



# Ben Ritter

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25 - 27 September • Chicago

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# Converting Heat Shrink Sleeve Labels

## Slitting, Seaming, and Inspection

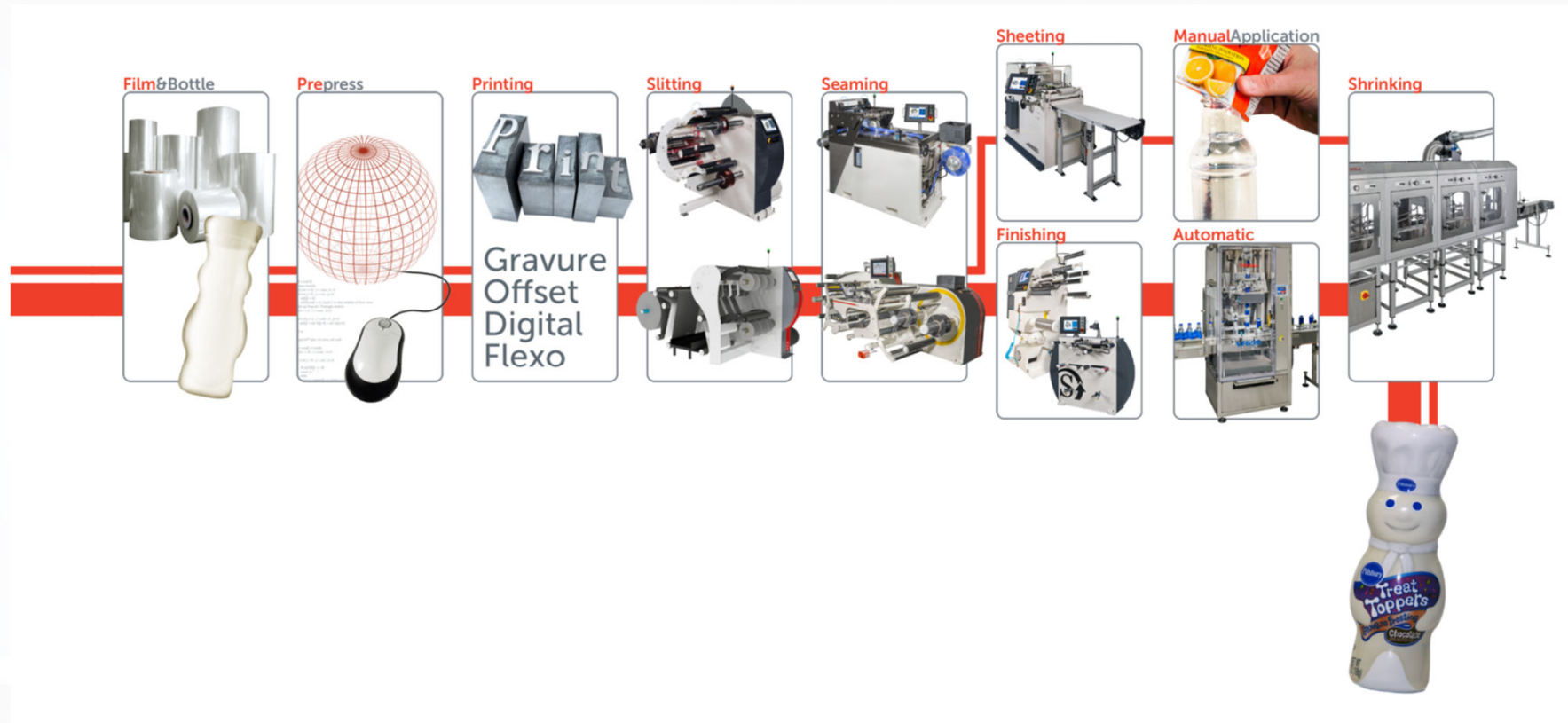


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# The Shrink Process

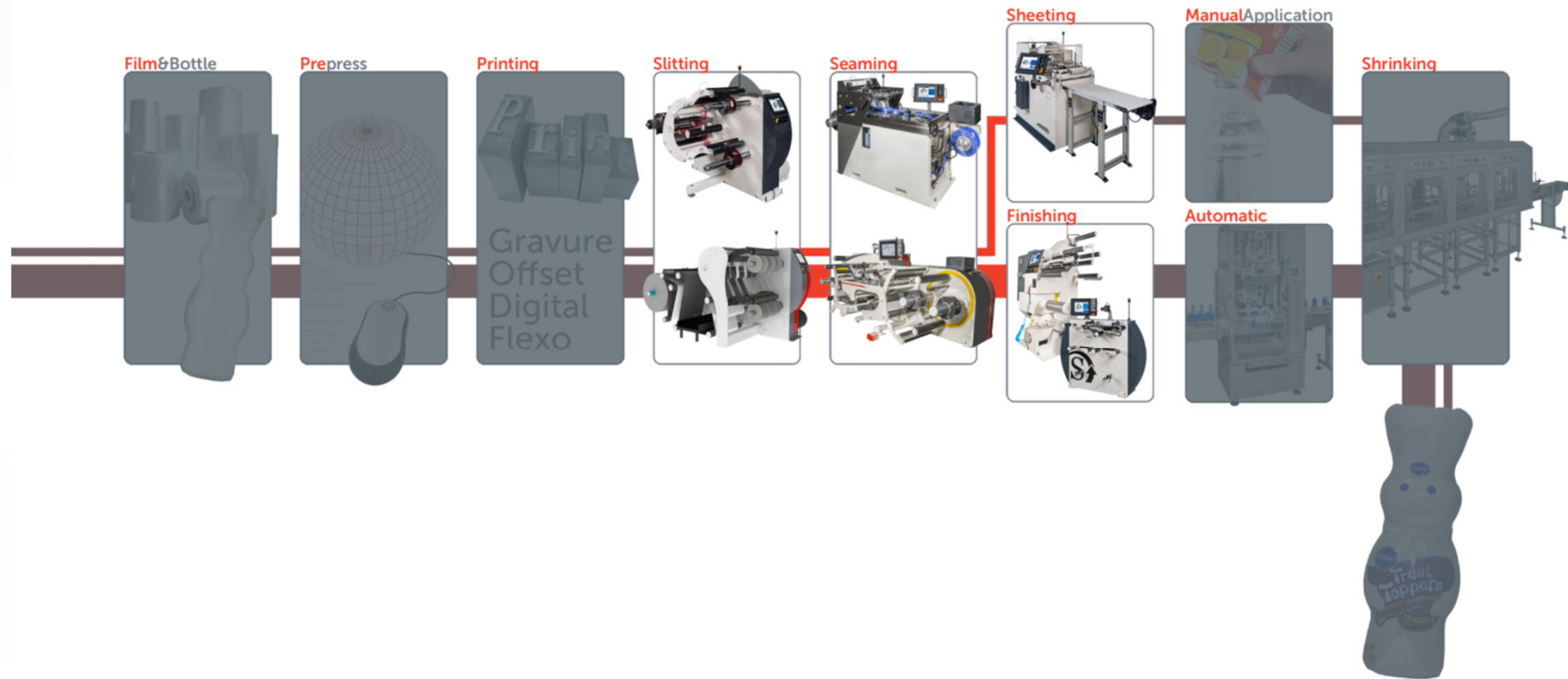


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# Converting Process



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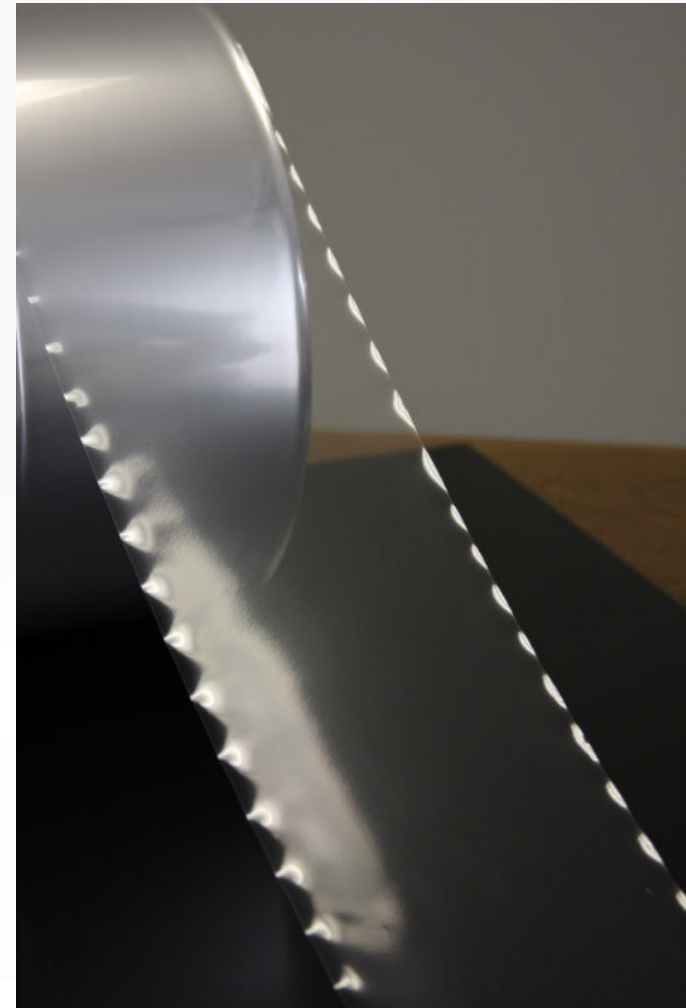
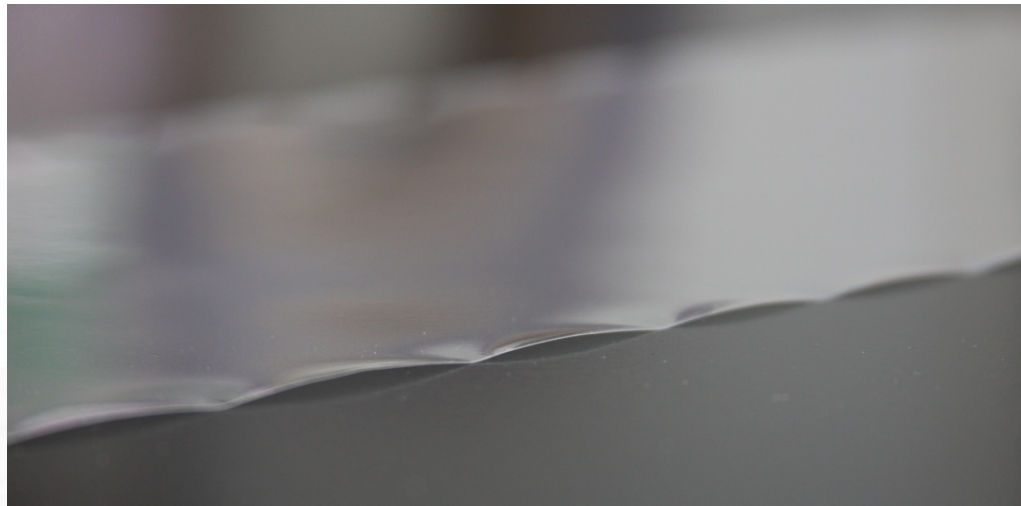
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# Slitting



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# Slitting | What to avoid

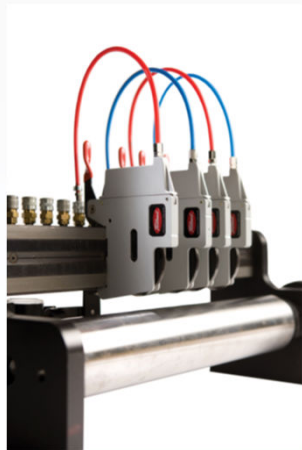


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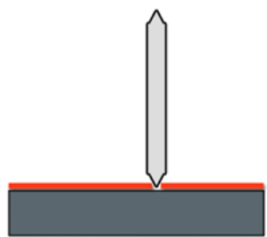
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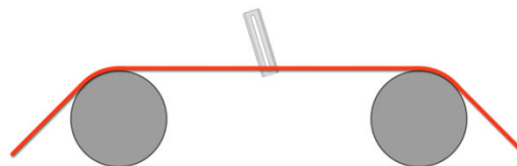
# Slitting Methods



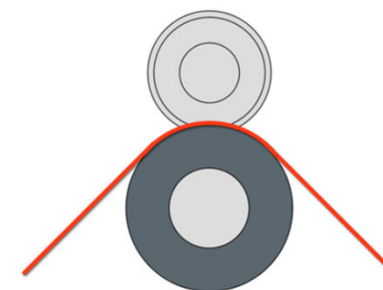
Crush/Score



Razor-In-Air



Shear



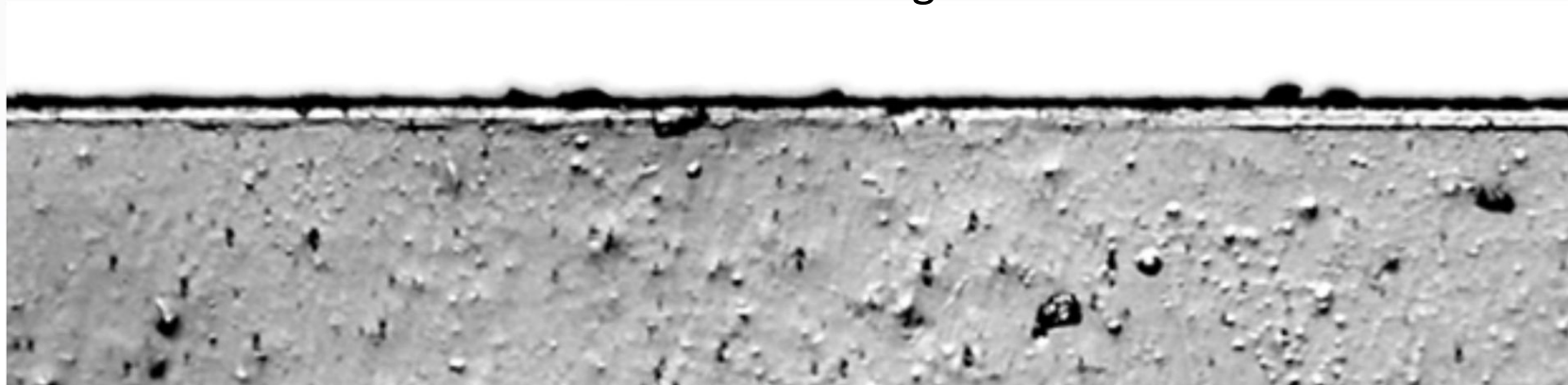
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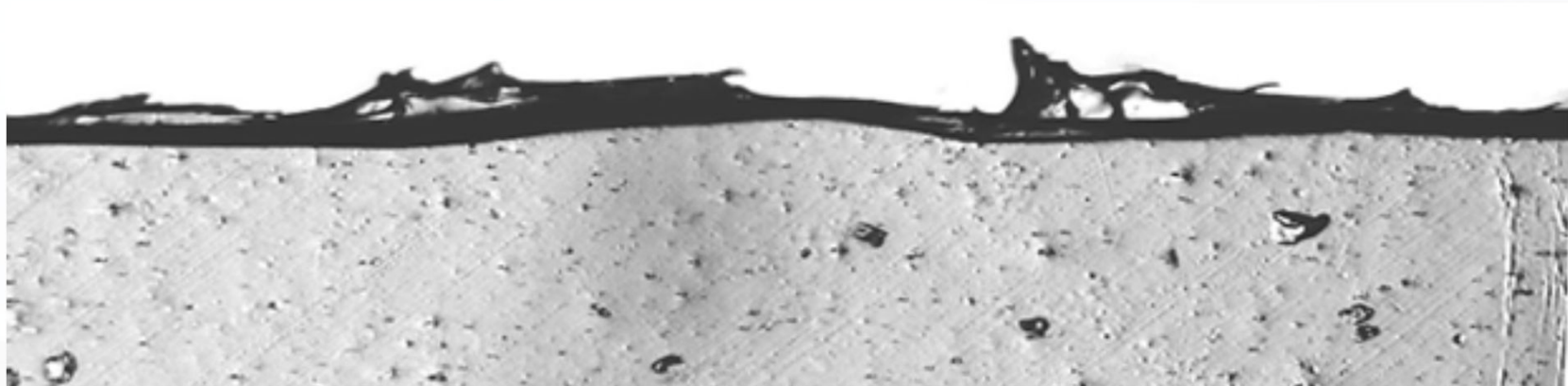
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## Slitting Methods | Shear

Shear is the recommended method for slitting shrink film.



PVC Shrink Film Shear Slit @ 50x



PVC Shrink Film Razor Slit @ 50x



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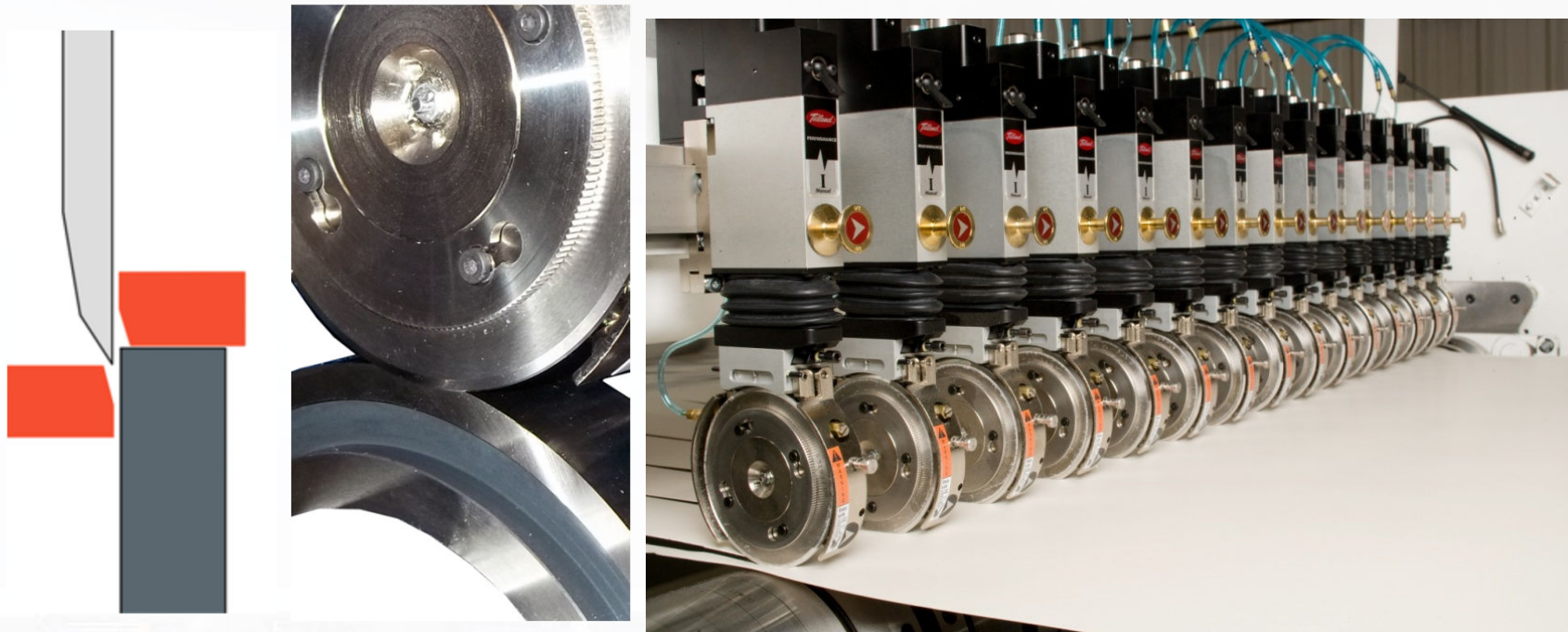
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## SlittingMethods | Shear

The concept of Shear Slitting uses two circular blades to cut a moving web at the point where the two blades contact each other.



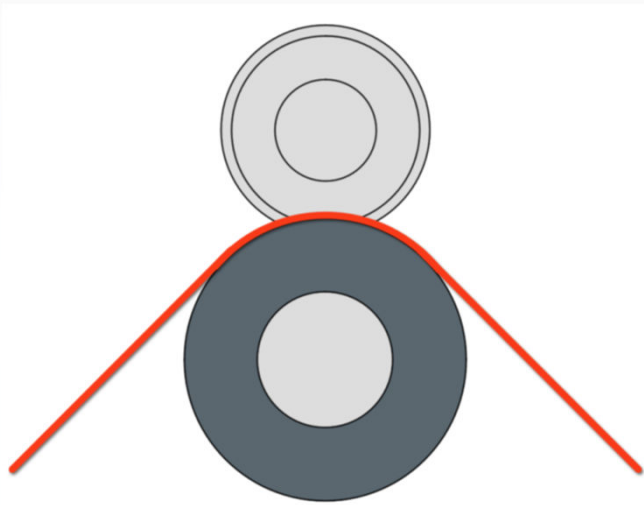
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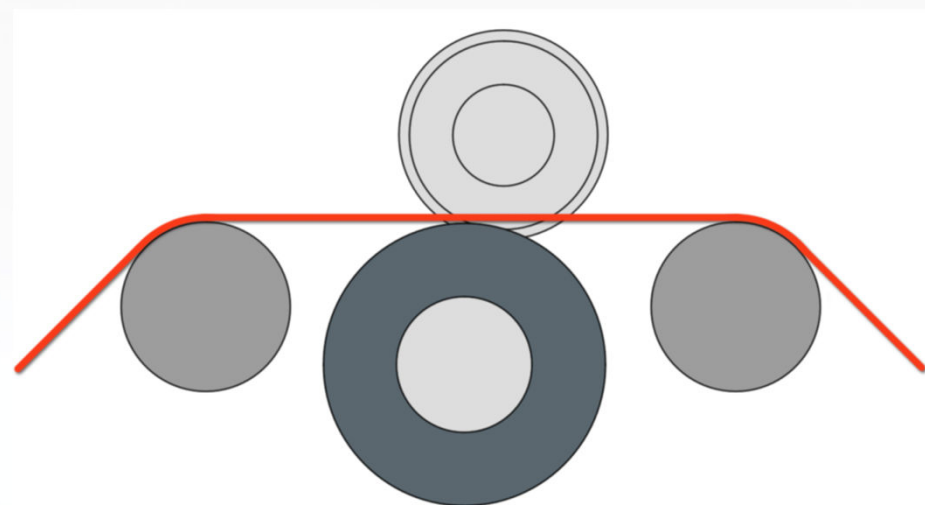
# Shear Slitting | Types

Wrap Shear



- More suitable for thin, flexible webs
- Wrap curvature opposes vertical deflection

Tangential Shear

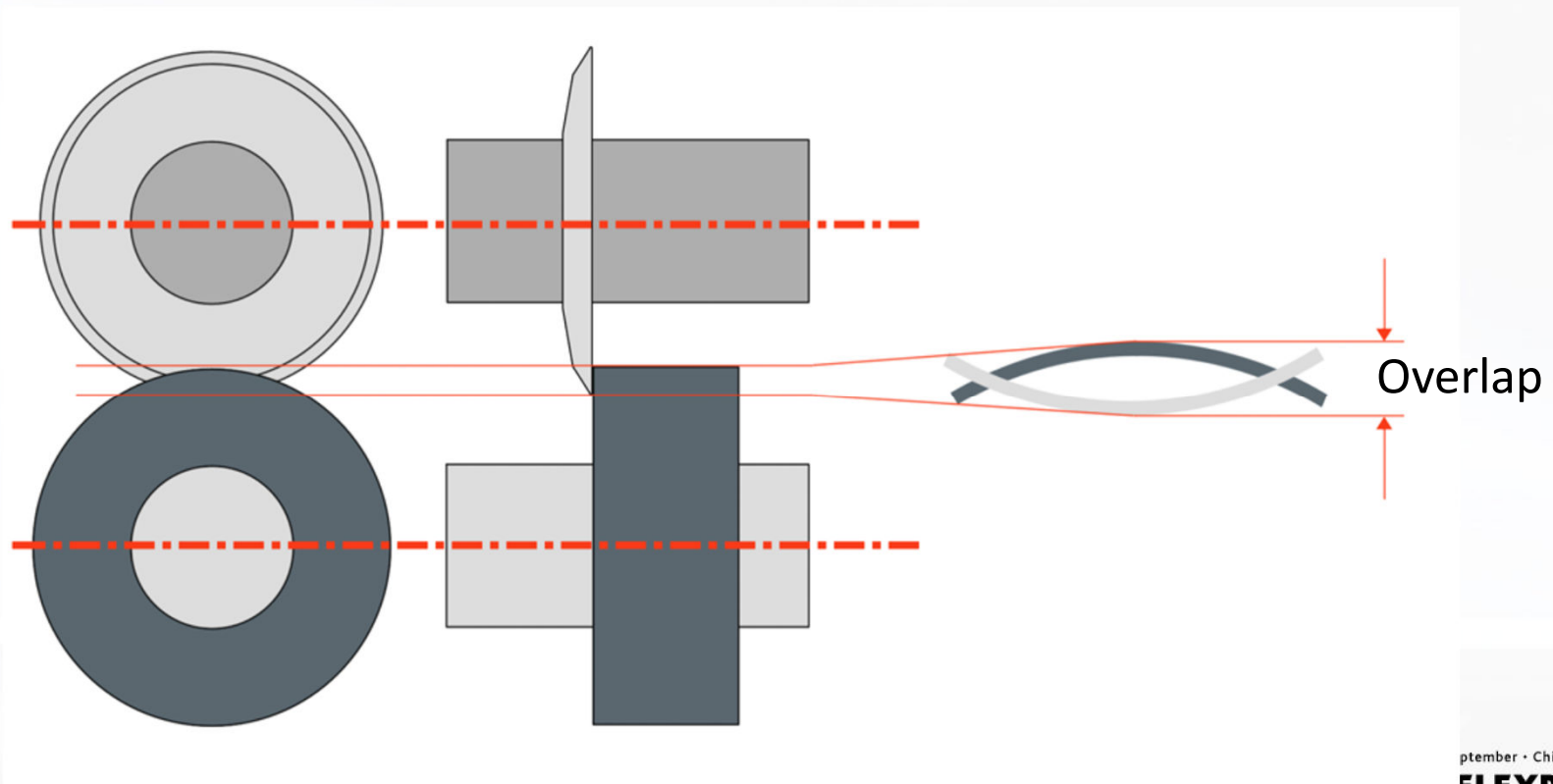


- Especially suitable for thick, more rigid webs
- Flat web geometry does not inhibit vertical deflection



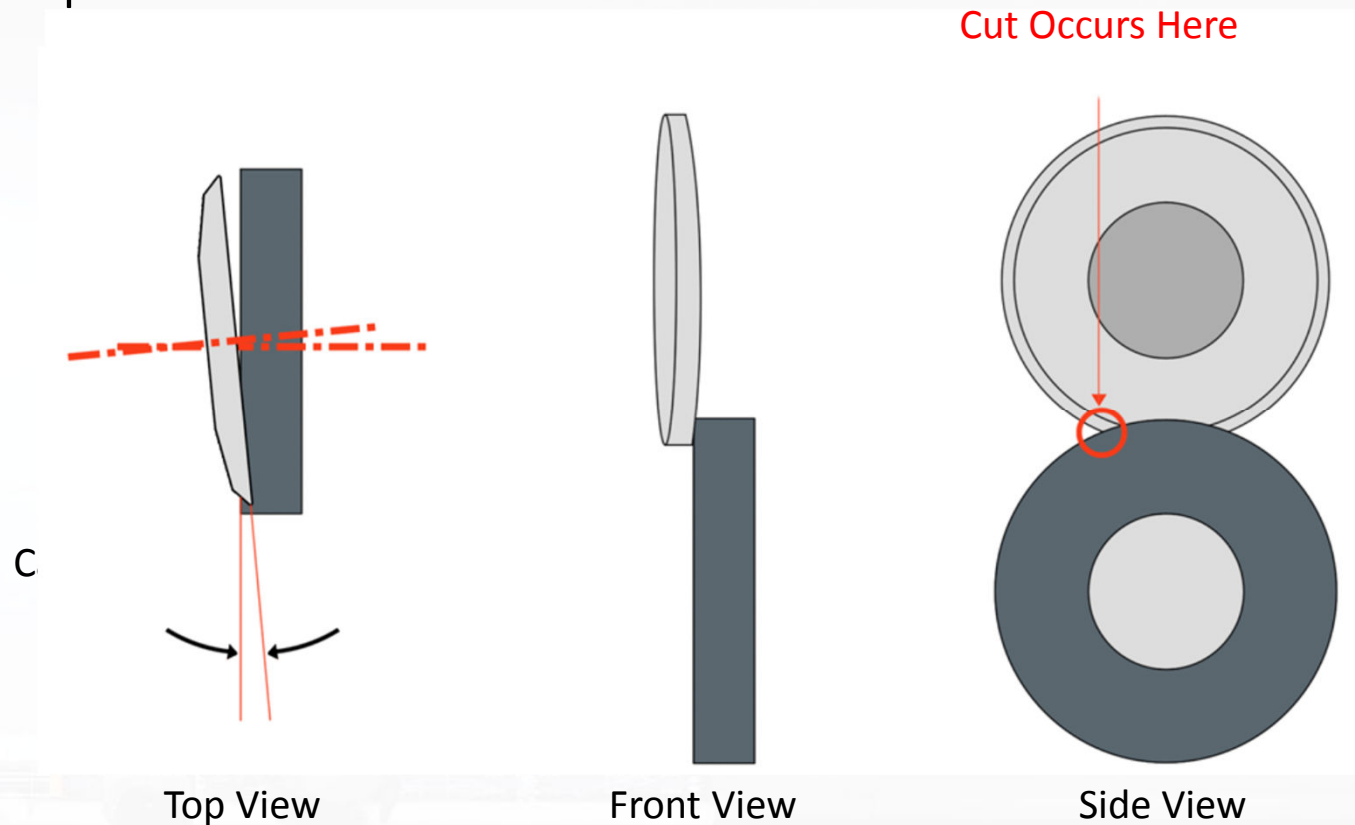
# Shear Slitting | Technical Aspects

The **depth (overlap)** is set by how far the tangent point of the top blade is engaged beyond the tangent point of the bottom blade.



# Shear Slitting | Technical Aspects

The **cant angle** is designed to force the shear knife contact to the overlap entrance point



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# Shear Slitting | Technical Aspects

## Cant Angle (Degrees)

- 0.0° to 0.25°
- 0.25° to 0.50°
- 0.50° to 0.75°
- 0.75° to 1.0°

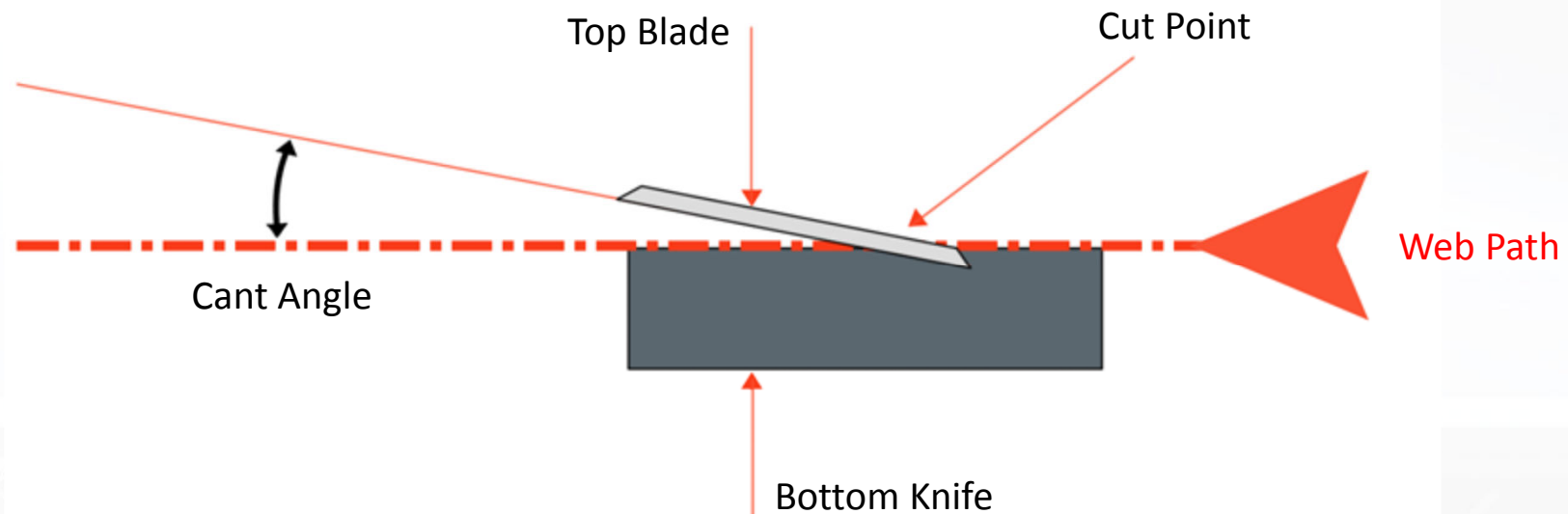
## Material

Metals, Plastic Sheet, Hard Web, Brittle Web

General Purpose Angle, Plastic Film, Laminates

Synthetic Fiber Products, Stretchy Films

Fabrics, Un-bonded, Non-woven



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# Shear Slitting | Technical Aspects

- Typical for Wrap Shear
- Three main **top blade profiles** primary angles of 25°, 45°, or 60°



25°

Thick, low-density webs



45°

Default tangential blade



60°

Stiff, high-density webs



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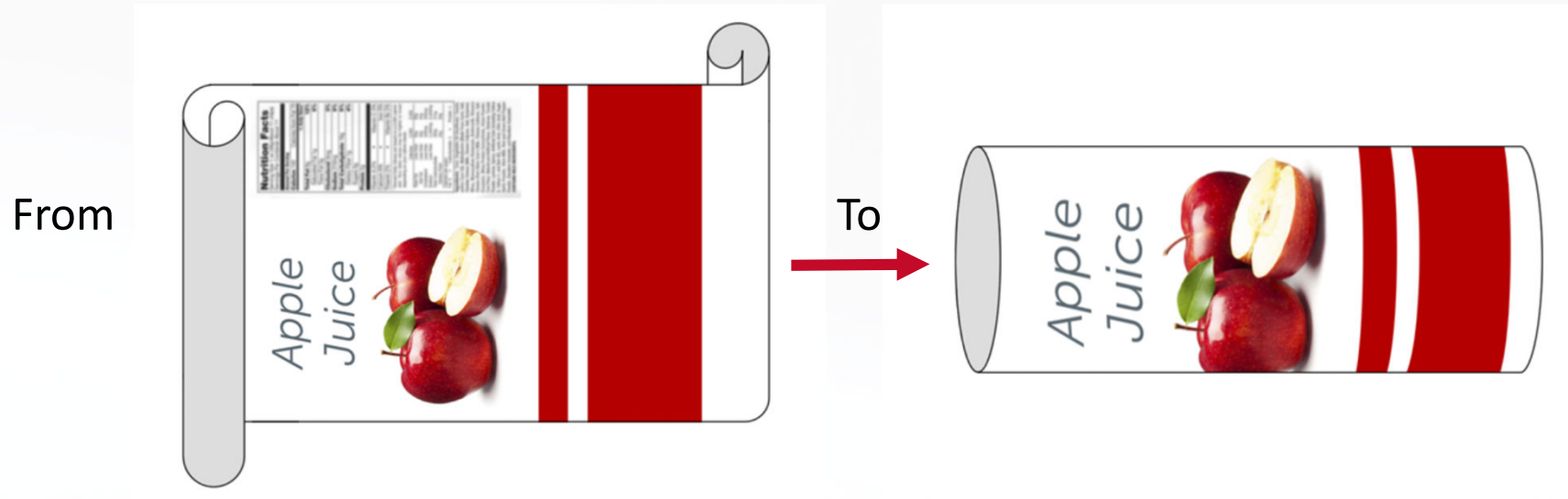
# Seaming Step



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# Seaming Step

- Objective



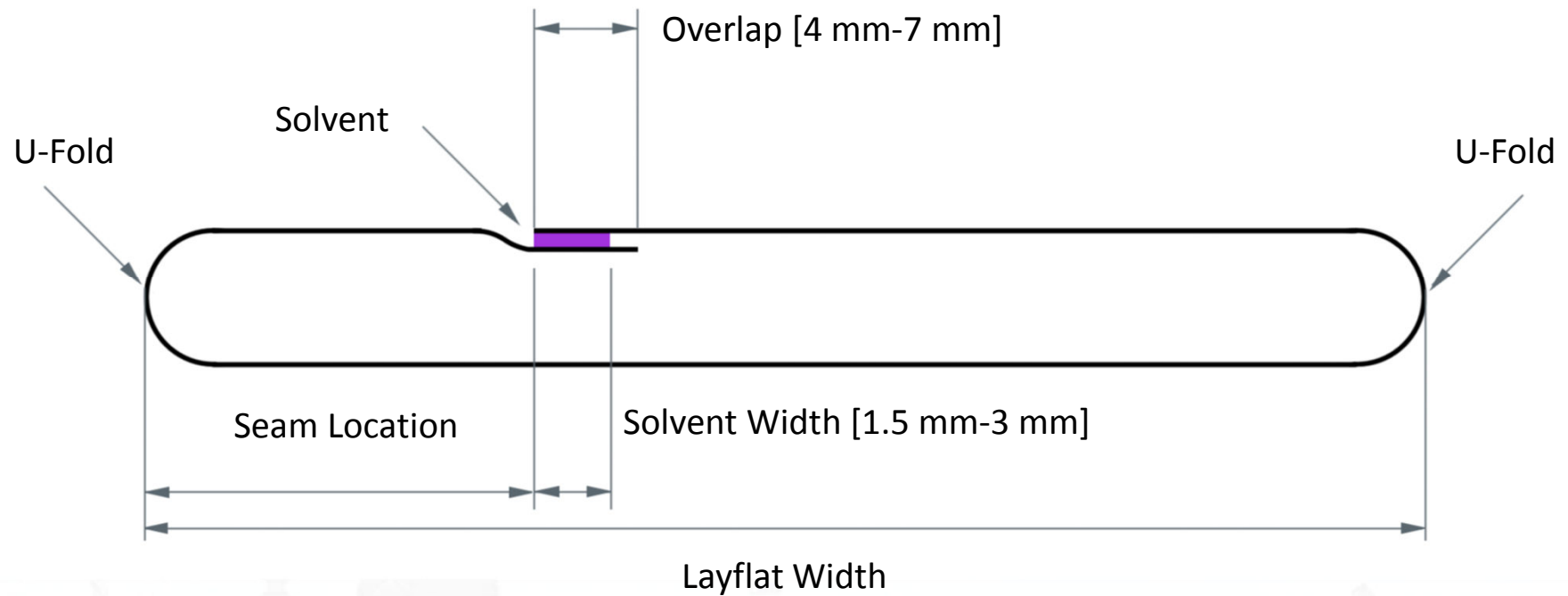
- In order to
  - Maximize throughput (a function of speed and up-time on equipment)
  - Minimize waste (a function of 'ingredients', equipment and the training, knowledge and experience of people)



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# Seaming Step | Terminology



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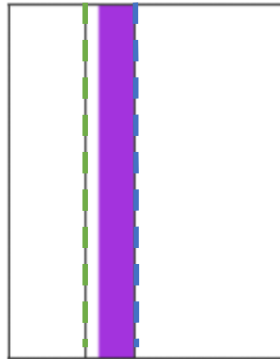
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# Chemical Reaction Areas- Required for Solvent Weld



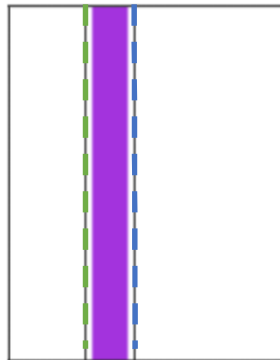
# Seaming Step | What to Avoid

## Good Solvent Placement

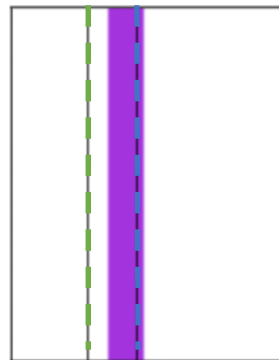


- To the edge, without going over
- Consistent width
- Consistent amount
- Note: Solvent represented in **purple**
- Note: Inside edge represented by **green dotted line**
- Note: Outside edge represented by **blue dotted line**

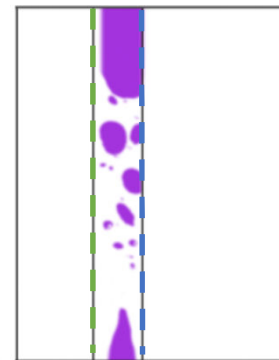
## Bad Solvent Placement



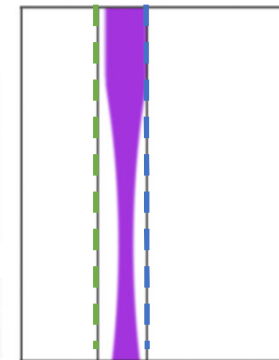
Not to the outside edge  
of the overlap



Past the outside edge of  
the overlap

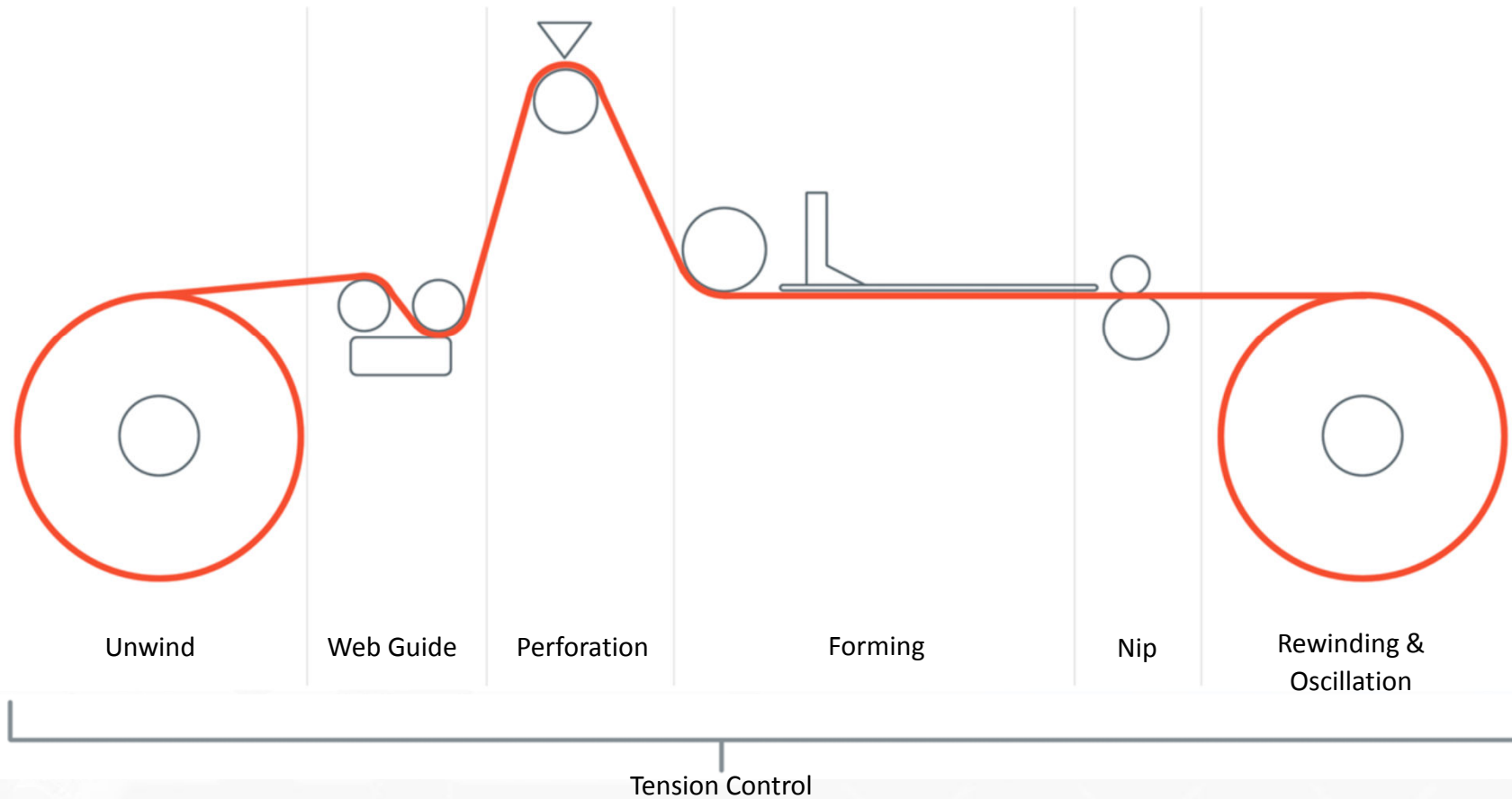


Skips/Voids



Inconsistent  
flow

# Seaming Step | How does it Work?



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# Seamer Concepts | Solvent Control



Gravity Fed



Pressure System



Servo Pump



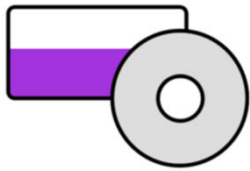
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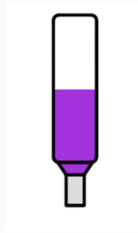
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# Seamer Concepts | Solvent Delivery Methods

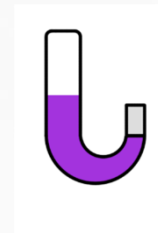
Key elements in the seaming process.



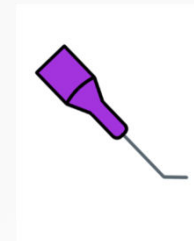
Solvent Wheel



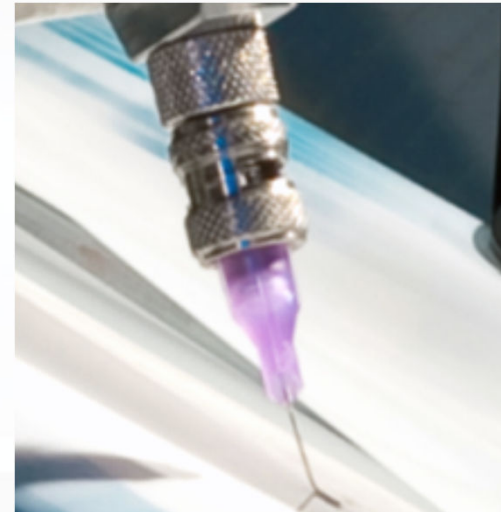
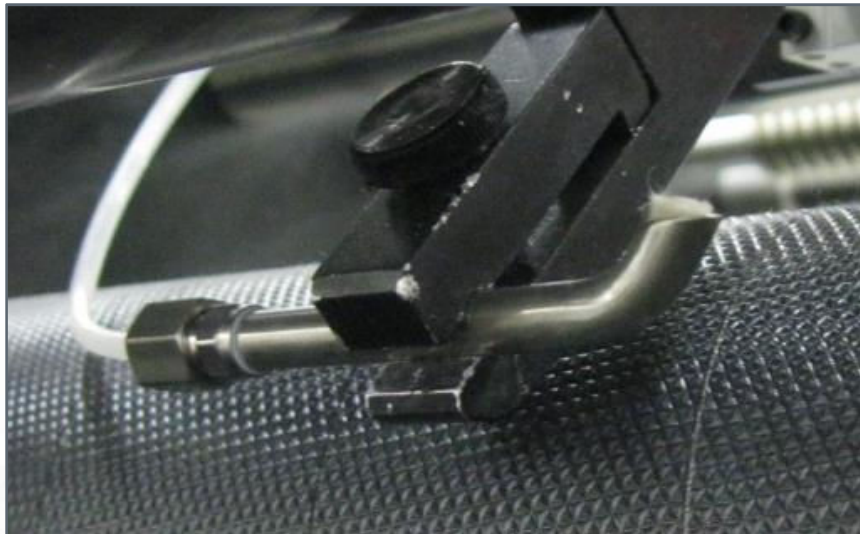
Top Wick



Bottom Wick



Needle



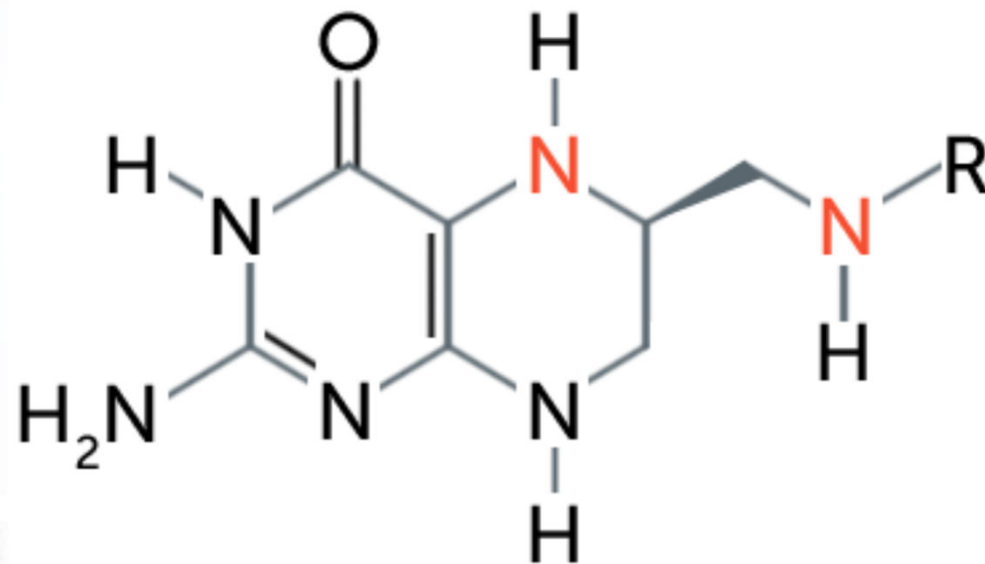
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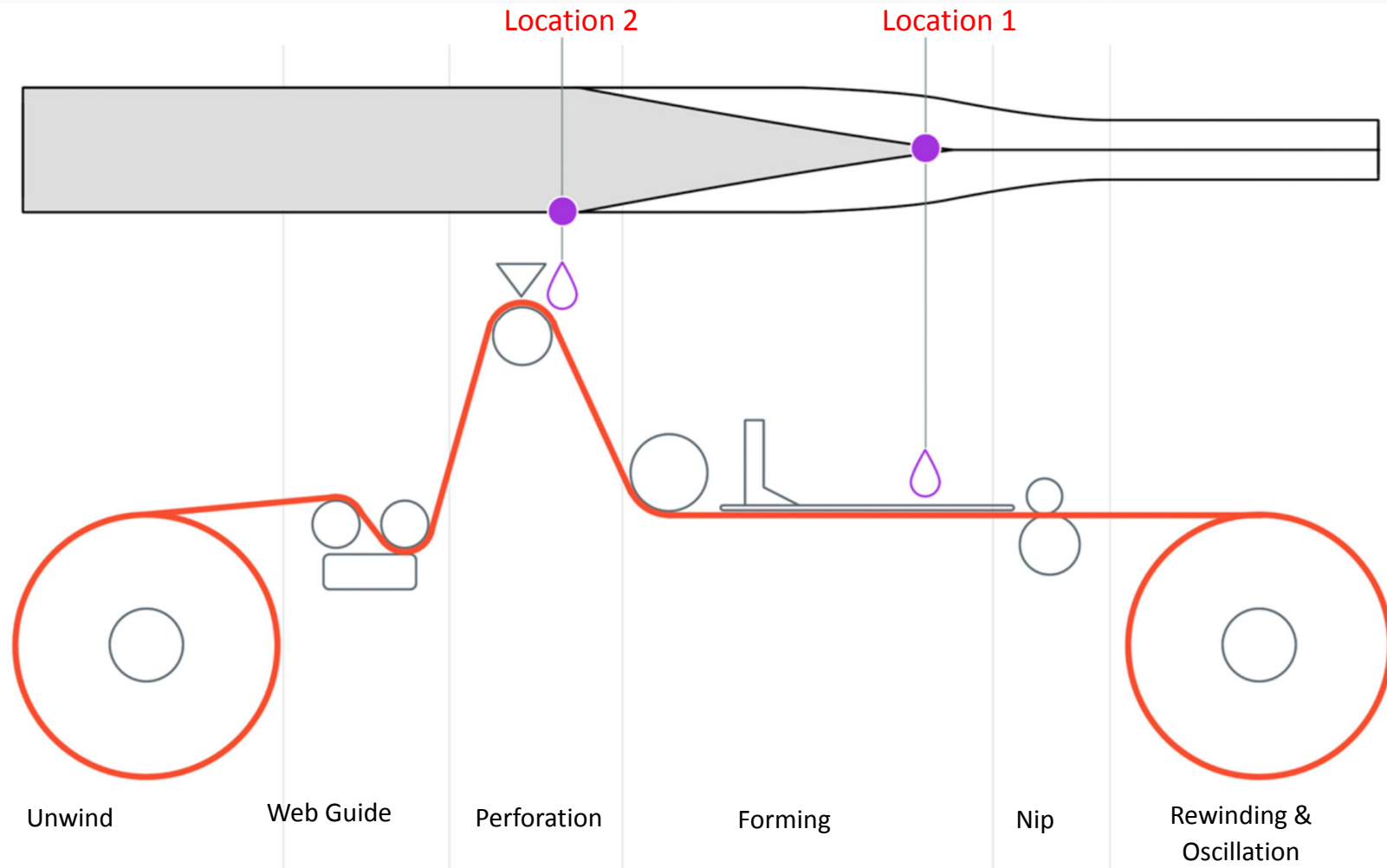
## Seamer Concepts | Solvents

- Not a glue
- Chemistry must be right
- Inexpensive, until you get it wrong



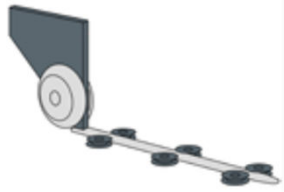
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# Seamer Concepts | Solvent Delivery Locations

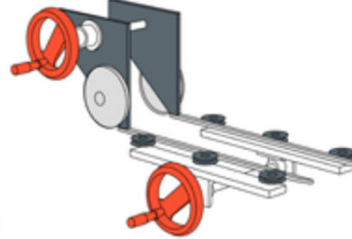




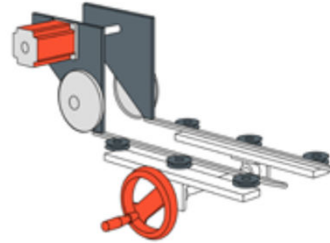
# Seamer Concepts | Folding/Forming



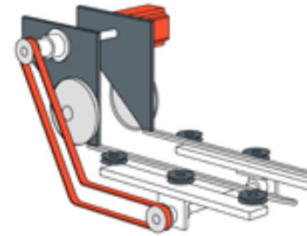
Fixed Size



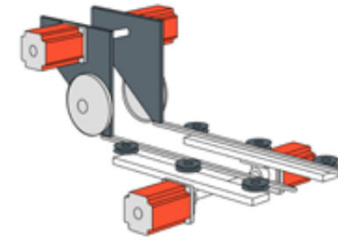
Manual



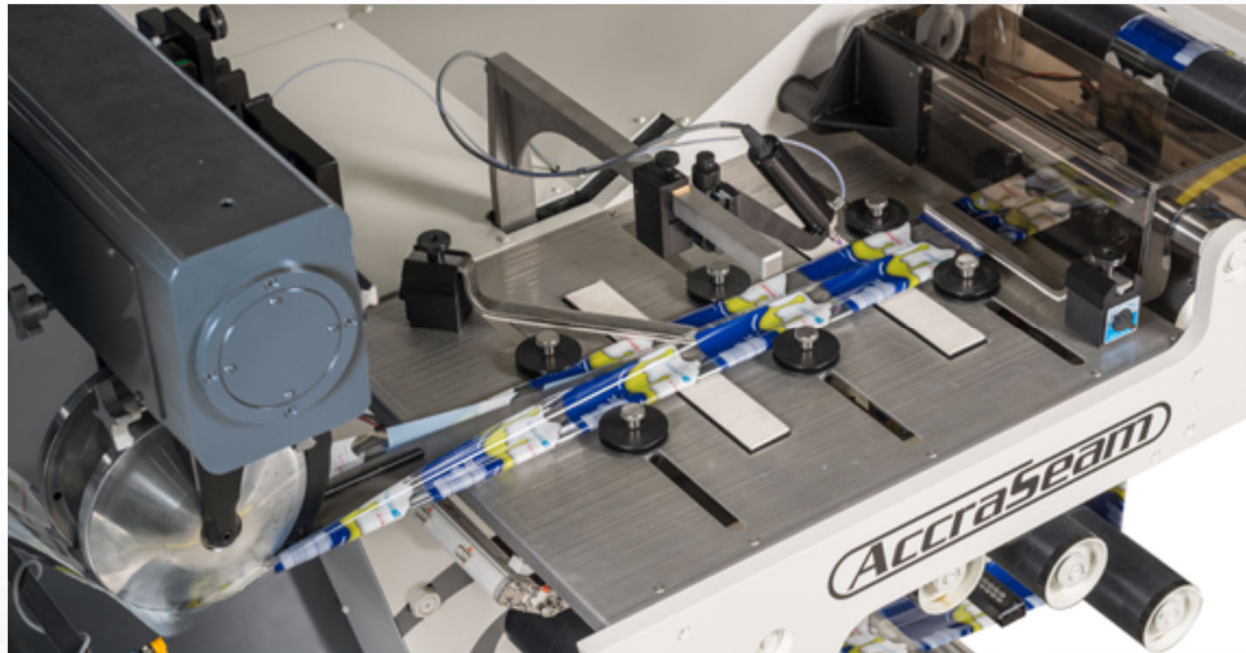
Semi-automatic



Fully Automatic

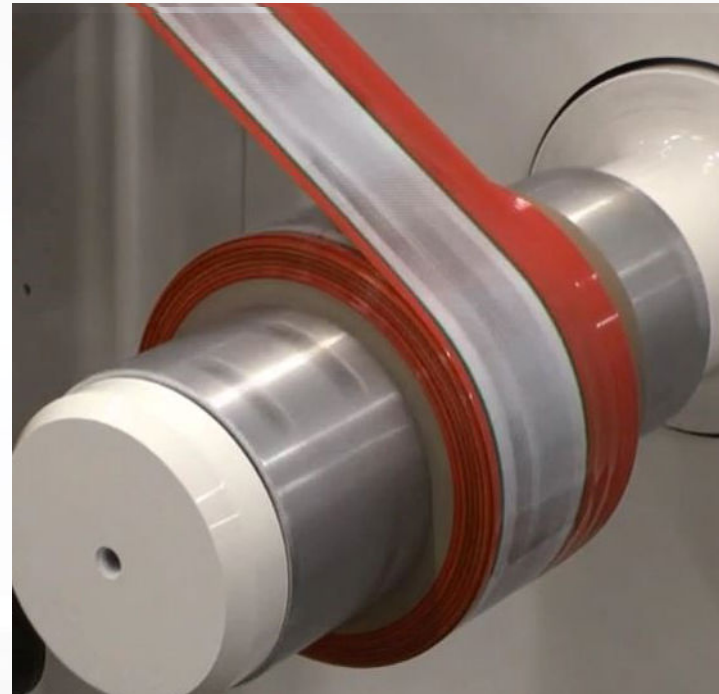
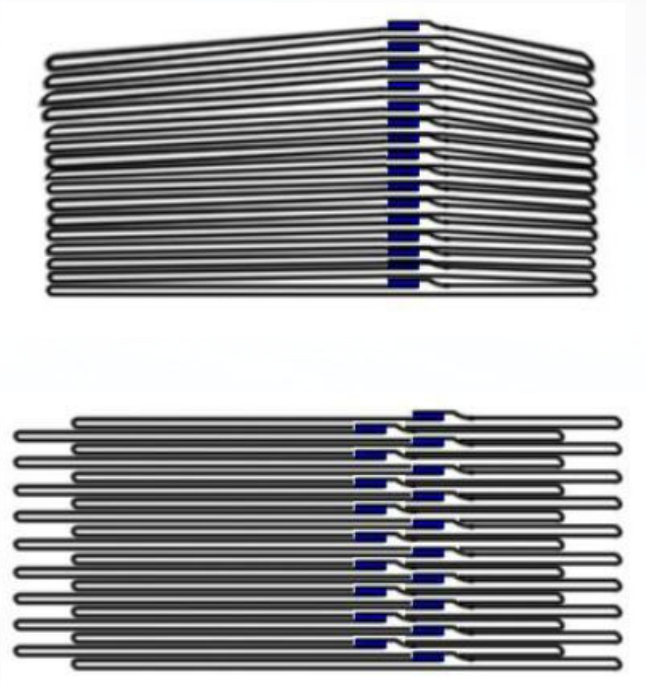


Automatic Table  
With Seam Location



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# Seamer Concepts | Rewind Oscillation



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# Seamer Concepts | Monitoring & Control



Operator



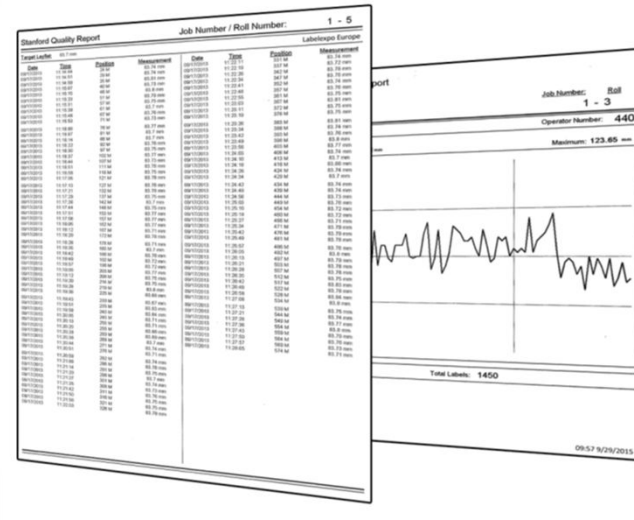
Optical with Indicator



Ultrasonic with Compact Flash



Wide-throat Ultrasonic with On-board Printing and USB Logging



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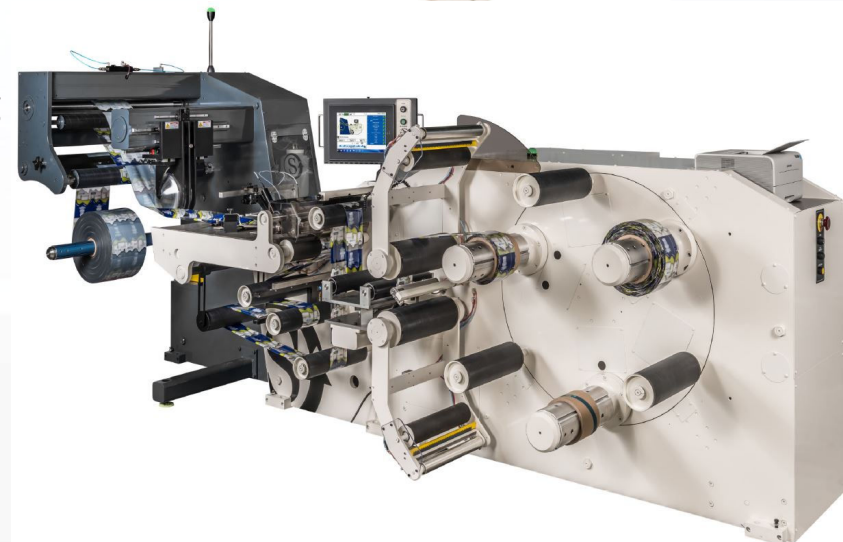
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# Finishing Step

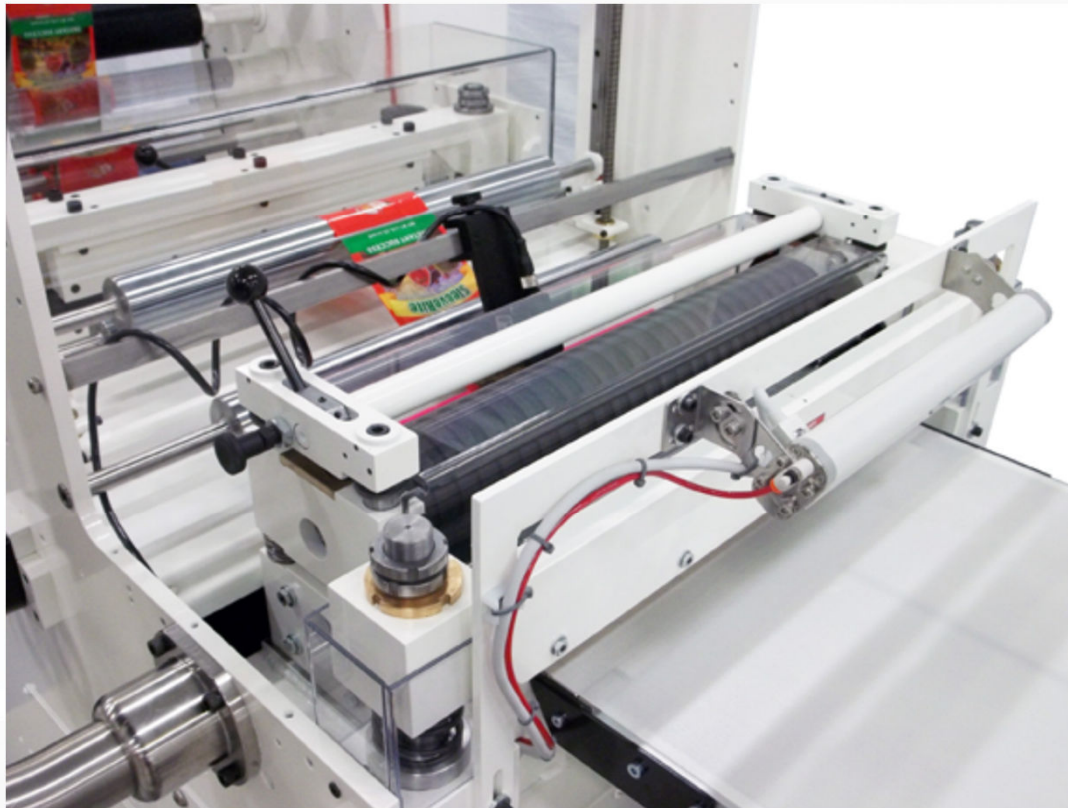
Do I need to inspect after seaming?

- Past/Current Paradigm: **Yes**
  - Check Seam
  - Check Layflat
  - Repair Splices
  - Change Core Size
  - Check Print
- Present/Future: **Debate**
  - Non-stop, or partially non-stop, seaming capabilities open the door to eliminate the finishing step



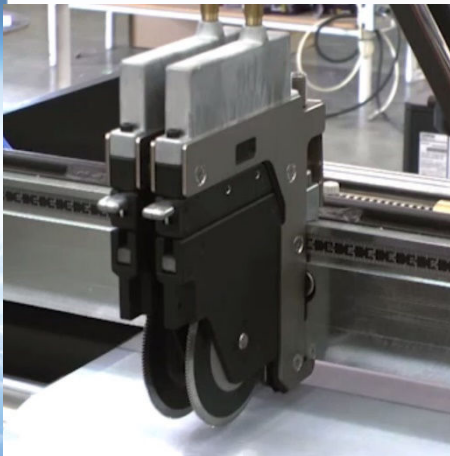
# Sheeting Step

Unlike any other sheeting process in your operation, it must be able to perforate, in register.

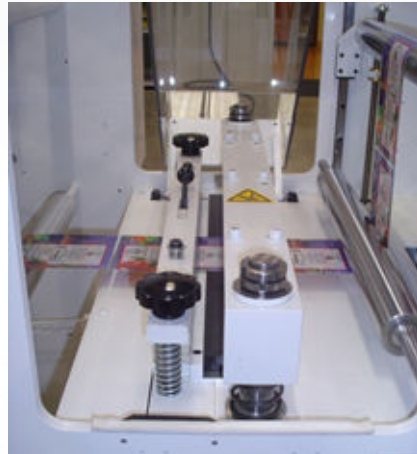


# Implementing Tamper evident, Security, and Brand protection features

Linear Perforation



Sheeter- Perforation



Stand-Alone Unit



Integral Unit



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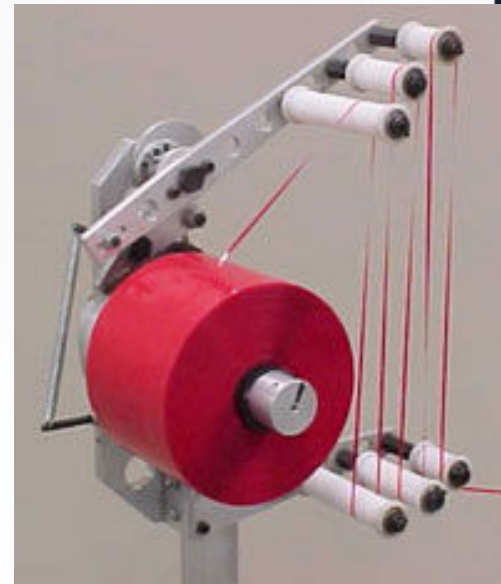
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## Implementing Tamper evident, Security, and Brand protection features



# Implementing Tamper evident, Security, and Brand protection features



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## Implementing Tamper evident, Security, and Brand protection features



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## Implementing Tamper evident, Security, and Brand protection features



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# Recognizing a Well-converted Sleeve

- No open, weak, or stuck seams
- Limited variation in the layflat width
- No crushed edges (u-fold, not v-fold)



Pennzoil: Courtesy SleeveCo.



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# Summary

The secondary converting steps have impact on the quality of the finished label on the shelf, and each step requires a focus on “getting it right.”

- **Always**
  - Use the best ingredients - film, ink, seaming solvents, equipment, people, process
  - Focus on shipping only quality and be consistent
  - Minimize waste
- Realize there are no shortcuts



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Converting | Questions?

Thank you for attending

**Ben Ritter**

Sales Executive

Shrink Sleeve & Converting Specialist



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