REFUSE DERIVED FUELS

THE TASK
EXPERTISE
KEY COMPONENTS
THE ENTIRE SYSTEM
Today, the production of refuse-derived fuels is an integral part of waste handling. With the spread of legal limits on or prohibitions of the landfilling of untreated waste, and the need to extract energy from waste, RDF has become an important commodity.

High-caloric fractions of commercial waste, production residues, packaging waste, bulky waste and even household waste can be processed into refuse-derived fuel.

Depending on its quality, this can be used in industrial furnaces, cement plants, and power plants.

Komptech has a burning interest in refuse-derived fuels, and Komptech products are at home in all major process steps for making RDF.
Waste passes through several steps on its way from refuse to fuel:

**Preshredding**
Preshredding brings the input material to a uniform size, which in some cases is already the right size for fuel, and eliminates overlengths which would interfere with further processes.

**Separation**
Separation removes contraries and recyclable materials from the fuel fraction.

**Fine shredding**
Fine shredding brings the fuel fraction, now free of contraries, to the right particle size.

**Post-screening**
Post-screening makes sure that the particles do not exceed the maximum size for fuel use. The fuel is now ready for use as a source of energy.
• Sizes for plants from industrial-scale three-shift operations to small single-shift plants
• High performance - maximum use of space
• Wide range of input materials
• High resistance to contraries
• Low air movement for low dust production
• Top-quality fuels

KEY COMPONENTS

Components
All components shown are available in many different performance ranges, to permit configurations for any desired RDF plant capacity.

Preshredding with the Terminator
The Terminator shreds a wide range of input materials, highly consistently and with high overall performance. As a preshredder, it ensures trouble-free feed of material in predefined particle sizes to follow-on components. The Terminator model chosen depends on the content of contraries in the input and the desired amount of fuel-ready fraction in the output.
Separation with the Ballistor
Designed especially for waste containing contraries, the Ballistor separates these out of the preshredded material stream in the rolling fraction. Built tough and needing only a little room, this ballistic separator causes just minor air movement. Therefore, it creates only a fraction of the dust blown up by a windsifter. As a result, much less dust-removal equipment is needed, reducing operating and energy costs.

The output is two main fractions - the light, flat fuel fraction and the heavy, rolling contrary fraction. Undersized material falls out through the screen holes to form a fine fraction.

With dry fabric waste, the end product can be a classic RDF or calciner RDF without further fine shredding.

Fine shredding with the Rasor
The Rasor fine-shreds the flat fraction dependably and precisely, often after optical sorting equipment has removed PVC and possible recyclables. Depending on the screen basket used, the fuel size can run from 60 mm diameter down to 30 mm blow-in RDF, or even 10 mm fuel for coal-fired power plants. High performance and sharp blades ensure low operating costs and top fuel quality.

Post-screening with the Multistar
With high performance and very effective use of space, the Multistar screens the fine-shredded fuel. Using only minimal energy itself, this star screener enables lower energy costs for the fine-shredder. The screen cut-off and thereby the maximum particle size of the fuel can be changed by adjusting the screen shaft speed, with just the press of a button.
• Tough
• High shredding performance
• Variable particle size through cutting gap adjustment
• Hydraulic drive with constant power control and stepless speed adjustment, or
• Mechanical direct drive with two-speed reversing gearbox

TERMINATOR

A tough preshredder

Preshredding brings the input material to a consistent particle size and prevents overlengths that might cause problems farther on. Robustness and resistance to contraries are very important in preshredding.

The Terminator’s special tooth geometries and innovative tooth mounting help it meet these requirements perfectly. Stepless cutting gap adjustment allows sizing of the output for its intended purpose. A narrow cutting gap shreds the input material more thoroughly, in which case the Terminator functions as a midlevel shredder to produce a high proportion of furnace-ready fuel fraction. If another size is desired, the gap can be opened up or a different shredding drum used.

Drive can be hydraulic or mechanical. The hydraulic version has constant power control and stepless shaft speed adjustment, while the mechanical version uses a two-speed reversing gearbox.
Separation removes contraries from the shredded waste stream. The Ballistor does this in a compact unit with low operating costs and without needing costly dust-removal facilities. Rotating screen elements separate out the two-dimensional, three-dimensional and fine fractions.

The two-dimensional fraction consists of flat, narrow pieces, which are cleaned as they pass over the moving screen elements. Free of contraries and with high heat value, they move on to fine shredding.

The three-dimensional fraction consists of hard, heavy, cubic pieces. The motion of the screen elements cause them to roll down and out of the fuel fraction. After removal of recyclable materials (metal, hard plastics, PET) the remainder of the rolling fraction goes back in a cycle to the Terminator for shredding and ends up in the screen fraction of the Ballistor.

The holes in the screen elements allow the fines to drop out of the material stream on its way up. Thus, the Ballistor acts both as a screen and separator.

- Wide range of input materials - commercial waste, production waste, packaging waste, bulky refuse
- Adjustable separation limit
- High resistance to contraries
- Low air movement for low dust production
- Long life, low operating costs
RASOR

Energy-efficient fine shredding

The Rasor fine-shreds the material to furnace-ready fuel. The material, now free of contraries, is fed steadily to the rotor by three screws. The power consumption of the machine is correspondingly even.

The cutters pull through the material in a closed shredding compartment. The rotor runs at a moderate 150 rpm, with high throughput.

The cutters can be turned repeatedly, and routine cutting gap adjustment is quick and easy.

Depending on the screen basket chosen, the fuel size can run from 60 mm diameter down to 30 mm premium blow-in RDF, or even 10 mm fuel for coal-fired power plants.

- Low rotor speed, for low noise, dust and vibration
- Continuous material feed for consistently low power consumption
- Fast tool change system for minimal down time
- Swing-away counter-cutter carrier for excellent service access
The fine-shredded material goes to a Multistar for screening. This star screener is a kind of "policeman", catching any last overlengths and assuring the quality of the fuel.

Doing the same thing with the fine shredder alone would mean more shredding passes, leading to unnecessarily high energy costs as well as excessive friction. The star screener uses much less energy to do the same job.

It also takes very little space. Often, it is simply placed over the fuel hopper, taking no more room than a conveyor would. The highly effective, patented "Cleanstar" system cleans the stars as the machine works, so the maintenance effort is insignificant and the screen works very reliably.

The overlengths go either to another RDF batch of a larger particle size, or back to the fine shredder.
• Sizes for industrial-scale three-shift operations to small single-shift plants
• Supplemented by proven components from well-known manufacturers
• Conveyors, sorting, steel construction, exhaust-air cleaning
• Top-quality fuels

THE ENTIRE SYSTEM
Integration of all components

Komptech is a central component vendor for builders and operators of RDF production plants, supplying pre- and post-shredders, screeners for coarse and fine screening, and ballistic separators for contrary removal.

We also develop and supply entire systems of connected and linked machines.

Komptech has the expertise and capacity to fit out RDF plants with system solutions, from input to finished refuse-derived fuel.
Classic, premium, and calciner RDF are just three of the types of refuse-derived fuel made around the world with Komptech technology. Classic and calciner RDF are made by shredding, separating and screening. Premium RDF adds an additional fine-shredding step.

The flexibility of the components in Komptech RDF production plants makes it possible to configure them for exactly the type of fuel desired, and also adjust them for new types and qualities of fuel.

Our customers must supply their customers with fuel that meets those customers’ specifications. Komptech provides the technology to do it. Whether stone, metal or overlengths, no contraries are left in the end product, and fuels come out in top quality.
TECHNOLOGY FOR A BETTER ENVIRONMENT