CARPET RECYCLING
FROM A TO Z
DAMON DEDO
GRANUTEC-SATURN SYSTEMS
THE PROCESS

A) FEEDING
   - Bulk
   - Conveyor
   - Bale quality

B) SHREDDING/GRINDING
   - THE ROTO-GRIND
     Bigger is better, more torque!
     - Principle of operation
     - Variables with carpet types
     - Wear parts (Cutters, Screens, Etc.)
     - Power
     - Dimensional data
     - Maintenance
C) DISCHARGE SYSTEMS
- Mechanical, conveyor, etc.
- Pneumatic

D) PERIPHERALS
- Metal detection
- Dust collection
- Fines separation, screening

E) PRODUCT SIZING OPTIONS
- Grizzly Shredder

F) BUDGETS
- Operating Costs
- Operating wear parts
- Utilities
- Capital costs
- Roto-Grind
- Material handling
- Peripherals

G) EXPERIENCE
FEED SYSTEMS

A) BULK LOADING
B) CONVEYOR LOADING
C) BENEFIT’S ONE VS. OTHER
D) FEED STOCK INTEGRITY!
THE ROTO-GRIND

- FOR CARPET RECYCLING “BIGGER IS BETTER”

- NO ROOM FOR SMALL, LOW POWER MACHINES

- AT A MINIMUM, YOU NEED 200HP, COULD BE MULTIPLE MACHINES OF 300+ HP

- TWIN DRIVE ROTOR PRODUCING UP TO 40,000 FT./LBS. OF TORQUE

- CLOSELY INTERACTS WITH POWERFUL, INTEGRATED FEED RAM

- SOPHISTICATED LOAD SENSING CONTROLS PRODUCE MAXIMUM PERFORMANCE BY KEEPING THE ROTOR FULLY LOADED
VARIABLES THAT IMPACT PERFORMANCE

- Types of cutters, 30mm, 40mm, 60mm
- Types of screens, if any (circular, zig-zag)
- Rotor speed, variable
- Ram force, rotor torque
- Type of carpet, form - loose or bale

POWER - HYDRAULIC DRIVE THAT PRODUCES THE HIGHEST AVAILABLE ROTOR TORQUE!

TWIN DRIVES, VARIABLE SPEED
ROTO-GRIND (continued)

**RAM** - MUST GENERATE HIGH FORCE TO REACH MAXIMUM CAPACITY. UP TO 40HP RAM

GENERATE RAM FORCES UP TO 39,000 FT./LBS.
HIGH CUTTER MAINTENANCE APPLICATION

- Expect cutter life of a few days with 24 hr./day operation.

- Most applications allow 4 useful points (or turns) of the cutter; with carpet, film or fiber, only 2.

- Cutter change can take up to three hours

CUTTER BLADE HOLDER TYPES - BOLT-IN, WELD-ON

- Roto-Grind features a unique stationary cutter that permits multiple uses, can be re-ground and re-used. It also allows adjustment of cutter clearances for efficient material size reduction.
CUTTERS, BLADE HOLDERS, SCREENS

40mm cutter, weld-on and bolt-on rotary cutter blade holder, and stationary cutter

Standard Round Hole Screen

Zig-Zag Fiber Screen
- *Mechanical, conveyor*

  Can be more expensive. Simple, but can be a cause for housecleaning concerns.

- *Pneumatic*

  Less floor space - more flexible layout design possibilities
PERIPHERAL COMPONENTS

- METAL DETECTION

  * Roto-Grinds do not tolerate heavy contamination

  * Banding cutters, hammers, and wrenches are not combustible and do not shred well. There is no need to process them! Avoid at all costs

  * If bulk loading, bale integrity must be known

  * If conveyor feeding, metal detection should be installed
DUST COLLECTION

* Carpet processing is extremely dirty and dust collection is recommended if not mandatory

* Enclosures required on feed hopper

* Dust collection also required at discharge area
- SCREENING

* Many applications want fines separated following grinding and this can be accomplished by processing the carpet fluff across a vibratory conveyor with a perforated pan.
SECONDARY SIZE REDUCTION
LIBERATION OF CACO$_3$ AND ADHESIVES (99.99%)

**MODEL 80 GRIZZLY SHREDDER**

CAPACITY (WITH PRIMARY CARPET SHREDS AS FEEDSTOCK)

- 3/8” SCREEN .......... 6000 LBS./HR.
- 1/2” SCREEN .......... 9000 LBS./HR.
- Wear parts represent the greatest percentage of carpet recycling expense. Desired product size will strongly effect cutter costs. Budget $3.50-$7.50 per ton for cutter costs.

- The single rotor shredders are efficient, but use significant motor horsepower - many are 300HP. Utilities can represent a cost per ton of $2.00-$7.50 assuming .10¢ kWh.

- Capital Costs
  * Roto-Grind pricing for carpet processing will begin at $200,000 and can approach $400,000 for larger machines with special features.

  * Material handling and associated components can add as little as $75,000 or as much as $200,000 to the system cost.
NOTABLE ROTO-GRIND
CARPET APPLICATIONS

A. NYCORE (Minnesota)

B. MAJOR SOUTHEASTERN CARPET RECYCLER

C. SHAW/SIEMENS (Dalton, GA)

D. NUMEROUS OTHER FIBER RECYCLING APPLICATIONS
THANK YOU

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