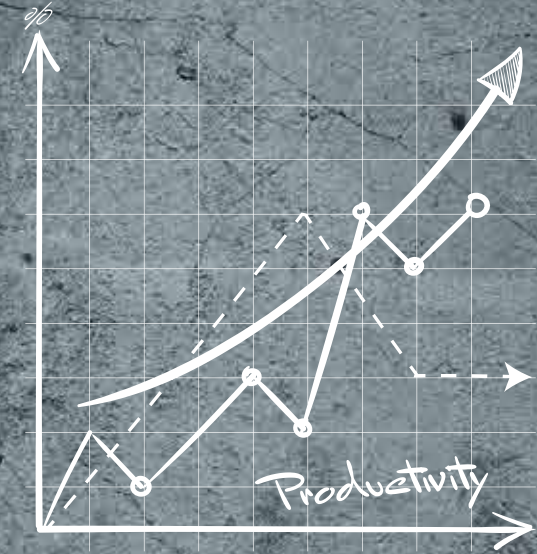
Heavy-duty machines, experienced and reliable first-class service worldwide. Whether you need quick assistance with your technical problems or professional maintenance: we will be there for you and do everything it takes to extend your system's life and operating time with our expertise in shredding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