

ASR[®] Automatic Scrap Recycling Systems

Returns Scrap to Near Full Base Material Value

Avoids Re-pelletizing Heat History Degradation

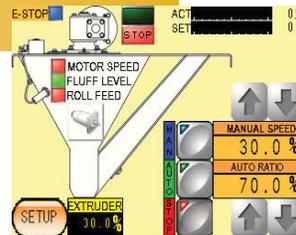
No Inventory of Lower Value Repelletized Material

Avoids Potential Repelletizing Contamination Issues

System Automatically Follows the Extrusion Rate

Low Operating Costs & High Return On Investment

Maintains High Quality End Products



The RMX Machine's
HMI Touchscreen
Operator Panel

Turn Your Scrap into Profit

The recovery of scrap generated during the production of blown film, cast film, tape and extrusion coating processes is a key element in reducing manufacturing costs. The ASR system can recycle trim scrap and off-spec roll scrap in-line and turn your scrap back into profit without the expense of repelletizing.

A complete ASR system consists of several components. A trim removal inducer will take edge trims, bleed trims or tapes in a continuous ribbon form from the extrusion line and convey it to an air eliminator mounted on a film scrap grinder.

At the grinder, roll scrap and/or loose scrap can

also be introduced. The grinder produces ground scrap (or 'fluff'), and conveys it to the scrap hopper of the extruder-mounted refeed machine. The refeed machine is designed to meter the ground scrap with virgin pellet materials back into the production extruder at a consistent scrap-to-virgin pellets ratio.

For processes with large amounts of startup scrap such as tape lines, the scrap can be ground and stored in a fluff surge hopper and then recycled over the course of the entire production run.



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Process Control's Test Lab ASR[®] System





Automatic Scrap Recycling Systems

Maximizing the Value of Your Thin Film Plastic Scrap

With the ever increasing pricing trends of resins, a key factor in increasing profitability can be reclaiming waste and scrap plastics for re-introduction into the manufacturing process. ASR systems recycle this scrap in-line, without the expense of repelletizing, and turn your scrap into profit - which goes straight to the bottom line!

Features and Advantages

- ASR system recycles any thin gauge clear film, tape, foil, foam, stretch wrap, or other metalized + plastic-based films.
- ASR systems processes, and effectively 'granulates' edge and bleed trims, as well as off-spec roll scrap, while minimizing or eliminating potential contaminations.
- ASR systems are available in multiple sizes and system configurations to automatically handle the smallest scrap projects, up to the largest scrap reprocessing rates and customer requirements.

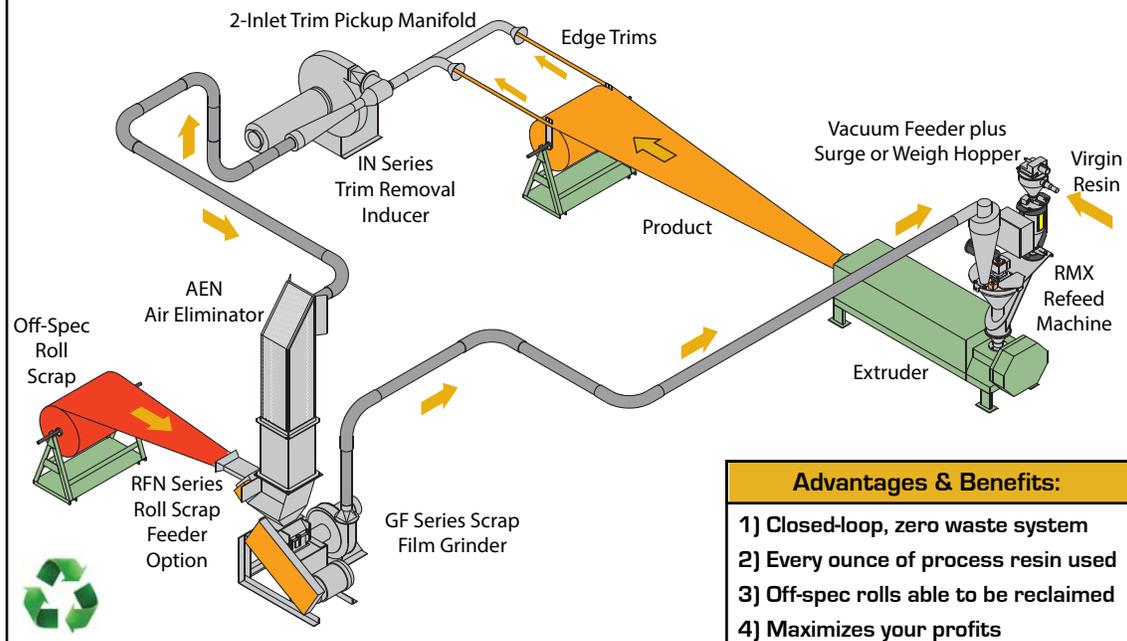
Wide Range of Applications

ASR systems have been successfully installed on thousands of blown film, cast film, extrusion coating and tape lines worldwide. Acting as automatic shredder/refeeder equipment, these highly profitable plastics reclamation systems are designed to handle every application, from standard to difficult, including:

- High-Speed Cast Films
- Stretch Wrap
- Silage Films
- Tacky Films
- Tapes (including oriented tapes)

Automatic Scrap Recycling System

Typical Scrap Reclamation System Layout/Features



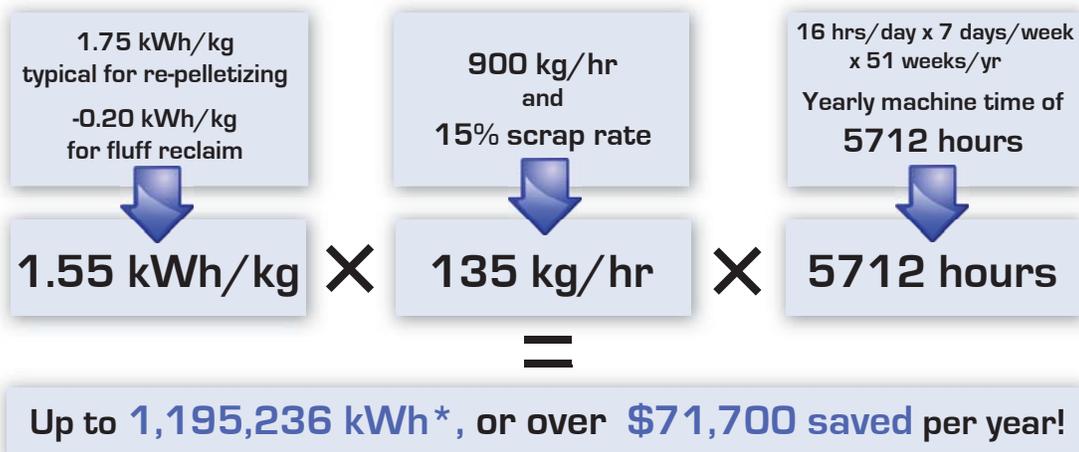
Advantages & Benefits:

- 1) Closed-loop, zero waste system
- 2) Every ounce of process resin used
- 3) Off-spec rolls able to be reclaimed
- 4) Maximizes your profits

Don't Re-Pelletize, Refeed Instead

The ASR System involves handling and refeeding ground film scrap directly back to the extruder. Edge trims, bleed trims (not shown), and off-spec roll scrap from the extrusion line are size reduced for the highest possible bulk density. Trims are picked up by the IN Series Trim Removal Inducer, and are conveyed on to the GF Series Scrap Film Grinder, which then effectively acts as a granulator. The ground scrap, or 'fluff', is then blown back to the extruder for in-line re-feeding. The cyclone-equipped RMX Series Refeed Machine has dual compartments that are used to meter the granulated fluff independently from the virgin resin. This type of system is typically less expensive than combination pelletizing extruders, and has a higher reclaim capacity on large, smooth bore extruders. The system is fully automatic, and easy to maintain with low operator intervention. Additionally, since the film is not re-melted, there is no additional repelletizing heat history added to the 'shredded' refeed material.

A Typical Savings Example: Refeeding vs. Repelletizing [Using US National average of 6 cents/kWh]



*Savings will vary based on material type and repelletizing process

RMX Series Refeed Machines

RMX Features

Virgin Material Inlet:
Gravity-fed Virgin
Material Always Flows
Unobstructed to the
Extruder's Throat

Variable Speed
Drive System

Safety-Interlocked
Ground Scrap
Access Door

Ground
Scrap
Inlet

Consistency Is A Key To Successful Thin-Gauge Scrap Recycling

Consistent Scrap-to-Virgin Ratio

Ground scrap and the much denser virgin material are held in separate compartments to prevent stratification. A highly consistent scrap-to-virgin resin ratio is maintained by metering the ground scrap, and allowing the virgin material to feed by gravity. If the scrap feed is interrupted for any reason, the virgin material continues to feed, supplying the entire needs of the extruder.

No Extruder Surge or Starvation

As the ground scrap is metered from the inner hopper, the weight of the surrounding virgin material and the force of the auger compacts the scrap into a consistent column of densified scrap, which is then fed to the extruder screw. The scrap never permeates the base material, so the extruder screw bites off a consistent combination of scrap and virgin resin with each turn. This consistent feed eliminates both extruder surging and starvation.

Maximum Scrap Refeed Rates

With this innovative recycling system, scrap refeed capability is limited only by the extruder's screw design and the product's scrap tolerance. Due to the highly consistent ratio and the densification of the scrap, the highest possible scrap levels can be achieved.

Inner Ground Scrap Compartment

Bridgebreaker
Assembly
Prevents
Bridging and
Helps Meter
Scrap to the
Extruder

Scrap Compartment
Level Sensor
Automatically
Prevents
Overfilling

Scrap Compaction Zone:
The Force of the
Surrounding Virgin
Material, plus the
Action of the Auger
Compacts the Scrap
and Maintains
this Compaction
Down to the
Extruder Screw

Virgin
Material
Cleanout
Drain

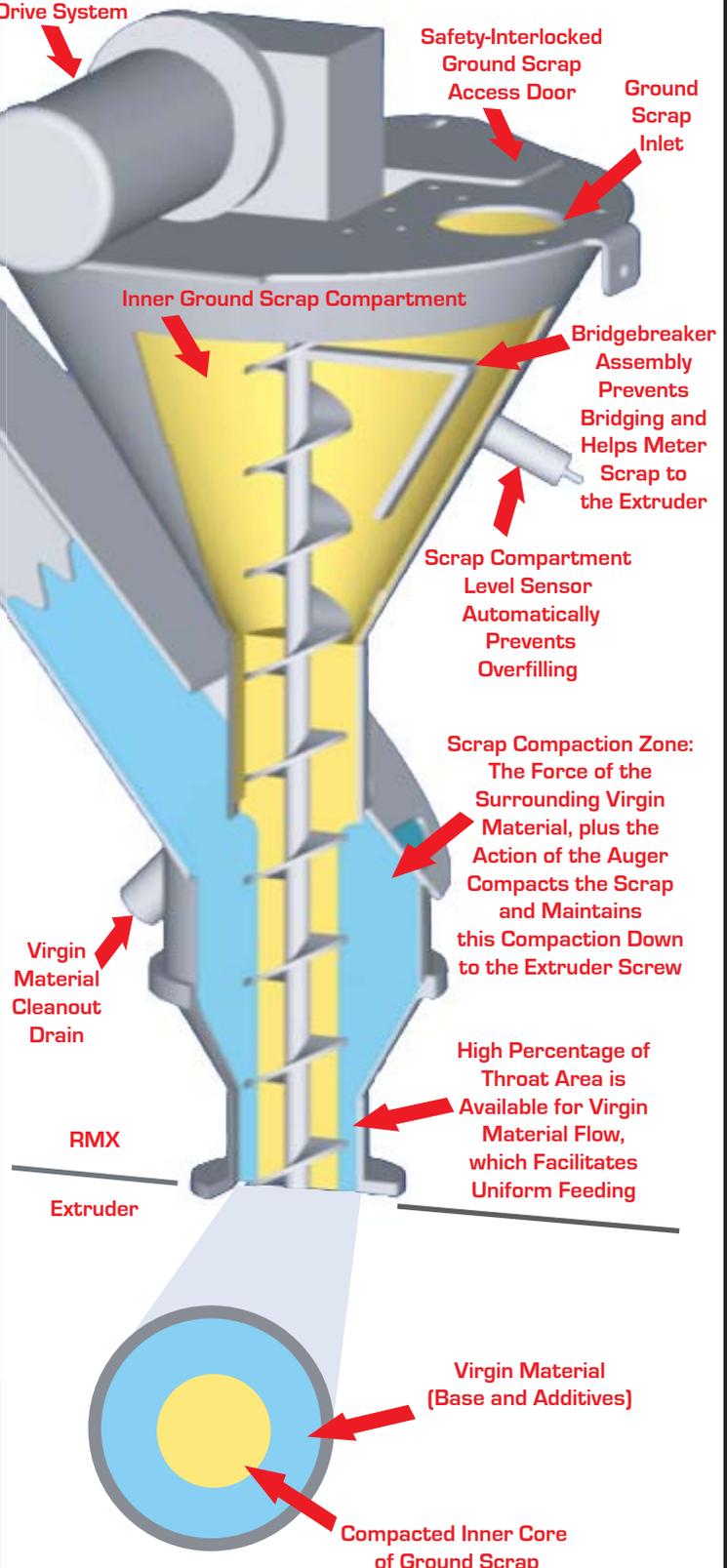
High Percentage of
Throat Area is
Available for Virgin
Material Flow,
which Facilitates
Uniform Feeding

RMX

Extruder

Virgin Material
(Base and Additives)

Compacted Inner Core
of Ground Scrap



GF Series Film Grinder

Thin-Film Grinder Features

AEN Air Eliminator
(Optional)

High Performance Grinders Provide Maximum Refeed Rates

Process Control grinders are specifically designed to grind thin-gauge scrap, unlike the traditional applications of parts grinders for these applications. This task-specific design produces ground scrap with the highest bulk density and the best flowability - important factors for successfully recycling thin-gauge scrap.

Increase Profits by Recycling Rolls

Roll scrap generated during startups or product changeovers can be introduced into the grinder through the addition of a RFN Series Roll Feeder. The Roll Feeder has knurled rolls to provide a strong pull on the film, without wrapping. A large feed chute provides ample space to introduce the film while 'bunching' it up for best pull. Our adjustable roll gap and pressure design allows for excellent operation over a wide range of scrap roll thicknesses.

Innovative Cutting Chamber Design

Our extensive research in this area has found that a clean, slicing action has been proven to produce the most consistent, highest bulk density ground scrap. For this reason, GF Series Film Grinders use double-angled knives and a steep knife approach angle to provide a clean, scissors-cut slicing action. This action, coupled with the close tolerance along the entire knife length assures superior ground scrap. To maintain the ground scrap quality and to prolong the life of the knives, Process Control utilizes adjustable bed knives. This allows precise adjustment of knife clearance, even after several knife sharpenings. Additionally, it has been found that in head to head comparisons with competitive grinders, our design works better.

Optional
RFN Series
Roll
Feeder

Manual
Feed
Chute

Grinder Body

Cutting Chamber

Fluff
Blower



Cutting Chamber Interior

IN Series Trim Removal Inducer



Twin Pickup, 5 HP Model shown

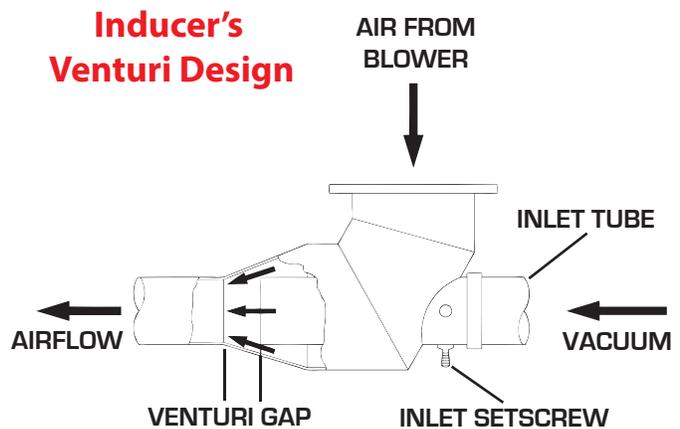
Trim Induction & Removal System

Process Control's trim removal systems are designed to automatically pick up and convey edge and/or bleed trims generated during the production of extruded products like film, tape and foam. These continuous trims are removed from the line by suction created in the inducer's venturi section. Traditionally, this method of scrap pickup helps completely eliminate contaminations commonly found in repelletizing processes. This is because the edge trims & bleeds are induced for in-line recycling as soon as they are made, and are foreign-object free at that point.

The Process Control inducer designs are particularly effective for handling both tacky and larger volumes of film. The Trim Pickup Manifold designs that accompany the Inducer typically vary to match the number of trims and bleeds that a manufacturer's situation requires.

Greater Operating Efficiency

The Process Control Inducer's patented venturi design uses the same principle used to generate lift on an aircraft wing. The venturi design is far more efficient than the more commonly used cyclonic design, resulting in more suction and far greater air flow per fan CFM output. This efficiency reduces the required horsepower, which results in lower energy costs, reduced noise and easier separation of the trim from the conveying air at the grinder.



4-Inlet Trim Pickup Manifold Shown





PROCESS CONTROL CORPORATION

Do It Right The First Time, Every Time!

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For detailed product information, including specs and dimensions, please request a PCC data sheet or download one from our website



For more information about our services and other PCC products, please visit our website at: www.process-control.com

The screenshot shows the website header with the PCC logo and contact information (770.449.8810, sales@process-control.com). The main content area features a navigation menu (Home, Shop Locator, PCC Advantages, News & Press, PCC Right Tools, About Us, Contact Us, Request Information) and a central banner for 'QUALITY RESIN BLENDING AND PELLETS / POWDER PROCESSING EQUIPMENT'. Below the banner are images of various machinery including Geometric Continuous Blenders, AS100 Automatic Scrap Recycling, Extrusion Control Systems, Material Handling Systems, Powder Feeders, Request Manuals and Downloadable Software, and a large image of a scrap recycling system. A sidebar on the left lists product categories. At the bottom, there is a 'We Continue to Set the STANDARD for the Plastic Processing Industry' section and a footer with the company address and website.



American Made Quality - Since 1967