New Developments in Recycling Fiber and Carpet Waste

Presented by:
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Fiber & Carpet Scrap Forms

- Fiber Bales
- Carpet Rolls
- Carpet Squares
This Presentation Covers Carpet & Fiber Recycling Techniques, Focusing on...
Size Reduction Equipment Repelletizing Systems
Size Reduction Equipment

Single Shaft Shredders

Single-shaft Shredders are good for breaking up carpet and fiber scrap into 1-3” sized pieces.
Designed for Operator to “Dump & Run”

Hydraulically powered ram feeder is controlled by shredder amp feedback to feed consistently without constant operator attention.
Single-Shaft Shredders: Rotor Designs

Standard Rotor Design

Works great for materials like hard scrap and purgings.

Film and Fiber Rotor Design

Fiber and carpet are difficult to handle—special design prevents wrapping and increases throughput.
Two Stage Size Reduction

**Step 1. Shredder**

Carpet/fiber and trims are chopped into small pieces using a single shaft shredder.

Scrap material

Shredder

reduces to 1 to 3 inch pieces

**Step 2. Grinder**

The smaller screen in the grinder provides final particle size of 1/4 to 3/8 inch for separation.

Separator

Air or liquid

Fiber

Backing
Now, We’ll Discuss
Repelletizing Technology
Traditional Repelletizing Systems

Ram-Stuffer

Traditional designs require pre-cutting.
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NEXT GENERATION RECYCLING MACHINES

SIMPLY ONE STEP AHEAD

TRADITIONAL METHODS

Shredder/Grinder – Fluff Hopper – Crammer -- Extruder

STEP 1
PRECUTTING

STEP 2
STORAGE

PROCESSING
Traditional Repelletizing Systems

Densifier Drum

Traditional designs require pre-cutting.
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Fiber is chopped to 6-8mm using grinder…

extruder throat

…and fed to twin screw extruder with crammer-densifier.
DISADVANTAGES

- Requires Pre-cutting equipment
- More time and effort to clean-out & changeover (colors, etc)
- Requires large amount of floor space
  - Dust/Housekeeping concerns
- More Equipment means more maintenance
  - High Cost Per Pound Produced
New Technology For Repelletizing—Integrated Shredder-Extruder Combo

ONE-STEP Operation:
Requires No Prior Size-Reduction For Most Materials Including Fiber, Carpet, Nonwovens...
The NGR Solution

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NGR ONE-STEP TECHNOLOGY

NGR has Only One Heating Step

Highest Pellet Quality
Low Operation Costs
Feed Loose Scrap via Conveyor

LOOSE SCRAP bales, loose fiber, bobbins, burn-offs, cut pieces...

Conveyor is controlled by Hopper level sensor.

Machine does not require continuous, labor-intensive feeding.

Repelletize without PRE-CUTTING!

High-Quality PELLETS Out!
Material Transport Into Extruder

Shred...
Compact...
"Warm-Feed" the Extruder
IN ONE-STEP

For a Copy of the Video clip shown at this Conference, Call 678-428-9262.
X:Gran 165/185/205 Machine

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X:Gran: 2500-4500 pph

Can handle ENTIRE LARGE BALE!
...how the system works:

1a. Conveyor Belt
1b. Roll Feeder
1c. Cyclone
2. Feeding Screw
3. Vented Extruder
4. Extruder
5. Vented Extruder
6. Net Filter
7. Underwater Pelletizing
8. Strand Pelletizing
9. Strand Pelletizing

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Venting and Pelletizing

Dual or quad vent removes water and oils from material
X:Gran Running Bales

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47 inch wide conveyor belt with Metal detector allows you to run even LARGE bales
NGR Shredder Built for Peak Performance

Tight blade gap prevents wrapping and ensures a consistent high-quality output.
Shredder/Feeder design

Heavy-duty feed screw takes scrap and feeds it efficiently to the extruder.
X:Gran 165 closeups

Feed screw enters extruder on the center-line

Dual bolt screen changer filters material

Large 70” wide shredder

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“The Extrusion & Recycling Specialists”