



FOCUS

ALTERNATIVE FUEL PREP SYSTEMS

FEEDSTOCK PREP

Vecoplan[®]

Vecoplan - Our History

Vecoplan was founded in 1969 in Bad Marienberg, Germany as a manufacturer of high quality wood chippers.

In the early 1980's, Vecoplan's focus turned to manufacturing innovative machinery for recycling of various materials, inspiring the invention of the first single-shaft rotary shredder the world had ever seen. This innovation has revolutionized the size reduction industry.

In 1989, a European patent was awarded to Vecoplan for the single-shaft shredder and its unique "U-rotor". To this day, this rotor design continues to be the most advanced cutting geometry for the universal size reduction of a whole spectrum of waste materials.

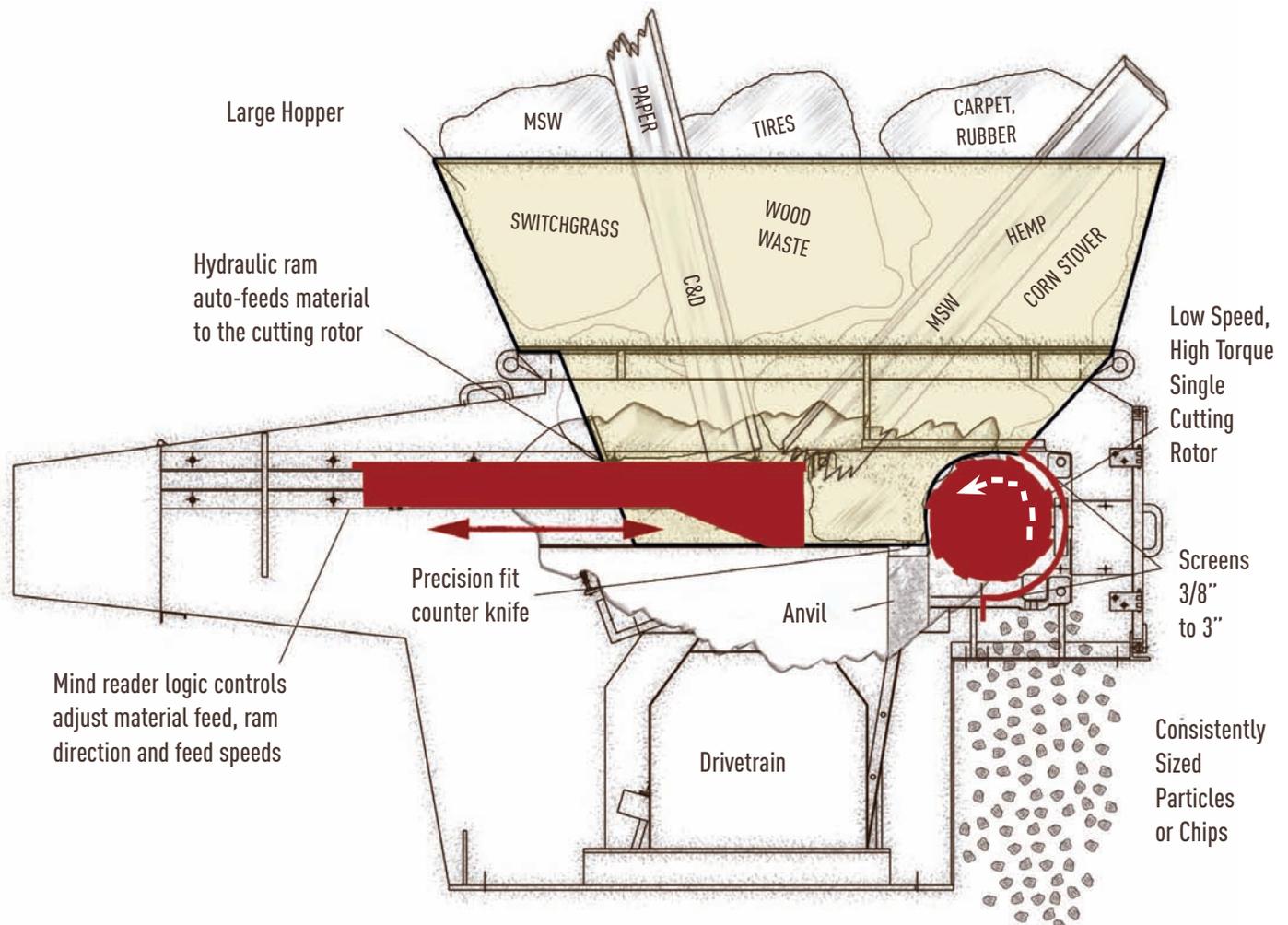
In 1994, Vecoplan received its ISO 9001 certification. This is the highest standard set for quality systems and confirms its dedication to innovative product development, design engineering, high quality manufacturing and quality control standards. Ensuring first rate customer service has been, and remains, a top priority.

In 2000, Vecoplan, the global leader in size reduction technologies, combined forces with ReTech Industries, the American leader in single-shaft rotary shredder technologies, to form Vecoplan, LLC - the undisputed global leader in size reduction systems.

Today, Vecoplan has a substantial presence on every continent (with the exception of Antarctica) and has evolved into the undisputed leader of state-of-the-art size reduction and recycling systems with over 75 models available and currently over 7,000 machines and systems operating around the world.

The Single-Shaft Rotary Shredder Concept

Low Speed, High Torque, Low Noise, Ram Feed, Single-Shaft Rotary Operation



Biomass Feedstock Prep

MSW • Green Waste • Manufacturing Waste • Agricultural Biproducts • Any Biomass Material



From Kilowatt To Megawatt

Waste-to-Energy Concepts To Suit Every Plant Size

Solutions tailored individually to the needs of your plant structure – implemented in outstanding quality for optimum cost-efficiency: VECOPLAN plants and individual machines make a crucial contribution to smooth processes and therefore to your company's success. We deliver your fuel safe and sound and with maximum availability. With the right plant concept our specialists lay the foundations for an effective integrated plant.

Complete feedstock processing
in a biofuel factory



Pre and Re-Shredder with
conveying and separating technology



Cellulosic Ethanol Feedstock Prep

Switch Grass • Corn Stover • Miscanthus • Hemp • Fescue • Wheat Straw • Bagasse



Shredding

The first step in processing fuel: user-friendly, cost-efficient pre- and re-shredding with proven VECOPLAN shredders.

- Reliable
- Easy to operate
- Simple removal of obstructions
- Low-maintenance and energy efficient

Conveying

Drag chain conveyors are an excellent option for bridging long spans, distances or heights. Modular conveying units and a clean, enclosed conveying system with low-maintenance drive and return units, equipped with high quality components, ensure necessary operational reliability.

- Conveying belts
- Drag chain conveyors
- Vibration conveyors
- Screw conveyors
- Air Belt conveyors

Screening

From the compact separator for overlength pieces to efficient screening machines for fine particles, VECOPLAN offers screening technology ideal for your plant.

- Roller screens
- Disc screens
- Star screens
- Vibrating screens
- Oscillating screens
- Rotary screens

Separating

Contaminants such as sand, glass, ceramics, stones, ferrous and non-ferrous metals are separated by screens, air separators, ballistic separators, overbelt magnetic separators or eddy current separators.

Storage

The storage technology for processed fuel starts with a reliable and rugged reception station. Vibratory metering conveyors, drag chain dischargers and screw discharge conveyors with conveying capacity up to 17,000 ft³/h are available for various applications.

Live Floor Systems:

- driveable
- hydraulically operated
- powerful
- low-maintenance

Storage:

From small bins with volume upwards of 105 ft³ to storage bunkers for over 350,000 ft³ of fuel.

Discharge & Metering

Vecoplan offers conveying systems capable of filling and emptying several bunkers simultaneously. Reception station for front-end loaders with vibratory metering capability for filling a drag chain conveyor directly – conveying capacities up to 17,000 ft³/h.



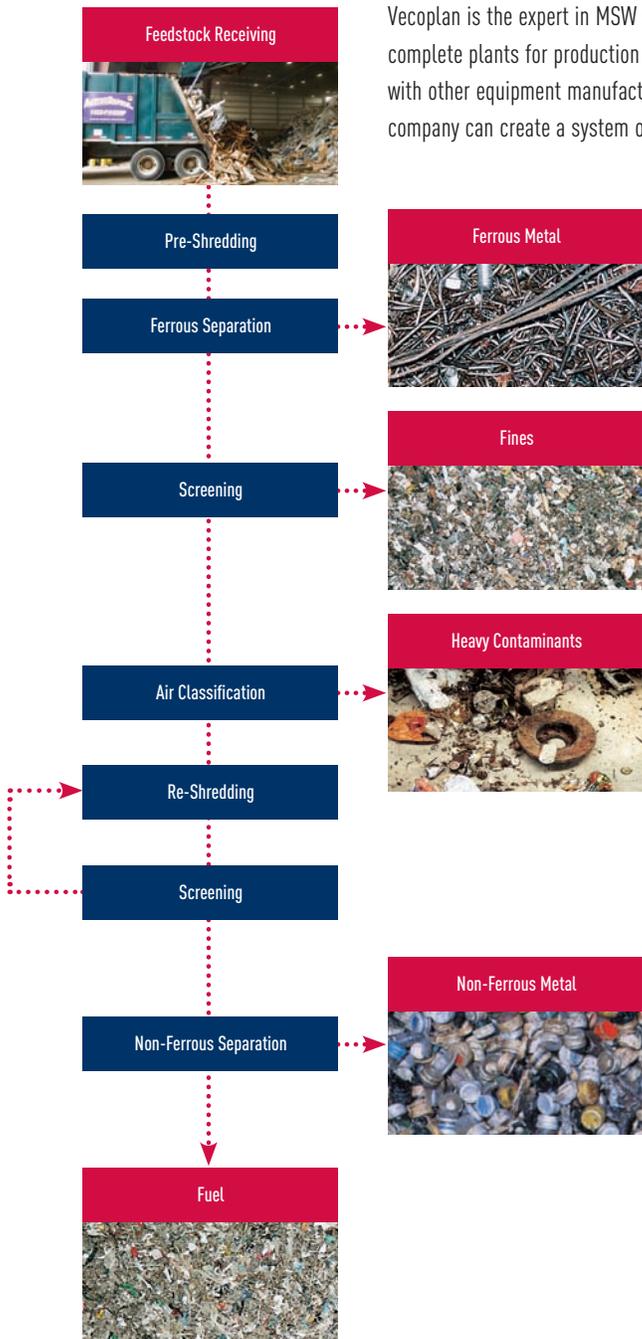
Refuse Derived Fuels

MSW • Carpet • Wood Waste • Plastics • Tires

Rising energy costs, the increasing expense of diminishing landfill space, progressive combustion technologies, emphasis on alternative energy sources, advances in preparation technologies for fuel conversion - all of these factors and developments are making the production of refuse derived fuel (RDF) a sensible option, both economically and environmentally. Vecoplan is a pioneer and a leader in advanced fuel preparation systems. The shredding technology of the fuel prep system is the heart of any RDF refining process or waste-to-energy program. Shredder uptime and low maintenance costs are major factors in the profitability of all solid waste combustion operations.

In addition to its RDF - WTE prep systems, Vecoplan has the unique and fortunate advantage of extensive shredding experience in most applications found within our collected waste streams. Some of these applications include unsorted MSW processing, transfer stations, MRFs, multi-material and Single Stream Recycling, biomass, compost, wood waste from industry, C&D, plastics, paper, electronics and many specialized waste streams. To compliment Vecoplan's shredding and separation equipment, innovative products for automated loading, material handling and integrated control systems are custom made for turnkey solutions.

Vecoplan is the expert in MSW shredding, separation and handling, but we are also partners with other innovative companies to provide complete plants for production of RDF, MRF stations, refineries, and other waste processing facilities. Vecoplan has strategic alliances with other equipment manufacturers, engineering firms, municipalities and energy companies. With all of these resources, no other company can create a system or solution as effective as Vecoplan.



Hurricane
Double-Shaft Rotary Shredder



RDF Plant



★ **Vecoplan's "U" Rotor**
 Developed and Patented by Vecoplan
 The industry's most successful cutting rotor design.

The cutting rotor has been engineered for durability and carries a Limited Lifetime Warranty. Cutting inserts are precision fit for easy maintenance.

Rotors are available in several diameters dependent on throughput requirements.

Anvil has a replaceable counter knife plate with close tolerance profile. The anvil stabilizes and anchors the grinding process.

Large infeed hopper for true Dump-And-Run operation

Heavy shelf over ram cavity to protect against impact with heavy parts.

★ Hinged cover provides protection to ram drive cylinders and allows easy access for routine cleaning.

Heavy dual cushioned hydraulic cylinders to advance process ram. Cylinders are secured with reinforced, vibration dampening clamps.

★ Hinged clean-out access doors with safety switches to access screen and cutting rotor for routine maintenance.

High quality, double row, self-aligning spherical pendulum roller bearings mounted outboard for ease of maintenance and prevention of contamination

Oversized, shaft-mounted reduction gearbox rated with very high service and safety factors.

Flanged discharge to accommodate an assortment of pneumatic and mechanical conveyance systems.

★ Quick change oversized ram guide rails are removable from the exterior of the machine.

"Process ram" provides precision feed of material to cutting rotor. Ram quickly adjusts to different load variables to maximize processing efficiency.

Sizing screens from 3/8" to 3" add economical production of consistent sized particles in one pass.

★ Heavy duty, 2 speed hydraulic pump package reacts quickly to high shock loads. The hydraulic system includes a two-stage pump, oversized cooling capacity and large reservoir.

★ Torque arm with disc springs to "shock absorb" gearbox. Equipped with a "shut down" switch to limit damage from tramp metal.

★ **Denotes A Vecoplan Exclusive**

Heavy side walls, braces and reinforcements. Robotically welded for stress-free construction.

High quality, premium efficiency drive motors with thermocouple interlocks.

Banded belt drive provides positive transmission and protection of drive train.

Fluid coupling absorbs micro vibrations and converts torque under load.



A variety of cutters is available for our line of grinders.

The Vecoplan Waste Shredder

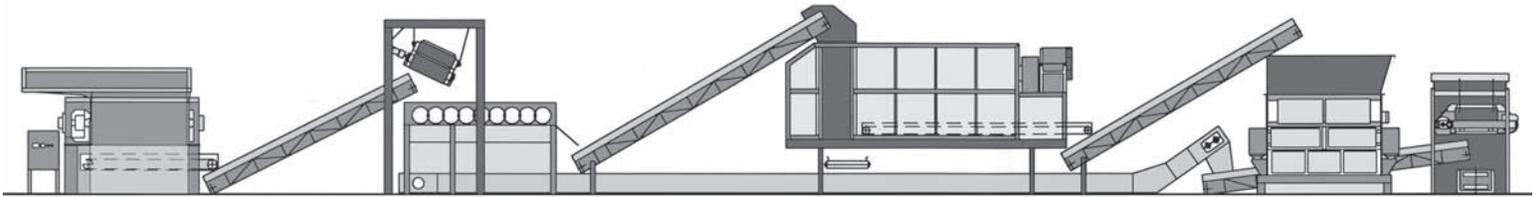
Vecoplan - Your Total System Solution

Vecoplan is known for providing complete turn-key solutions.

We provide complete material handling systems and design engineering including conveyors, pneumatics, metal detection and separation. American electrical control panels and components are available and may be fabricated to your specifications.

Vecoplan understands that installing new equipment can disrupt production operations. New equipment can create new demands on your present electrical system. That's why we include a review and analysis of your present electrical components.

Vecoplan will help you plan for the additional equipment and prepare your present system to minimize any disruption to your operation.



Our Complete Range of Products

- Single and Multiple Rotor Shredders
 - Conveying Technologies
 - Air Classification Systems
 - Refiners
 - Rotary Trommels
 - Vibratory Feeders
- Oscillating, Roller and Star Screeners
- Ferrous and Non-Ferrous Detection and Separation
 - Bulk Material Handling, Metering and Loading
- Turn-key Recycling and Waste Processing Systems



Vecoplan®