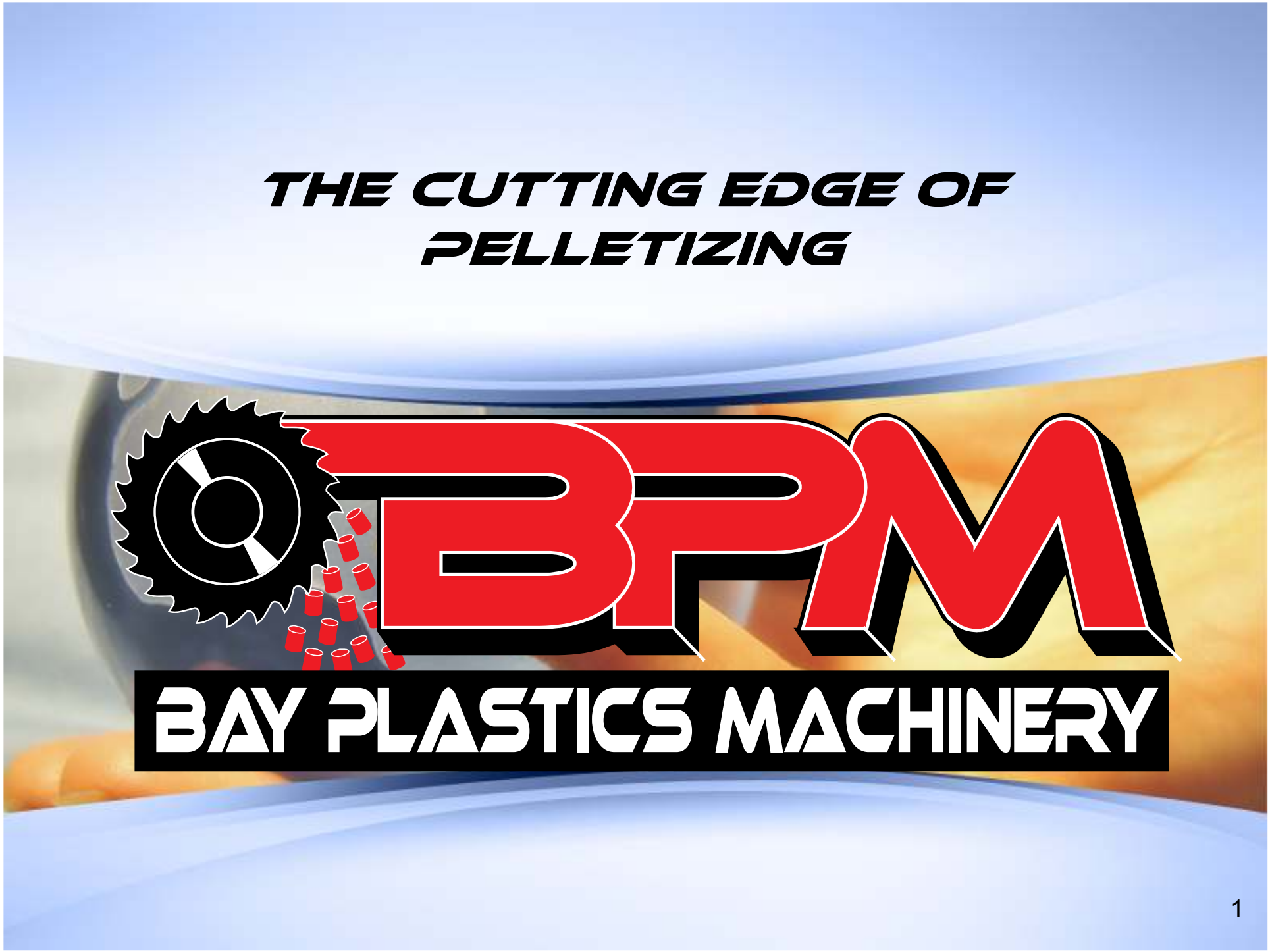
THE CUTTING EDGE OF PELLETIZING



BAY PLASTICS MACHINERY

Company History

1961	JETRO Corp. introduced it's first Strand Pelletizer .
1974	Conair purchases the company and the division is known as Conair JETRO.
1997	Conair centralizes all remote manufacturing facilities to Franklin, PA.
1997	Bay Plastics Machinery was formed by the son of JETRO's founder and a core team of individuals.
1998	Joint Venture created between Germany pelletizer manufacture and Bay Plastics Machinery. The New Company is known as Scheer-Bay Company.
1999	Developed BT 25 Lab Pelletizer
2002	Developed Pultrusion Pelletizers
2004	Developed AX Series Pelletizers
2006	Developed SB Series Pelletizers
2008	Scheer declared insolvent in Germany, ending 10 year relationship
2009	Re-named Bay Plastics Machinery Corporation
2011	Celebrating 50 year of Pelletizer Manufacturing in Bay City, MI

Plant 1 – Lab & Machining Center

New BPM Plant 2

Office & Manufacturing Facility

26,000 Sq. Ft of Production Space

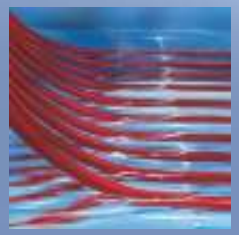
In Bay City Michigan

PELLETIZING TECHNOLOGY From BAY PLASTICS MACHINERY

Pelletizing Methods

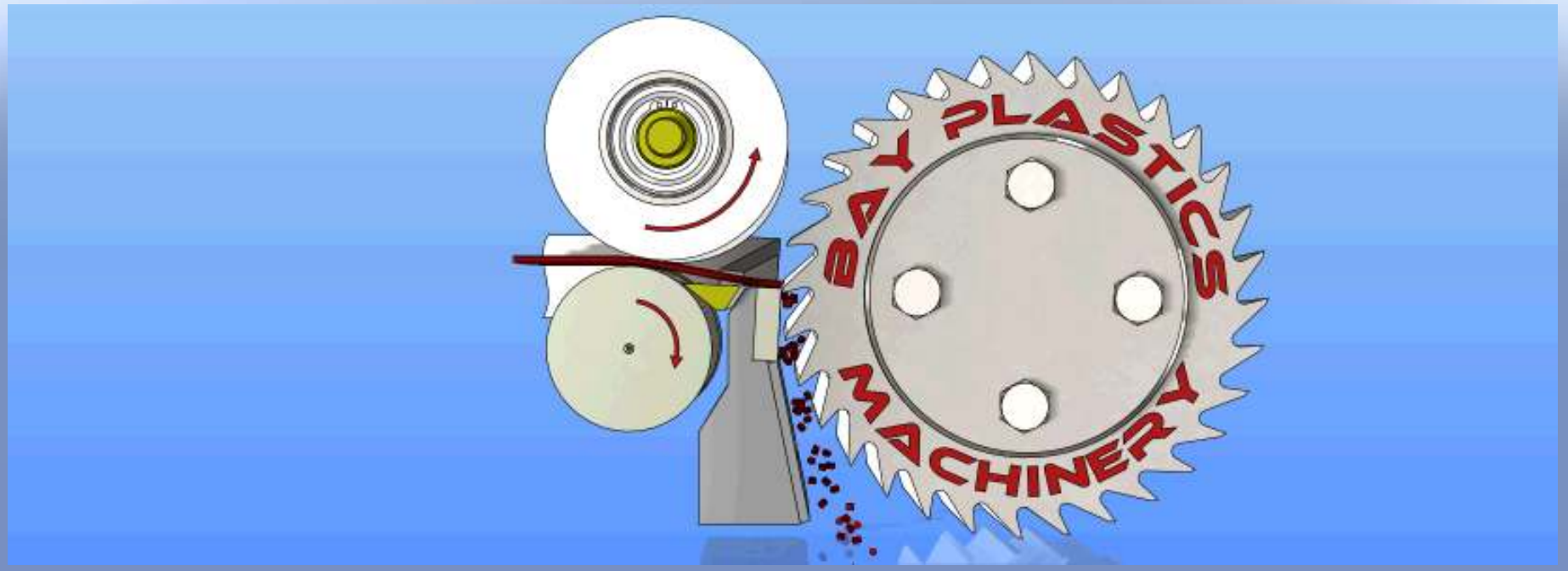
- Strand Pelletizing

  - Conventional
    - Lab Units
    - Med Production
    - Large Production
  - Micro Pellets
  - Long Fiber
- Automated Strand Infeed



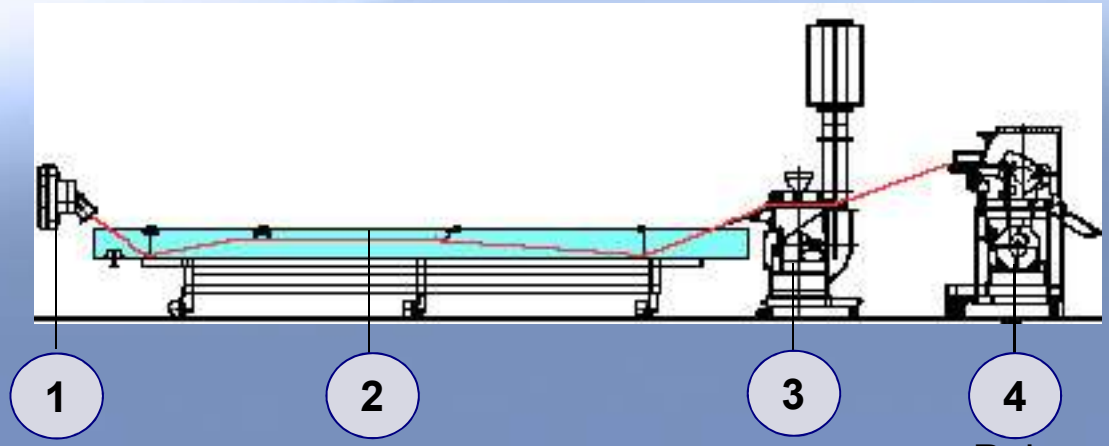
  - Wet-Cut Waterslide
  - Dry-Cut Waterslide

Strand Pelletizing Systems



Double Click on Rotor for Demo

CONVENTIONAL STRAND PELLETIZER SYSTEM



Conventional System Layout

1. Die
2. Water Bath
3. Strand Dewatering Unit
4. Strand Pelletizer

Polymer Strands are manually feed into the Pelletizer

- Material cooling properties determines the length of the water bath
- Flexible for material change-overs
- Suitable for master batch, compounding, and engineering plastics.

BT 25 - Lab Unit

Throughput = 100 lb./hr. Up to 4 strands

- Used for lab and small production runs.
- Able to process materials from soft rubber to brittle, high density, and glass filled thermoplastics
- Cost effective for all lab applications.

BT 25 with Stand and Air Knife

Uni-Base

Integrates the Pelletizer, Water Bath, and Air Knife on a single Base.

BT 25 - Lab Unit

Throughput = 100 lb./hr Up to 4 strands

Features of BT 25 Lab Pelletizer

- Dual Drive Standard
- 110v single phase
- Compact Foot Print
- Large Offset Upper Feed Roll for Greater Pulling Force
- Complete Access To Cutting Chamber for Inspection and Cleaning
- Tool Less Entry to Cutting Chamber
- Easily Removable Rotor and Upper Feed Roll
- Positive Strand In feed to Cutter
- Safety Interlock

SB 100 SERIES – Lab to Light Production Unit

Throughput -800 lb./hr. UP to 15 strands

Features of the SB 100 Pelletizer

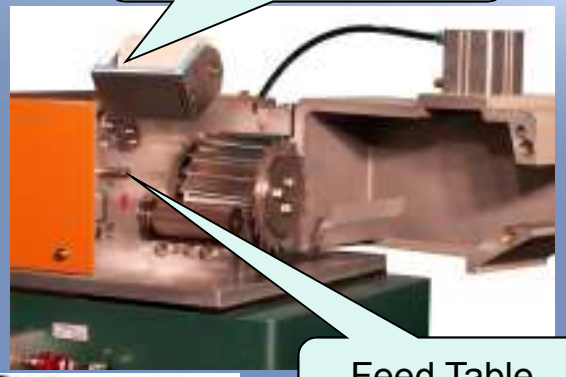
- Quick clean out – faster material changeovers
- Removable discharge chute – easy clean out.
- Tools Less entry
- Utilizing a push/pull bed knife to adjust the cutting gap
- Upper feed roll parallel to lower feed roll to ensure maximum contact across the strands.
- Large cylinder in the cover, applying pressure to upper feed roll for best pulling force.

SB 100 SERIES – Lab to Light Production Unit

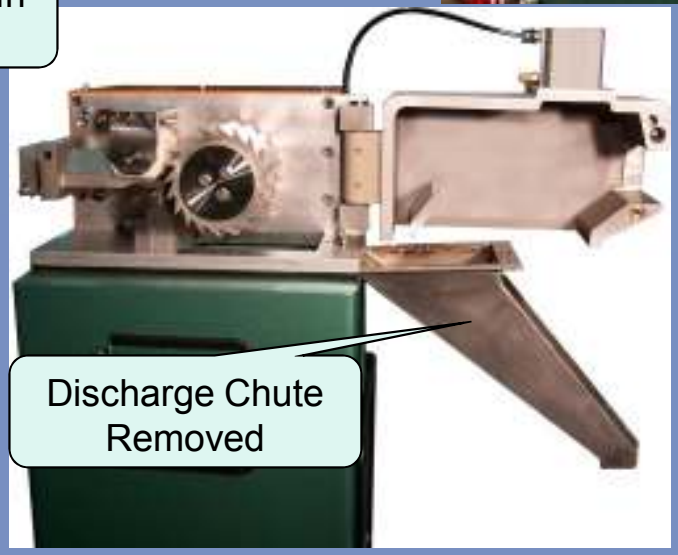
Throughput -800 lb./hr. UP to 15 strands

Feed Table In Place

Upper Feed Roll Parallel Movement



Feed Table Removed



Discharge Chute Removed

SB 100 SERIES – Lab to Light Production Unit

- Belt drives are more robust than chain.
- Drive belts require no lubrication
- Require little maintenance or PM
- Belts are much quieter than chain

SB100 Uses a serpentine belt to drive the lower feed roll.

- Double sided synchronous belt
- Spring actuated belt tension pulley. Controls belt tension.

Z SERIES - Medium Production

Available in 50mm, 100mm, & 200mm Units

Throughput- 2500 lb./hr.

and up to 40 strands.

Z SERIES Features

- Supported Bed Knife Holder
- Truly Rust Free Cutting Chamber
- Removable Feed Table
- Larger Diameter Rotor Shaft
- Eccentrically Adjustable Lower Feed Roll
- Chrome Plated Rotor Hub
- Removable Discharge Chute

Bed Knife Holder is Supported by the Isolation Plate

Z SERIES Feed Roll Drive

Single Drive System

•Lower feed roll is driven through a serpentine belt system, connected to the rotor motor.

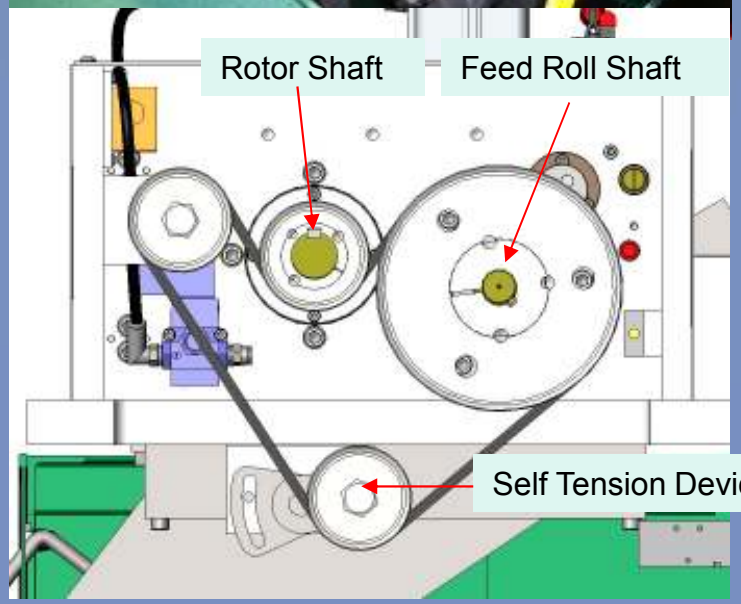
•Upper feed roll is driven via contact to lower feed roll – extends UFR life (always runs at the same speed as the LFR).

•Self tensioning belt design, prevents belt slipping.

•This design is a low cost, durable system, that is easy to maintain.

Dual Drive is Available as Opt.

•Dual Drive will add a second motor/drive & belt for the feed roll control.



Z SERIES - Medium Production

Removable Feed Table allows for easier cleaning

Removable Discharge Chute – Makes it possible to completely clean the material contact points.

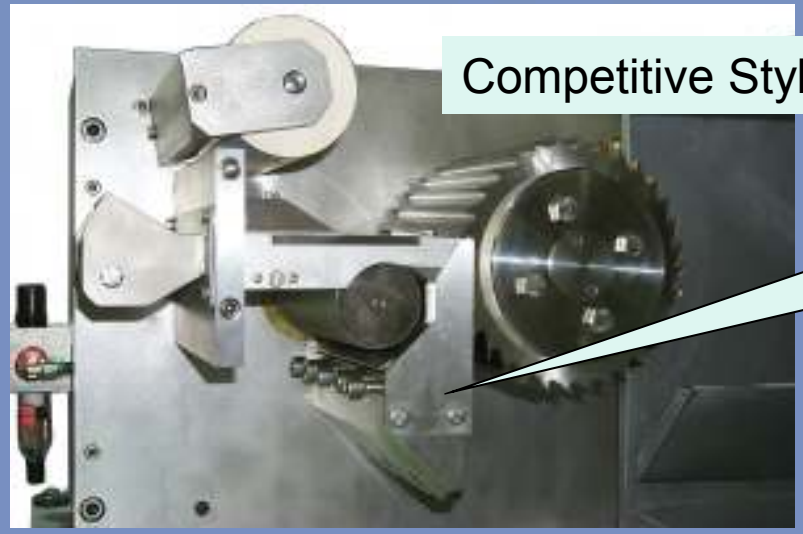
Z SERIES - Medium Production

Product Improvements

Z08

Bed Knife Holder is Supported, improving cutting gap control

Supporting the Bed Knife Holder on the Isolation Plate—This allows us to hold a tighter cutting gap. With the old hanging bed knife design, the gap would change as more load was applied to the system.



Competitive Style

Bed Knife Holder is not supported, it relies on bolts from the back plate to support. Frequent cause of poor gap control.

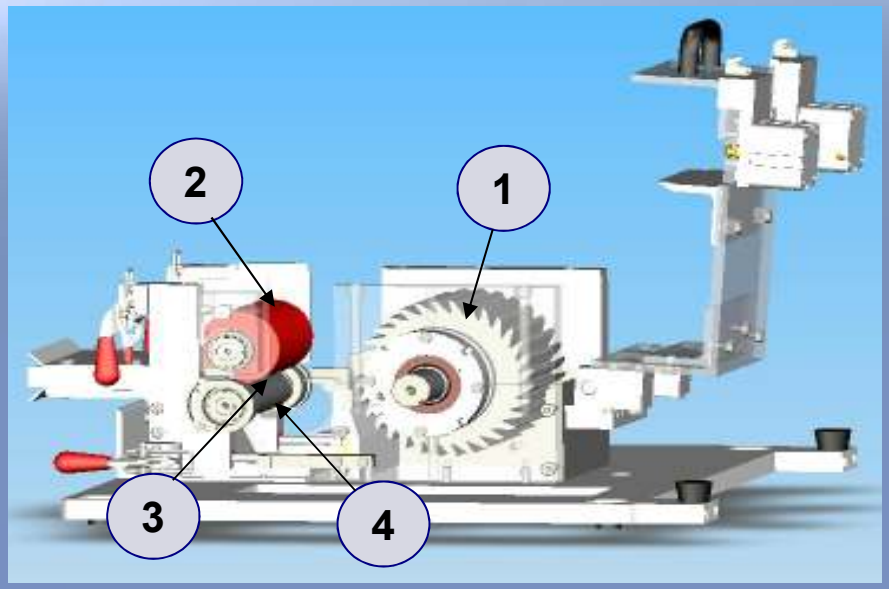
X-CLASS - Medium Production

AXP PELLETIZERS

Available in Sizes 4”, 6” , 12” & 16” Throughputs -4,300 lb./hr., And up to 90 Strands

- Tool Less Entry to Cutting Chamber
- Slide out feed table to access cutting chamber
- Utilizing push/pull bed knife adjustment
- Quick easy clean out
- Robust design
- Serpentine belt to drive lower feed roll
- 50% less floor space than gear box models
- Cam cover design for automatic belt tension release
- Dual drive option available

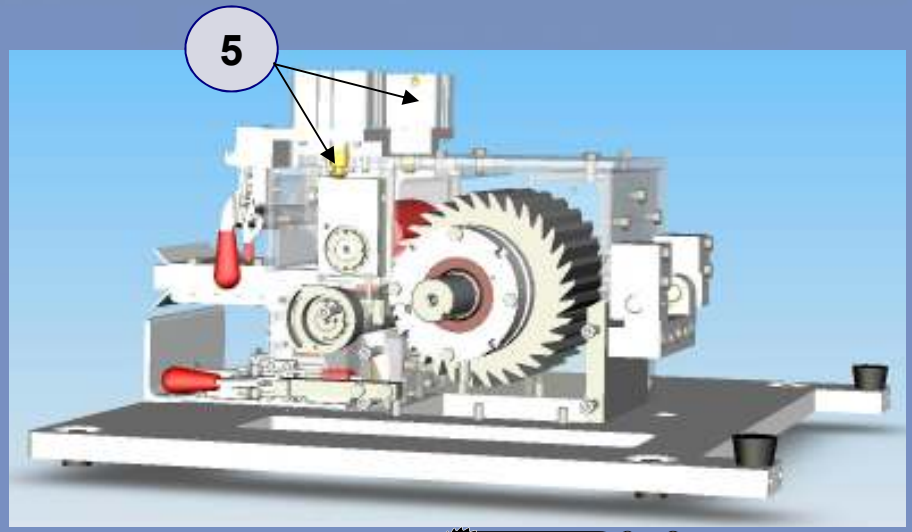
X-CLASS - Medium Production



5. Pneumatic Cylinders to apply maximum pressure to upper feed roll.

Description of Cutting Chamber

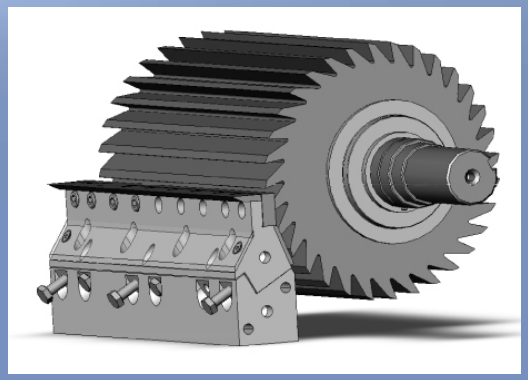
1. Rotor
2. Upper Feedroll
3. Lower Feedroll
4. Bed Knife

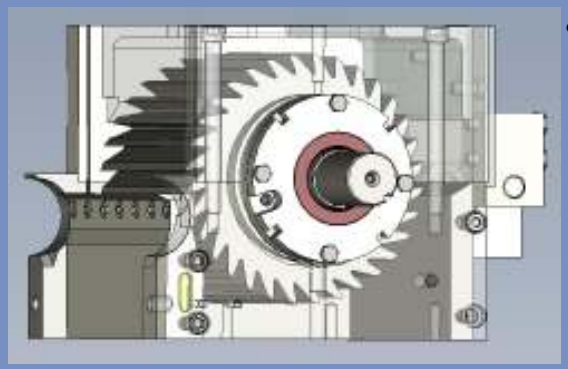


AX & AXP PELLETIZERS -

Various Styles Available:

Available in Sizes 4”, 6” , 12” & 16” Throughputs -4,300 lb./hr., And up to 90 Strands





Drive Systems:

•Serpentine belt driven – Standard on AX & AXP

•Gear Box Driven – Opt.

Rotor Gap Adjustment

- Push/Pull bed knife adjustment – Standard AXP series
- Eccentric adjustment – standard AX series

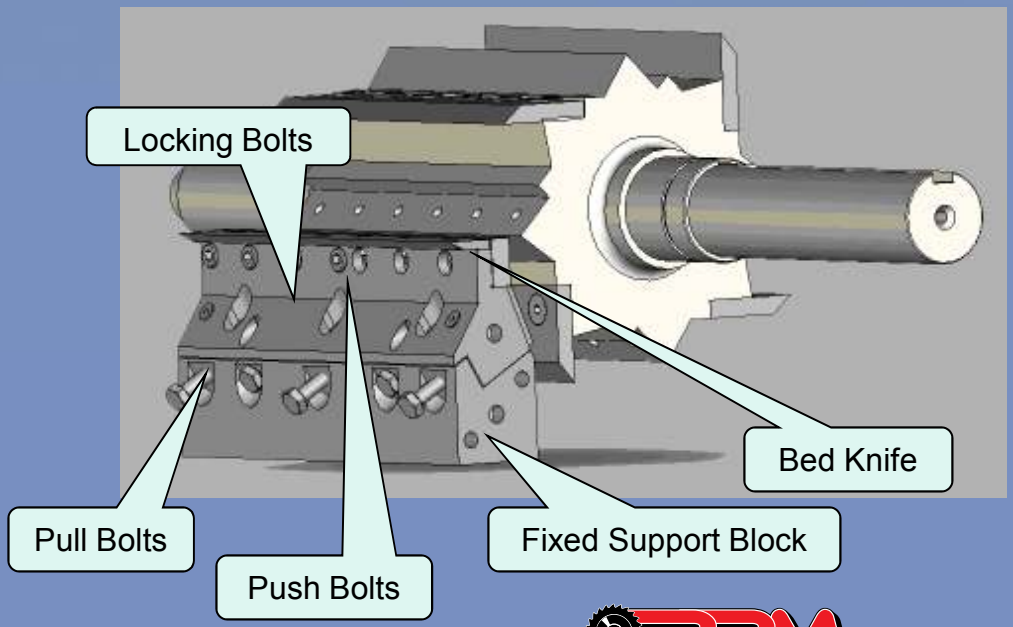
Benefits of Push-Pull Cutting Gap Adjustment

Benefits-

- Adjustments are made with threaded bolts, this allows fine adjustments to be made.
- Adjustments are made to sliding block of steel not spinning rotor
- Able to make small adjustments across the length of the bed knife for wear inconsistencies.

Push Pull Cutting Gap Adjustment

Gap adjustment is made by adjusting the position of the bed knife holder, by adjustment bolts.



X-CLASS - Medium Production

Optional Dual Drive

Allows customer to adjust the length of the pellet.

Available with a variety of different styles of rotors

- Welded Stellite 12 (able to repair damage to tooth)
- Carbide Wedge Lock
- Bolt On Carbide Blades.

Optional Upper Feed Roll Drive

Positively drives the upper feed roll for materials that do not feed easily into the cutting chamber

BXP SERIES PELLETIZER

Large Production

BXP – Large Production

Upper Feed Roll Pneumatic Cylinders

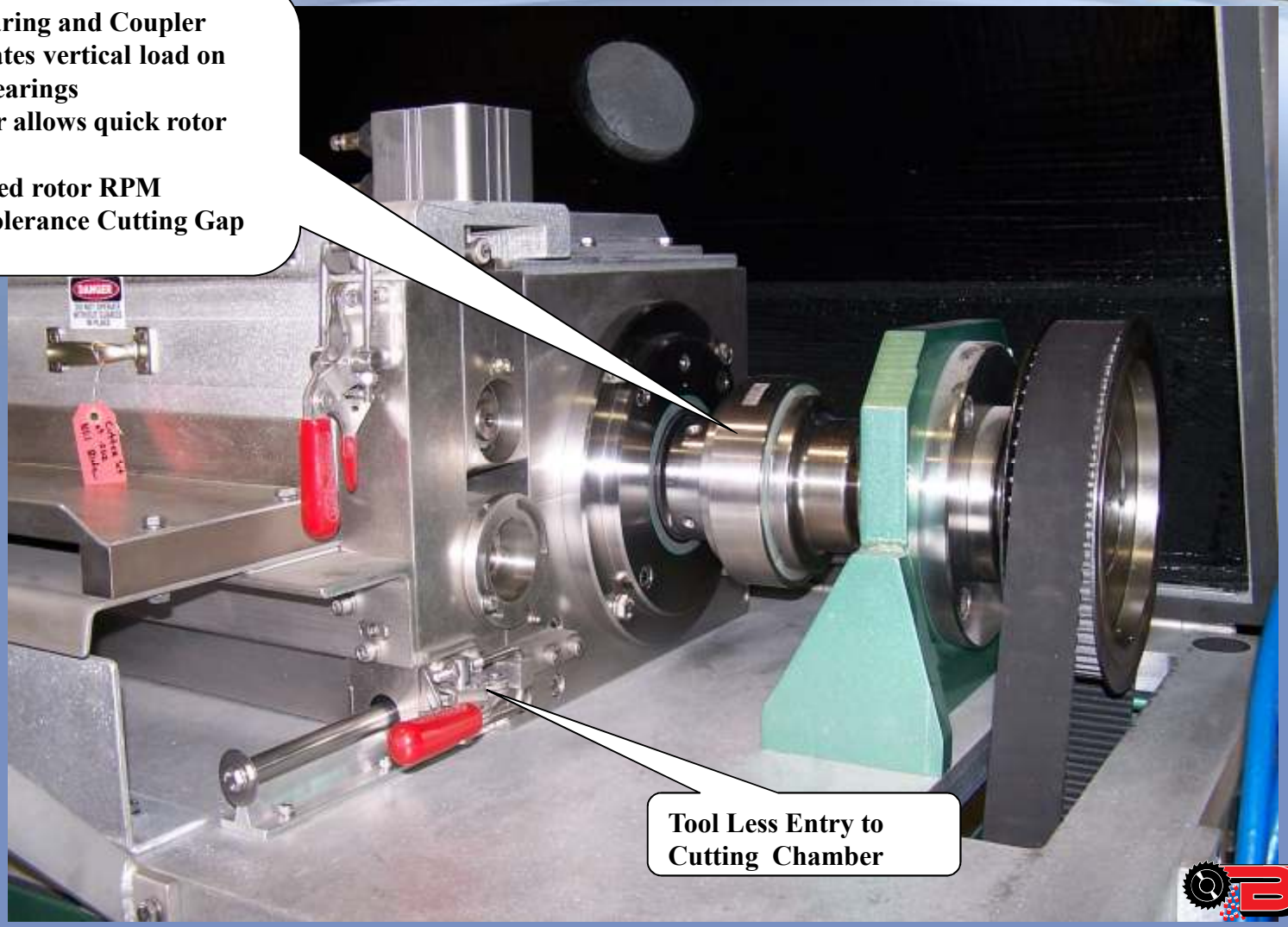
- **Standard off the shelf cylinders, stock item, low cost.**
- **Large cylinder, utilizing the head side of the cylinder for downward pressure (maximizing area).**
- **Positioned the cylinder on the upper cover above the UFR. Minimizes interference on front of cutting chamber, ideal position for downward pressure.**
- **Standard cylinders are interchangeable right to left.**
- **Optional – UFR modified to be interchangeable between BXP & Conair 3500 machines.**

BXP – Large Production

Optional

Isolation Bearing and Coupler

- **Eliminates vertical load on rotor bearings**
- **Coupler allows quick rotor change**
- **Increased rotor RPM**
- **Tight tolerance Cutting Gap**



Tool Less Entry to Cutting Chamber

DX Series Large Production Strand Pelletizers

Available in 300mm, 400mm, 600mm, 800mm, & 1000mm Units

Throughputs from 1,450 kg/hr to 7,250 kg/hr

And between 50 to 250 Strands

Robust designs, production ready for decades.

- Suitable for a wide range of thermoplastic polymers
- Used for conventional and water slide systems.

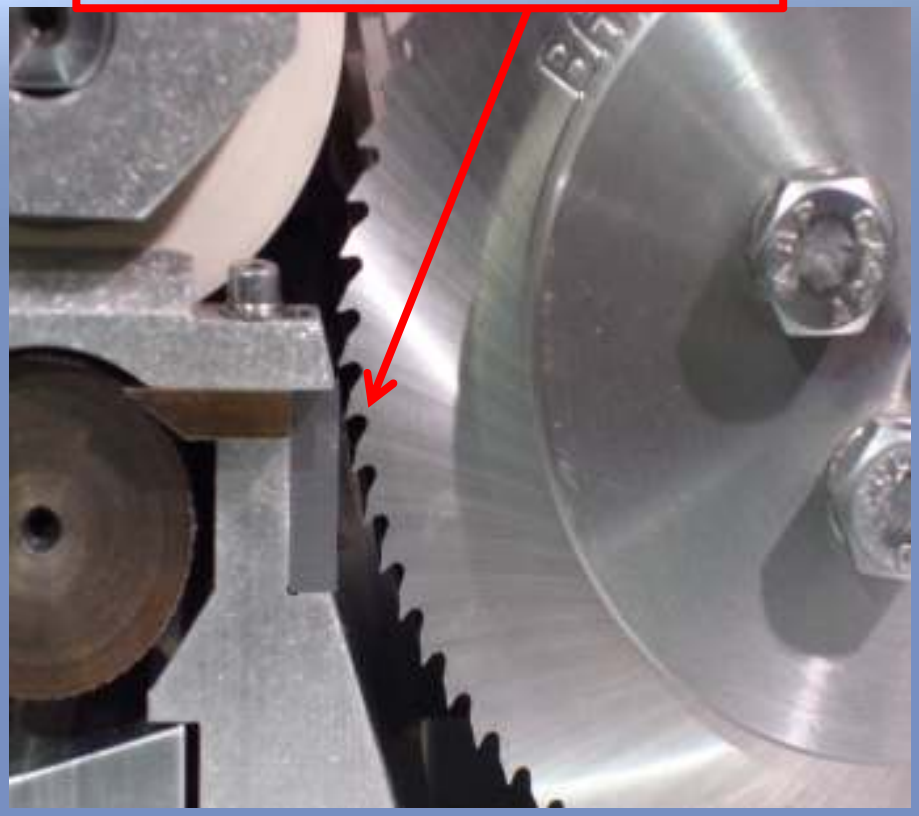
DX Series Large Production Strand Pelletizers

- Utilizing a push/pull bed knife to adjust the cutting gap
- Bed Knife uses the full length of the rotor cutting surface.
- Simple Clean Out
- Easy to Maintain

- Pneumatic cylinders mounted on cutting chamber cover to apply pressure to upper feed roll for best possible pulling force.
- Available with Stellite, Tool Steel, or Wedge Lock rotors.
- Available with various feed roll options, knurled, smooth, Serrated, or covered.

MICRO Strand Pelletizing Systems

Patented Rotor with High Tooth Density
72-120 Teeth (low wind generation)



Micro Pellets

MICRO Pellets
(Patented)

Micro Pellets are pellets that 1mm or less in size

- Traditional pellets are 0.125” x 0.125” (3mm x 3mm)
- Micro pellets can be as small as 0.010” x 0.010” (0.25mm x 0.25mm).

Benefits of Micro Pellets over traditional pellets

- Enhanced process ability resulting from smaller pellet size and larger surface area (twice that of traditional pellets/weight).

Micro Pellets Replace Messy Powders

- Easier automated loading
- Potentially structurally stronger end products
- Superior color matching
- Fewer feed problems
- Greater bulk density

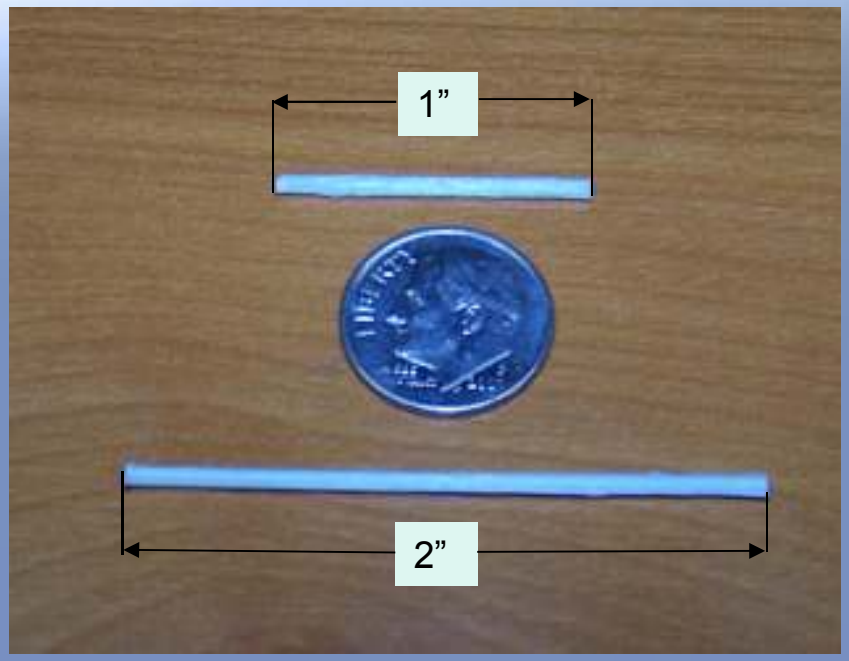
PULTRUSION

Strand Pelletizing Systems

Long Fiber Pellets

PULTRUSION SYSTEMS

Pelletizing Equipment for Long Fiber Material



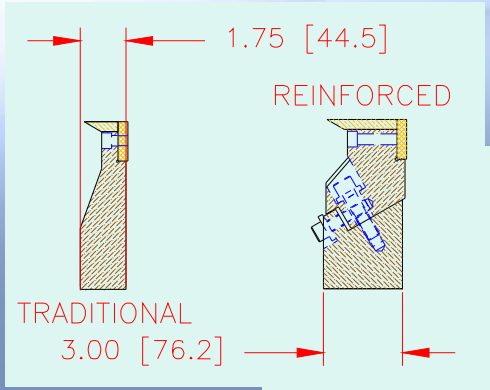
Pellet lengths vary from 1/8” to 2”

Long Fiber Pellets

- Materials
  - PP, Nylon 6 & 66, Polyurethane, PC, Polyester, PET, PBT, PPS, PES, PEI
- Fiber glass, carbon, stainless steel, Organic/Natural fibers
- Long fiber pellets are used to improve material properties in finished goods
  - Improved Mechanical Properties
  - Light Weight
  - Non-Corrosive
  - Metal to Plastic Conversions

PULTRUSION SYSTEMS

Pelletizing Equipment for Long Fiber Material

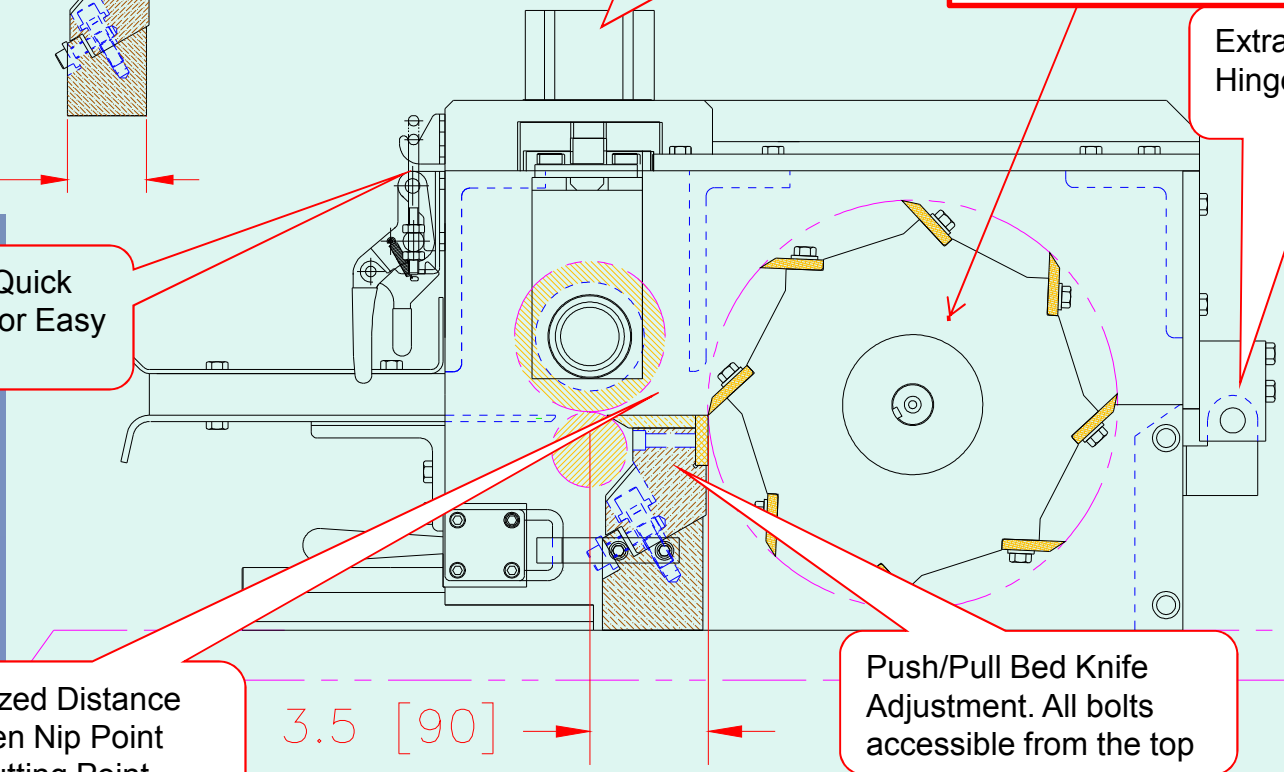


Cylinder mounted on cover for unobstructed access to the cutting chamber

Rotor Tooth configuration – Designed for application 2-16 teeth

Extra Heavy Duty Hinge Assembly

Locking Quick Clamps for Easy Access



Minimized Distance between Nip Point and Cutting Point

Push/Pull Bed Knife Adjustment. All bolts accessible from the top

BPM

MANUAL & AUTOMATED CONTROLS

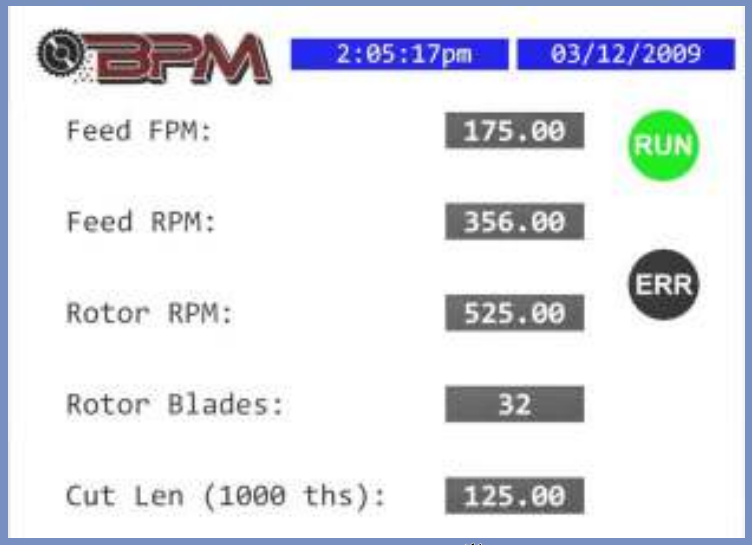
Manual Speed Pots

Intergraded Touch Screen Control

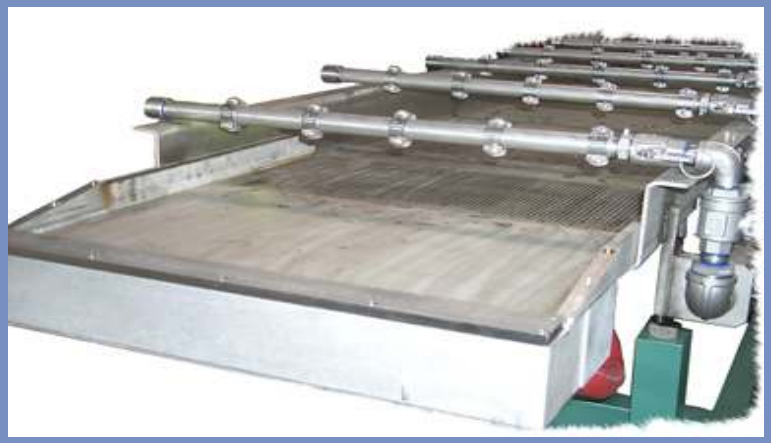
OPTIONAL FEATURES

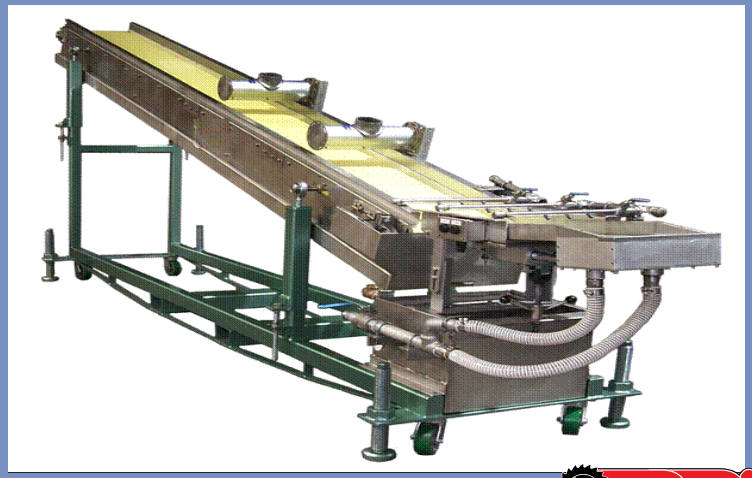
- **Dual Drive Option**
  - Allows customer to change the cut length. Includes a second motor and drive to control the lower feed roll, this in combination with the rotor motor and drive allows the customer to change the length of the pellets by adjusting the speed of the two motors.

- **Digital Pellet Length Control**
  - Utilizes proprietary designed program and a 5.5” touch screen to set the pellet length.
  - The operator will simply have to enter the desired pellet length on a pop up number pad, and the program will control the drives to produce the desired pellet length.
  - The strand diameter and line speed is control by either a 10 turn speed pot or up/down keys on the screen.
  - Pellet lengths can be selected between 2” to 0.01” and this system is accurate to +/-0.0005”



AUXILIARY EQUIPMENT

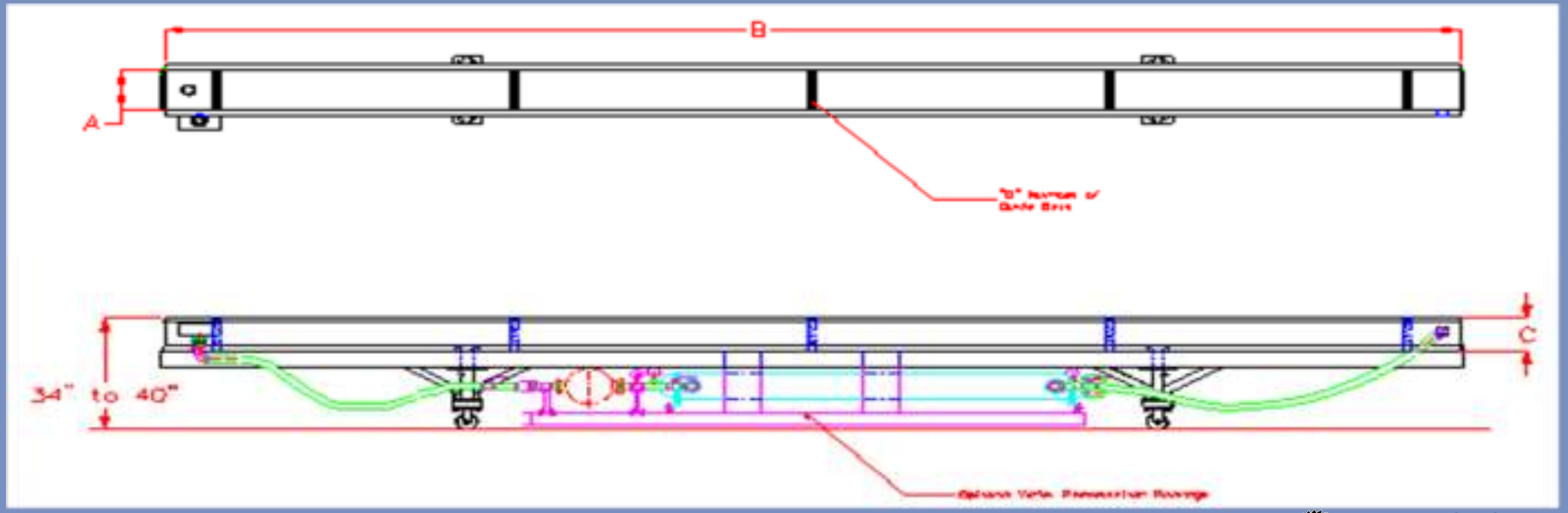




WBX Water Bath

- BPM'S Water Baths are designed to meet the needs of your extrusion line. Made of 304 stainless steel, our cooling tanks are available in multiple sizes to accommodate most extrusion applications. Our rugged painted steel support frames are equipped with heavy-duty support jacks for adjusting the height. A weir box with removable screen is standard along with inlet and drain ports.

- Available options: Water Recirculation System * Automatic Water Make Up Circuit * Stainless Steel Support Frame * "V" Grooved Casters and other special requests



WBX SERIES - Water Baths

(Sizes from 6”w x 6” D x 6’ l to 30”w x 12”d x 30’l)

Adjustable/Removable Spreader Bars

Over Flow Weir

Available Options:

Liner Adjustment moves full tank under die to ease start up

Vertical Height Adjustment

Optional Water Recirculation System

- 5GPM to 180 GPM
- 3k BTU/Hr to 550k BTU/Hr

Water Make Up Valve

AK Series Air Knife

Available in 6”, 12” & 18”
Horsepower varies from 3 to 7.5

Air flow from 950-3,175 CFM

Air Velocity up to 5,900 FPM

Air Nozzle is Opened ended to Assist Start UP.

The blower pulls air through a coarse filter and pushes the airflow into the nozzles. The height of the air nozzles can be adjusted to meet the needs of the line.

The strand guides can be adjusted as necessary to control strands.

VAK SERIES - Strand De-Watering Systems

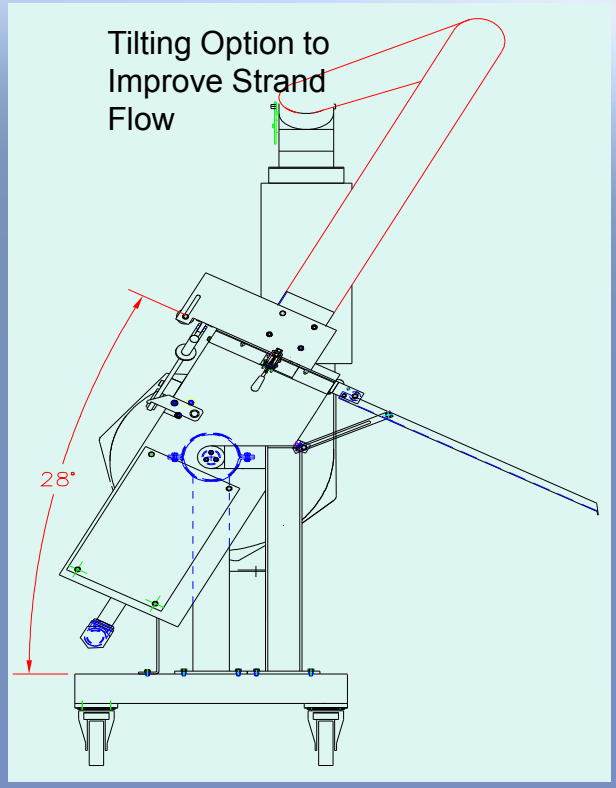
Available in 12”(300), 16”(400), 24”(600), 32”(800)

The VAK dries the strands by a combination of air pressure and vacuum.

The air supply for both pressure and vacuum is provided by a single blower. The vacuumed air is pulled into a demister to separate the water. Water drops to the bottom of the vacuum chamber and is drained by a self regulating valve.

Dual Positive Pressure Nozzles

Vacuum Table

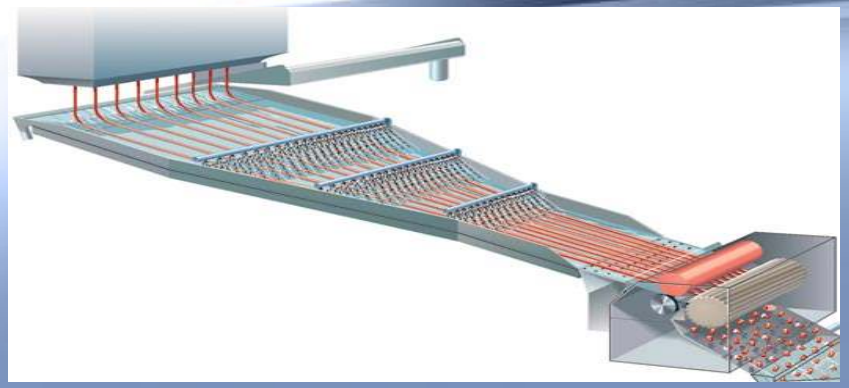


Horsepower varies from 5 to 25HP.

Air Flow from 1650 to 3530 CFM.

AUTOMATED STRAND INFEED –

DRY & WET CUT Water Slide PELLETIZING SYSTEMS

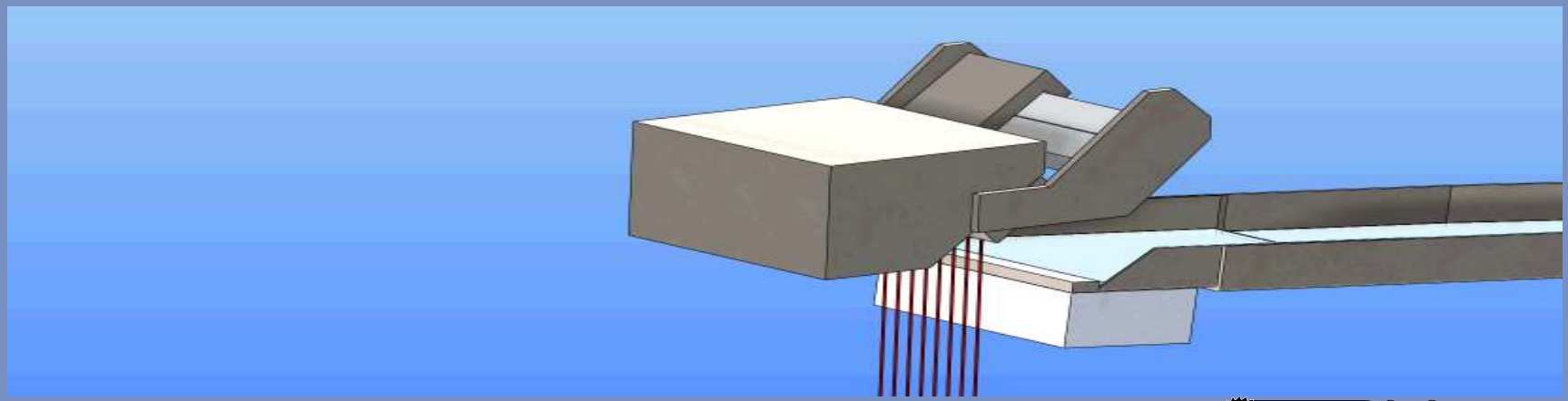


WET CUT Water Slide Systems

- Water is used to convey pellets through the pelletizer

DRY CUT Water Slide Systems

- Water is drained and strands are dried before cutting action



Double click for DRY CUT demo

HORIZONTAL Water Slide PELLETIZING SYSTEM (WET CUT)

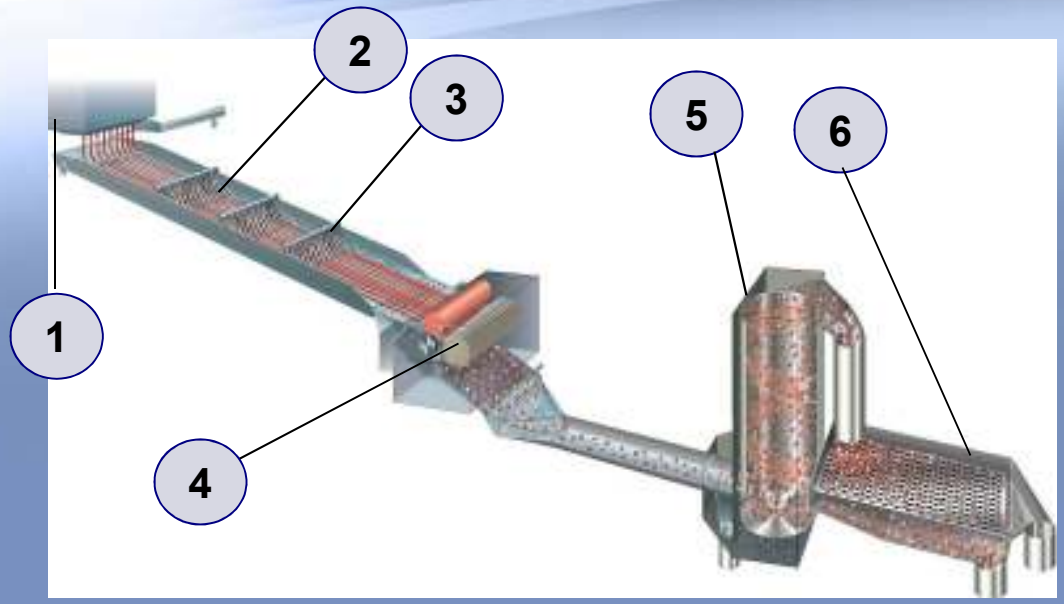
Wet Cut Water Slide Systems

- Strands are conveyed down the water slide to the feed rolls.
- Spray bars are used to improve cooling
- Some water is drained just before the feed rolls and transferred through the cutting chamber
- Cut pellets are dropped back into the water, allowing post cut cooling and conveyed to the dryer.

Wet Cut water slide w/conical trough

- Die widths can be twice that of the pelletizer infeed.

Water Slide Pelletizing System



Water Slide System Layout

1. Die
2. Water Slide
3. Spray Bars
4. Strand Pelletizer
5. Spin Dryer
6. Classifier

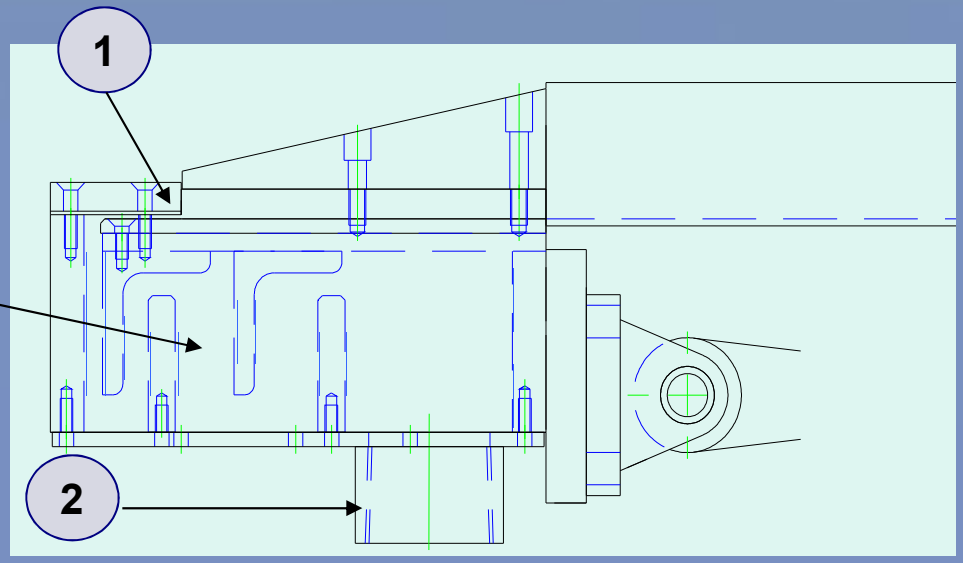
Polymer Strands are carried into the Pelletizer via the water movement down the slide

- Material cooling properties determines the length of the water bath
- Dropped strands are automatically feed into the pelletizer
- Suitable for master batch, compounding, and engineering plastics.

Water Slide Sluice Box

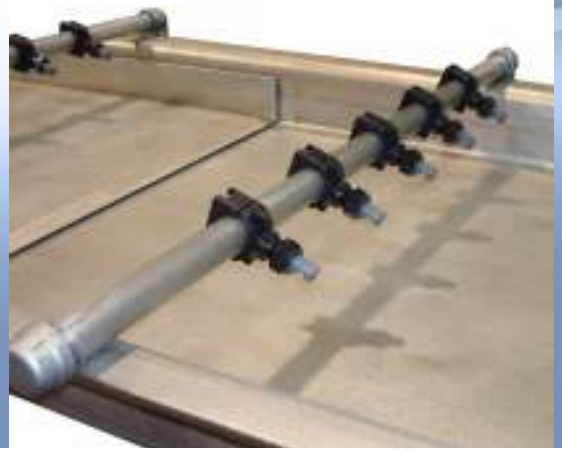
Bay Plastics offers a bolted sluice box, with adjustable water discharge, improving and controlling the laminar flow of water.

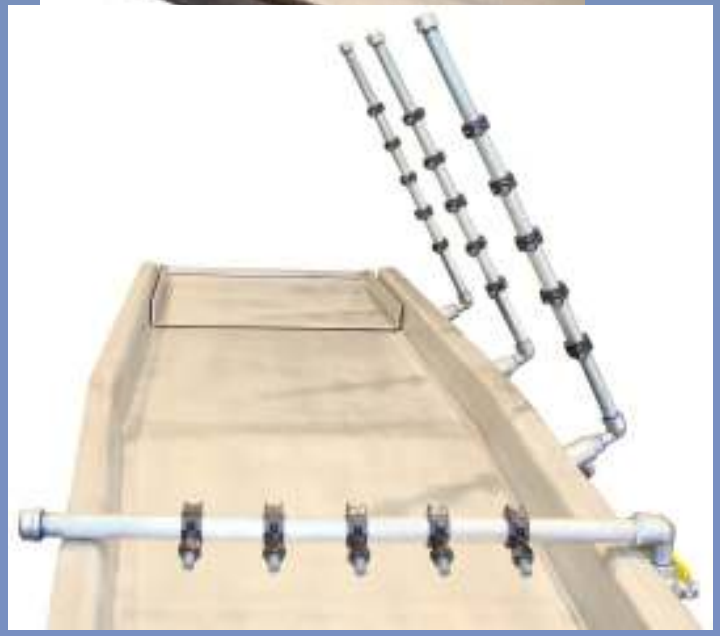
The competition does not have the ability to control or change the water discharge, because they don't adjust the discharge.



1) Water Discharge (adjustable)
2) Water Supply
3) Water Tamer Section

Water Slide System





Water Distribution Manifold

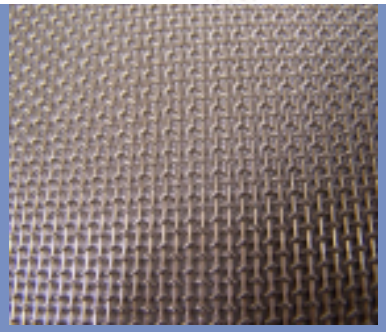
- Polymer tipped spray nozzles, with flip up bars
- Flow meters for spray bars and post cut cooling
- Start up surge valve (optional)
- Low flow, flow meter (retracts sluice tray if water flow is below adjustable level).
- Water trough height adjustment

AUTOMATED STRAND INFEED –

Water Slide With Vacuum Belt Conveyor

(Dry Cut)

PET Belt Material



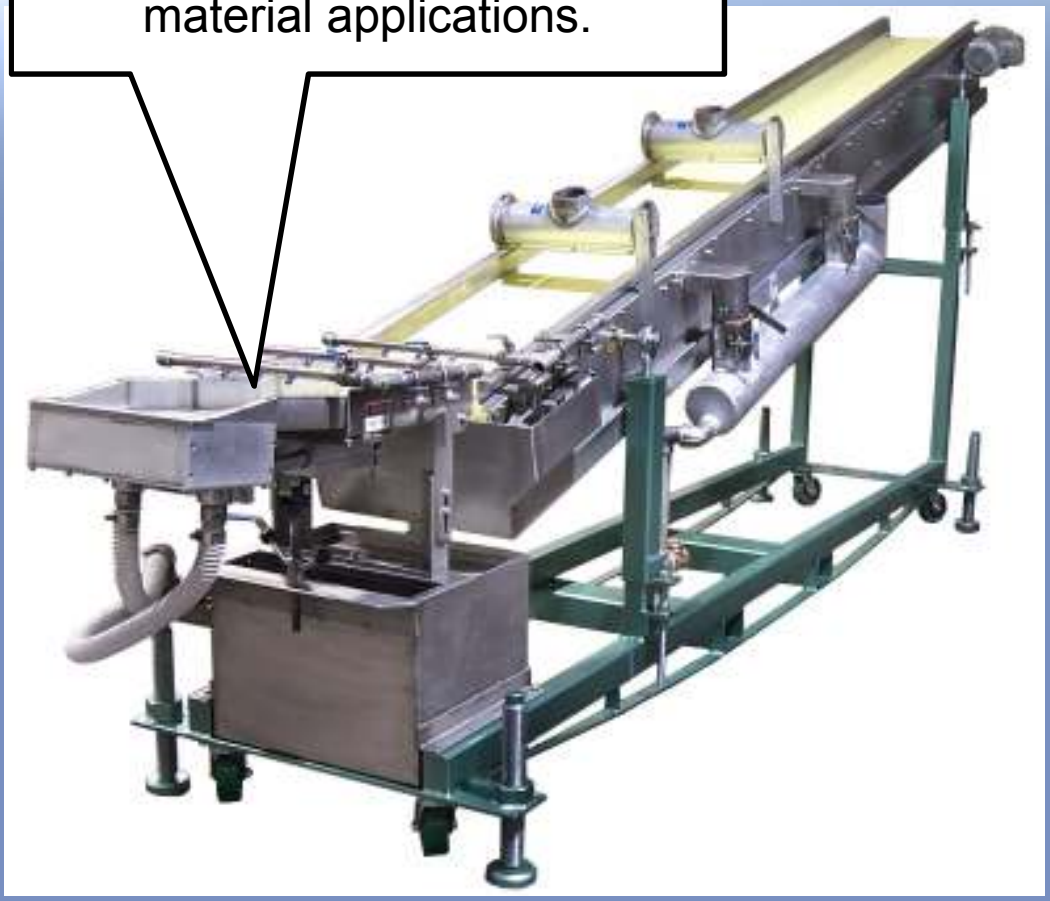
Stainless Steel Belt

Dry Cut Water Slide System w/Belt Conveyor

- Strands exit the die and are conveyed down the water slide to the belt conveyor
- At the transition between the water slide and the belt conveyor, the water is drained.
- Spray bars can be added on the belt conveyor to offer additional cooling if necessary.
- A vacuum is pulled under the belt to remove, and control residual water from the strands.
- Broken strands are automatically feed into the pelletizer.

Water Slide With Vacuum Belt Conveyor

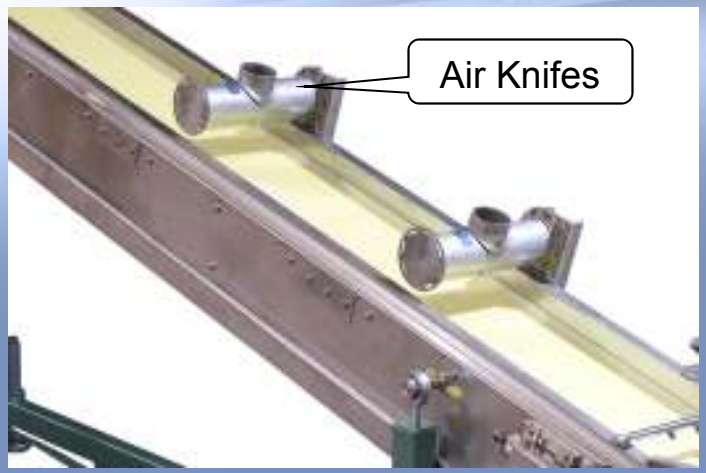
custom designed water slides and conveyors for different material applications.

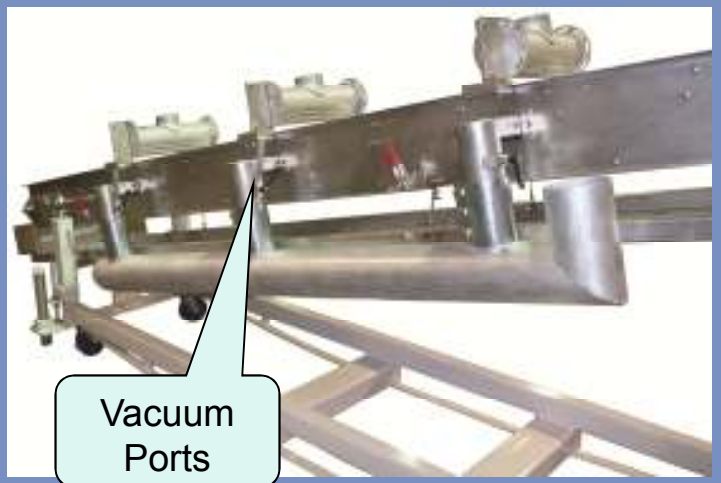


Dry Cut Water Slide System w/Belt Conveyor

- Available with vacuum and or positive pressure air (water removal)
- Available with additional spray bars for expanded water cooling section
- Variable length and widths available

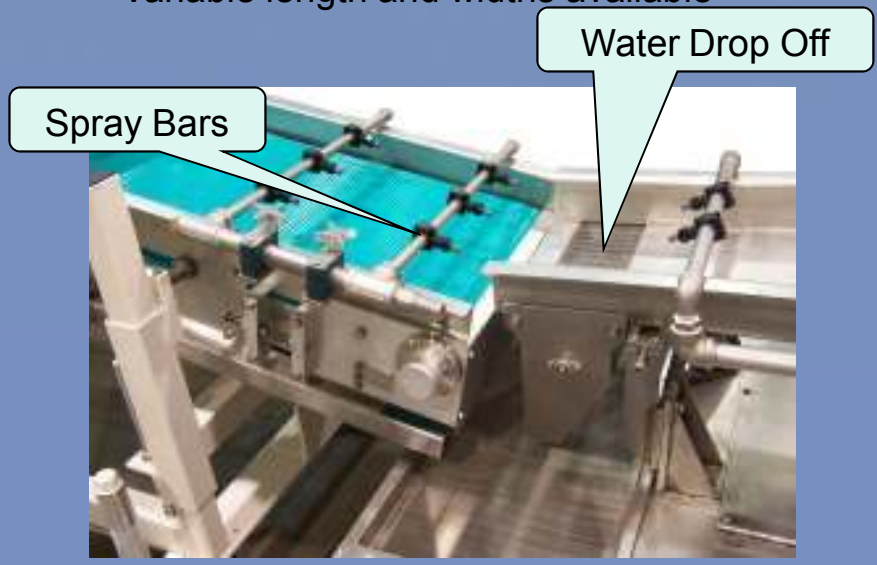
Dry Cut Water Slide Pelletizing System





Dry Cut Water Slide System w/Belt Conveyor

- Available with vacuum and or positive pressure air (water removal)
- Available with additional spray bars for expanded water cooling section
- Variable length and widths available



Water Free Pelletizing

From Flooding the Material with Water

To Eliminating or Reducing Water Contact

Water Free Pelletizing

Typically as material is extruded it is submerged in water for a period of time to solidify and cool the material. This cooling can be done before or after the cutting process it is material dependent.

There are materials that can not be cooled in water.

- These materials may be water soluble,
- extremely hydroscopic,
- or simply the water may have a negative impact on the final product

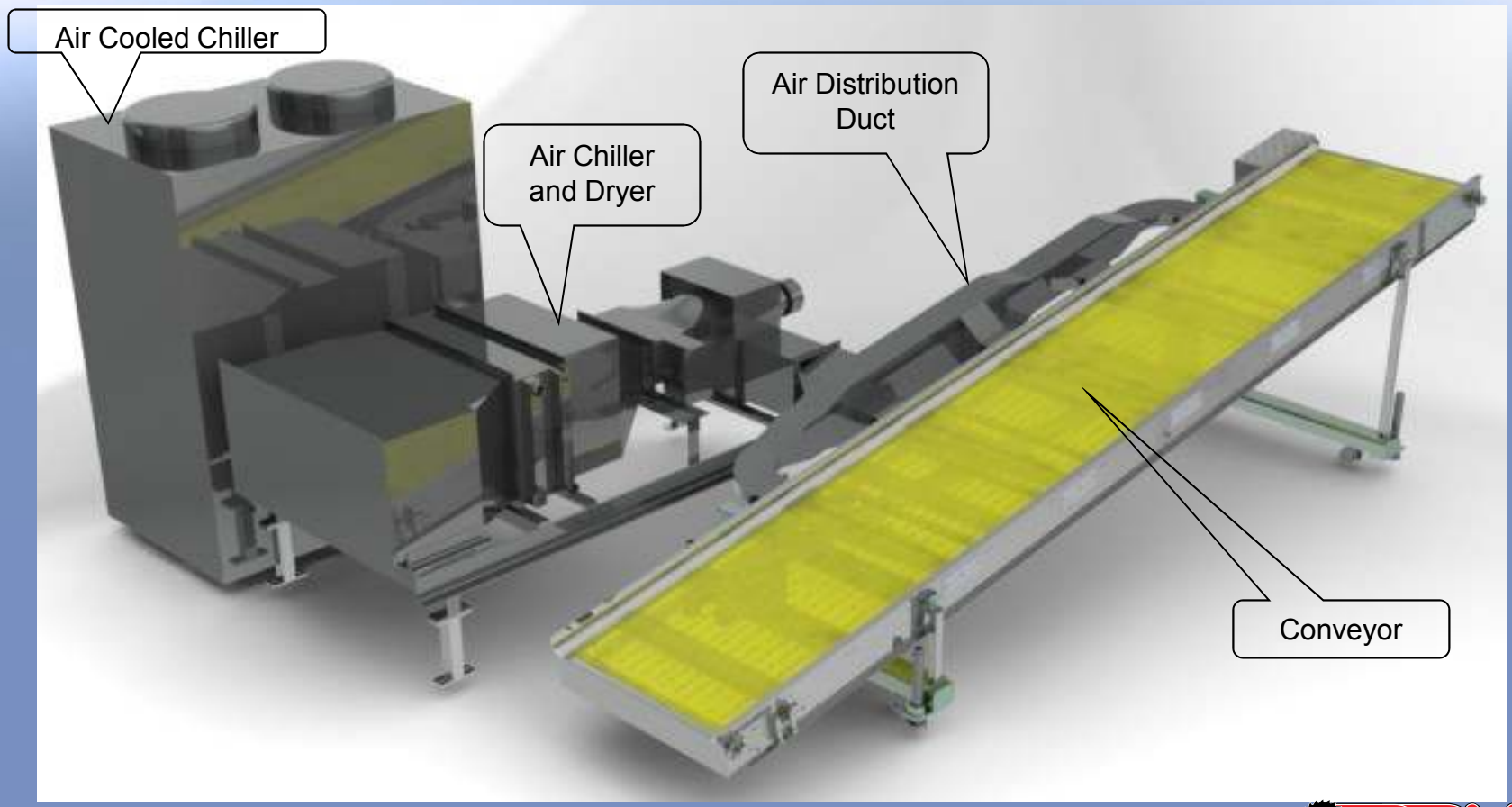
Manufactures have been developing systems to cool the material with Air.

- Ambient Air – Difficult to control due to climate
- Chilled dehumidified air - expedites the cooling process.
- These systems typically use open mesh belt conveyors to move the material from the die to the pelletizer.

Some materials are tolerant to small amounts of water to be used. In these applications a fine mist of water is applied to the material, the heat from the resin will evaporate the water. During evaporation process cools the material.

Water Free Pelletizing

Water Free Cooling System



Water Free Pelletizing

Small lab system using compressed air to cool the material.

Larger production unit that used fine water mist in combination with positive and negative pressure air to cool the plastic.

SERVICE & SPARE PARTS

FOR ANY BRAND PELLETIZER

Spare Parts

Bearings and Housings

Bed Knifes and Doctor Blades

Rotor Rebuild

Stellite Rotors

Bolt on Rotors

Rotor Re-sharpening

Rotor Repair and Re-sharpening

Feed Rolls

REPAIRABLE STELLITE ROTORS

BPM'S Stellite Rotor Design

Repaired Rotor

Damaged Rotor

Proprietary Method of Welding Stellite that allows the rotors to be easily repaired if damaged.

Competitive Stellite rotors cannot be repaired without cracking & failure.

Wrap welded stellite Rotors.

- teeth are cut out of the stellite
- has a layer effect between stellite & stainless steel
- repairs to damaged rotors will crack and chip off

DIRECT SUPPORT & SERVICE

BAY PLASTICS MACHINERY

Located in Bay City Michigan, Supporting our Customers Throughout the World.

- On site manufacturing
  - Pelletizing Manufacturing & Assembly
    - Manual Strand Lines (7 Models)
    - Wet Cut and Dry Cut Water Slides
  - Rotor Manufacturing
    - New, Rebuild, Sharpening
- Parts and Service Support
  - For Any Brand Pelletizer
  - Full Time Service Engineers (more than 30 years experience)
  - More than $1M in Spare Parts in Stock

REBUILD CAPABILITY

Specializing in rebuilds of Conair, Rieter, and Cumberland Pelletizers

- Complete Rebuilds of Old Out Dated Equipment
- Complete Cutting Chamber Inspection and Rebuilds
- Meets or Exceeds O.E.M Specifications
- Competitive Pricing
- Quick Turnaround

Basic Information Required for Quotation

1) Number of Strands

2) Materials to be

3) Additives or Fillers
   a)Percentage

4) Specific Gravity of Material

5) Maximum Rate & Minimum Rate

6) Design Rate if Different from Maximum

7) Diameter of Strands

8) Length of Pellet

9) Any Other Special Requests (Feed Heights, Discharge Chute Configuration etc..)

For Additional Information
Please contact:

3494 North Euclid Ave.
Bay City, MI 48706
989-671-9630