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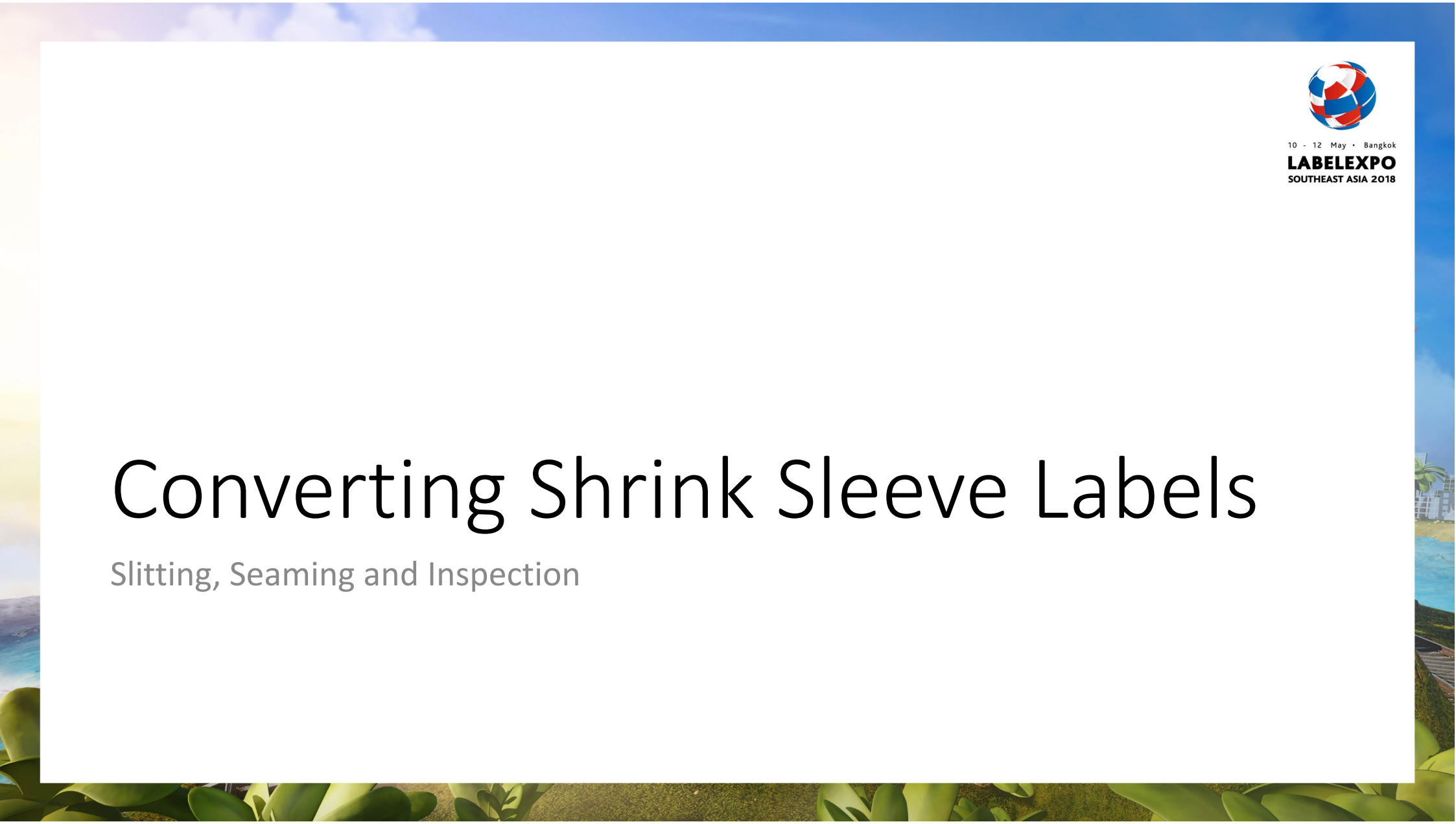
Séamus Lafferty, Ph.D.
President

Accraply
A Barry-Wehmiller Packaging Company



Converting Shrink Sleeve Labels

Slitting, Seaming and Inspection

The Shrink Process

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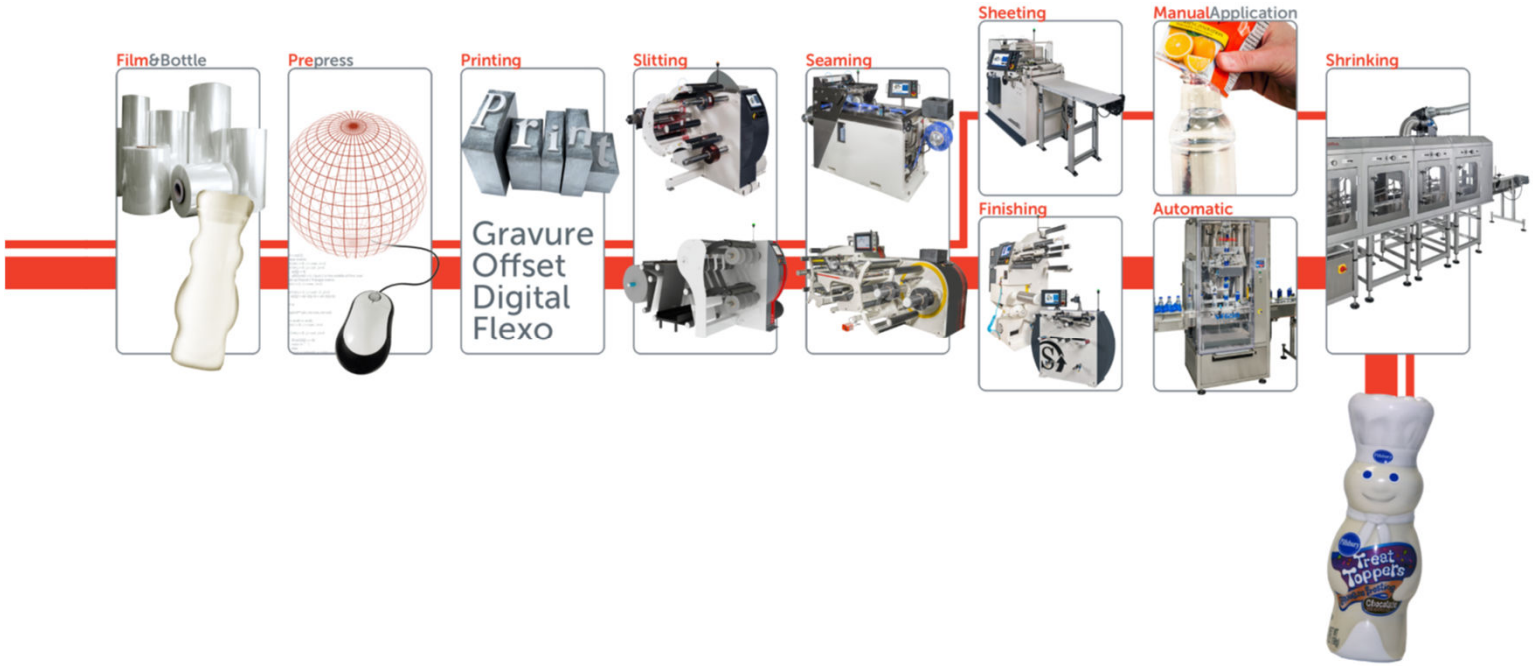
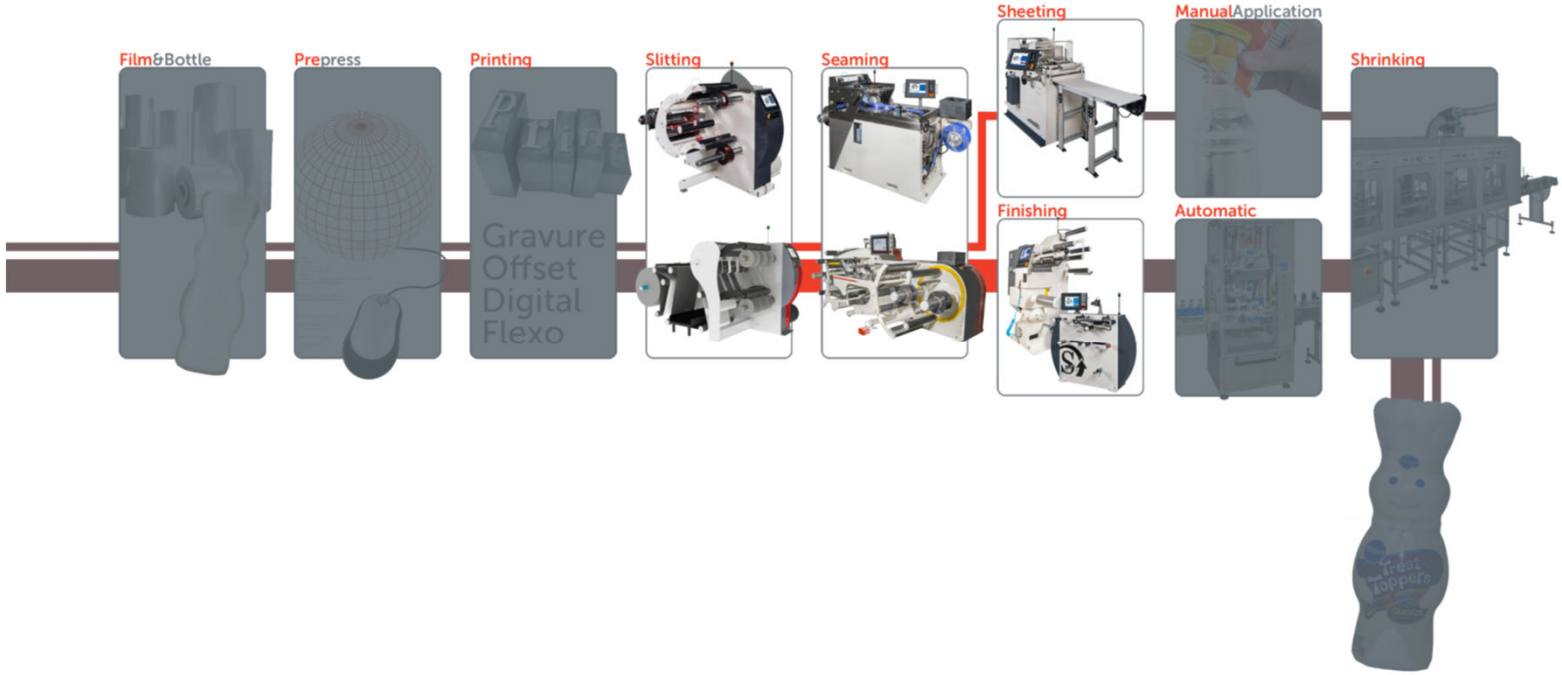
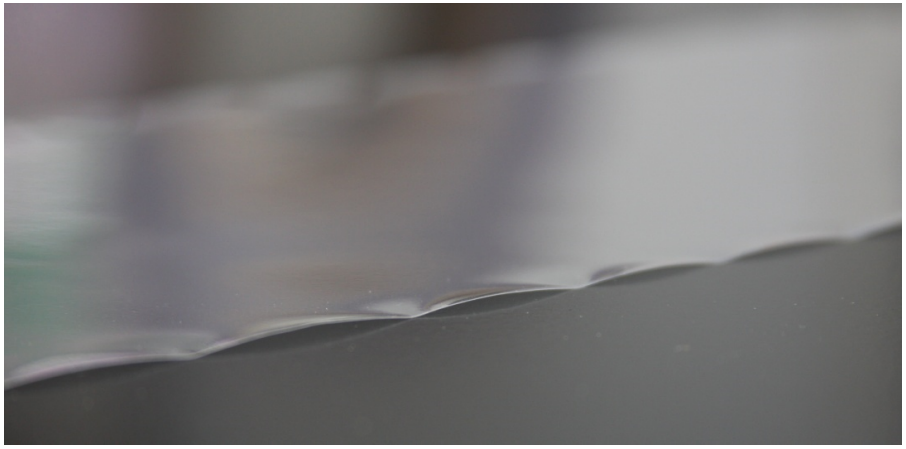


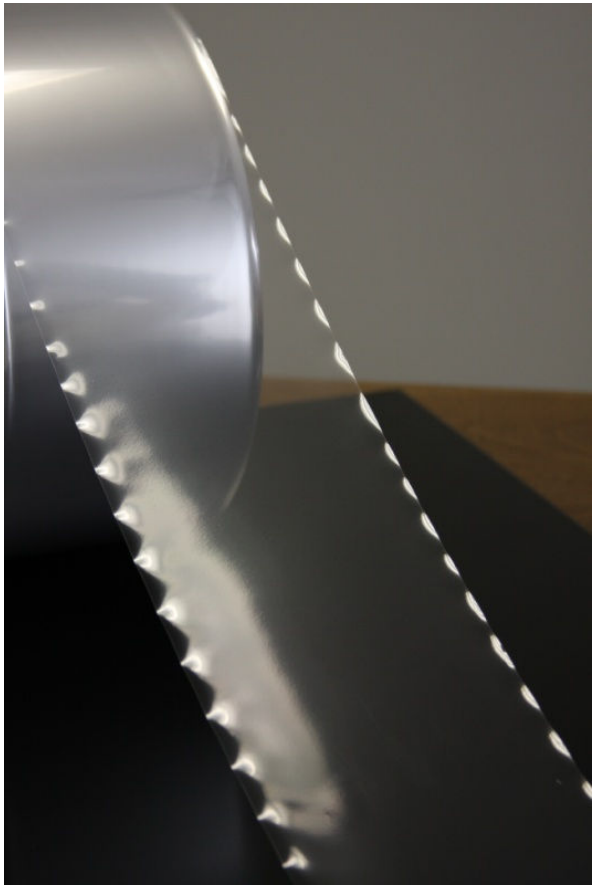
Converting Process



Slitting

Slitting | What to avoid





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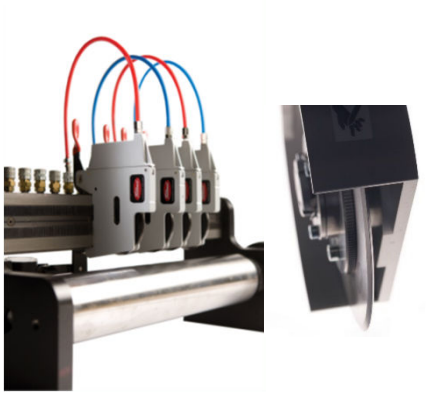
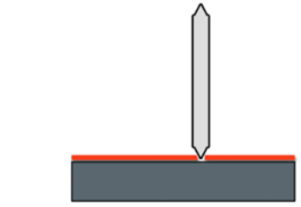
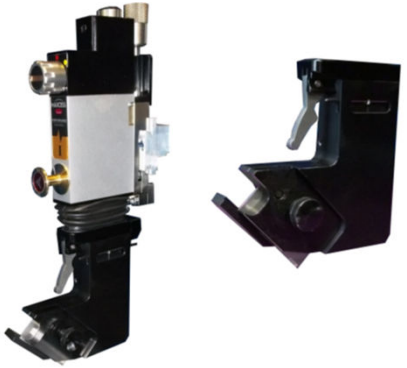
Slitting Methods



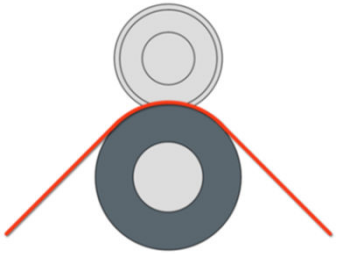
Crush/Score





Razor-In-Air

Shear

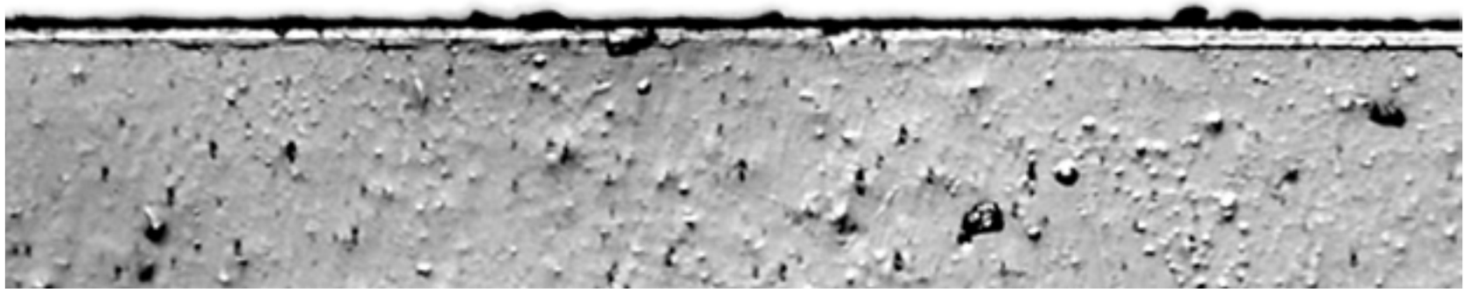


Source: Diagrams, WEB HANDLING, WINDING, SLITTING FOR ACCRAPLY, Slides 61b,64b, Timothy J. Walker, T.J.Walker + Associates, Inc., JUNE 2011

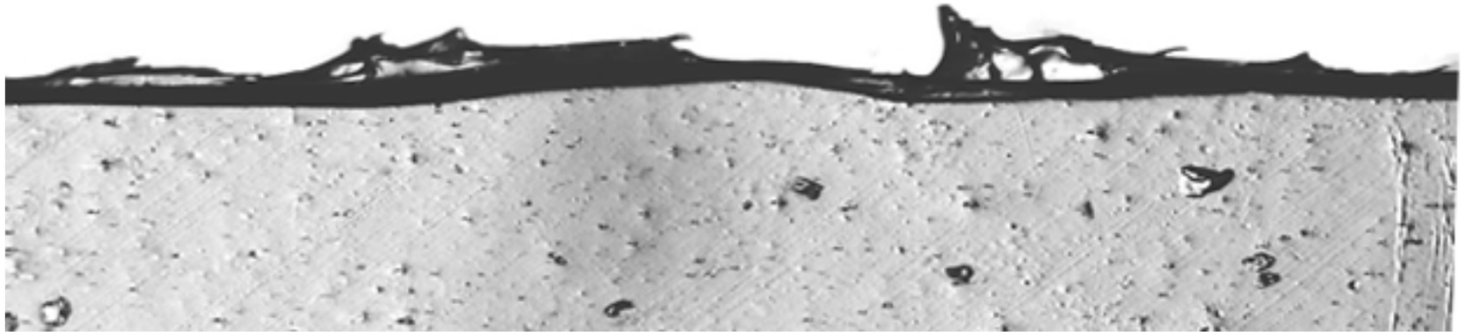
Images Courtesy of Tidland/Maxcess Intl.

Slitting Methods | Shear

Shear is the recommended method for slitting shrink film.



PVC Shrink Film Shear Slit @ 50x



PVC Shrink Film Razor Slit @ 50x

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.

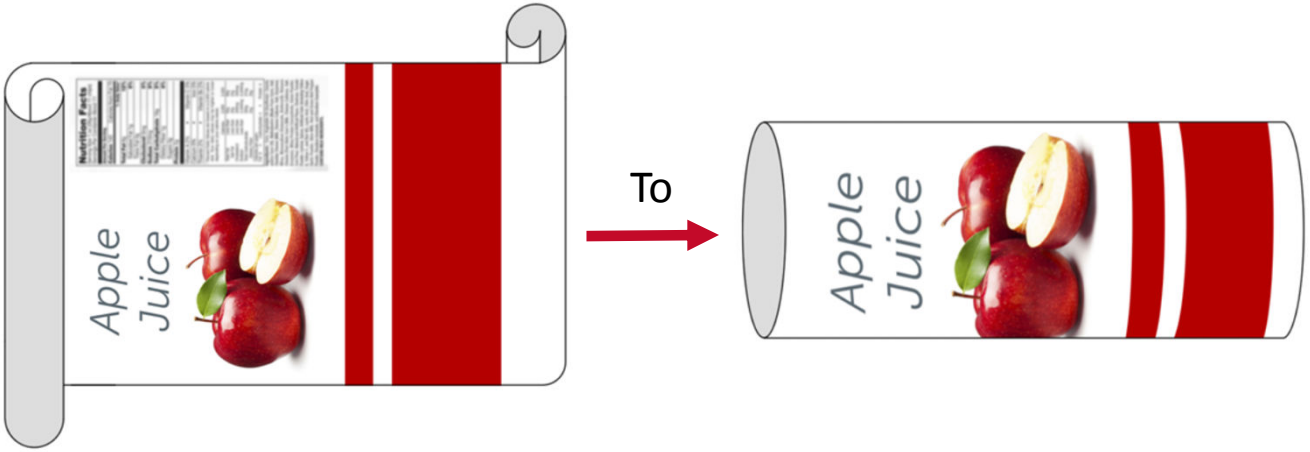
Source: Diagrams, WEB HANDLING, WINDING, SLITTING FOR ACCRAPLY, Slides 61b,64b, Timothy J. Walker, T.J.Walker + Associates, Inc., JUNE 2011

Seaming Step

Seaming Step

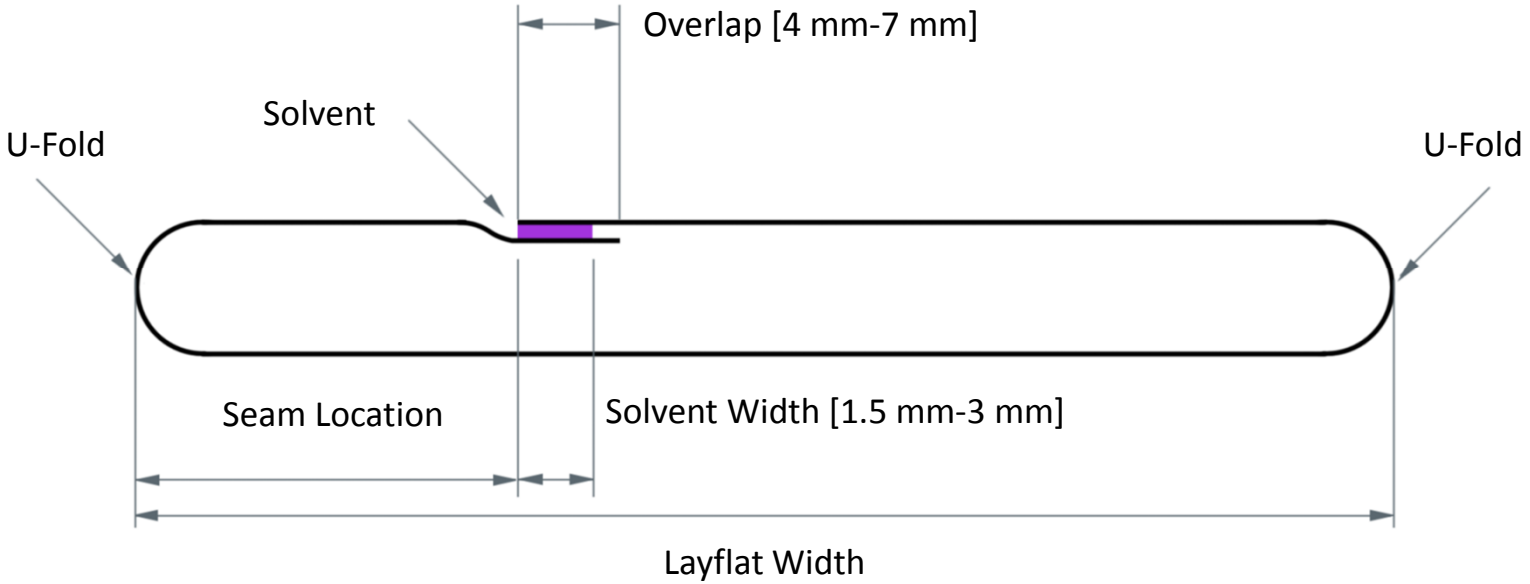
- Objective

From



- 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)

Seaming Step | Terminology



Seamer Concepts | Nip Rolls

Chemical Reaction Areas- Required for Solvent Weld

Seamer Concepts | Solvent Control

Refer to **page 57**
of Label Academy book,
Shrink Sleeve Technology

Gravity Fed

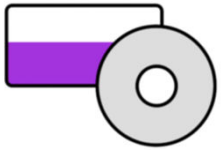
Pressure System

Servo Pump

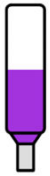
Seamer Concepts | Solvent Delivery

Refer to **page 57** of Label Academy book, *Shrink Sleeve Technology*

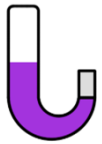
Key elements in the seaming process.



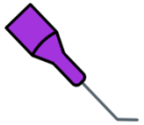
Solvent Wheel



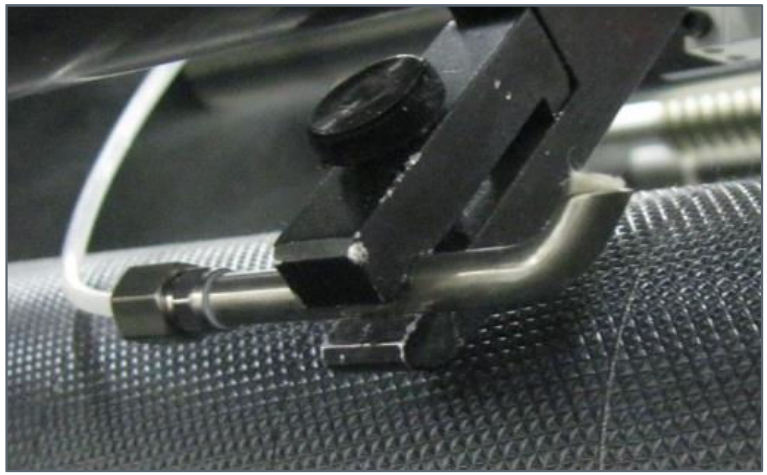
Top Wick

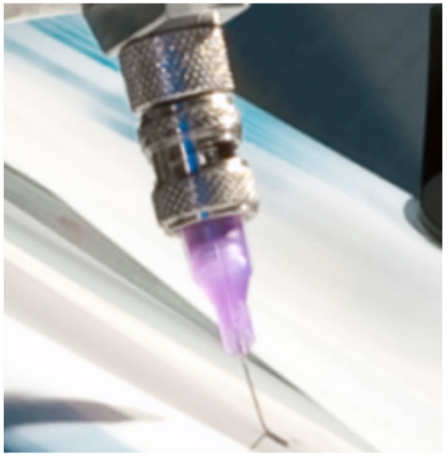


Bottom Wick

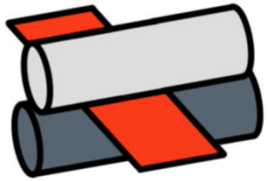


Needle

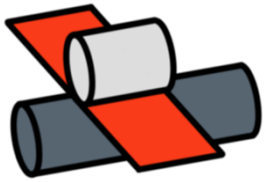




Seamer Concepts | Nip Rolls



Full Nip

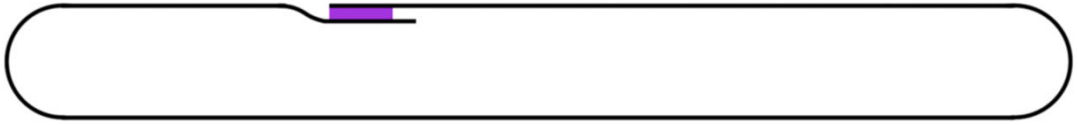


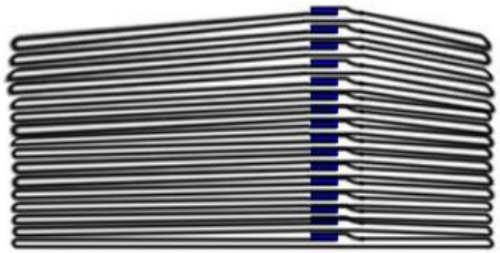
Cut Nip

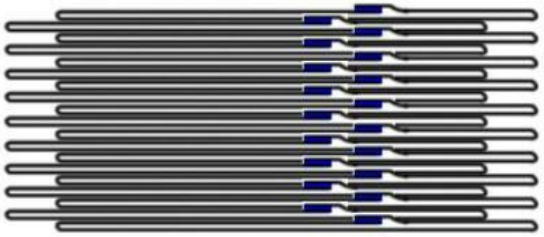
No Nip

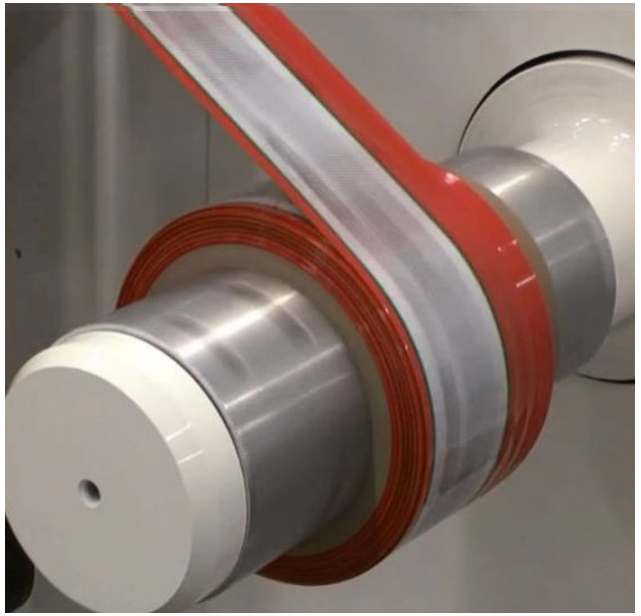
Seamer Concepts | Rewind Oscillation

Refer to **page 59**
of Label Academy book,
Shrink Sleeve Technology





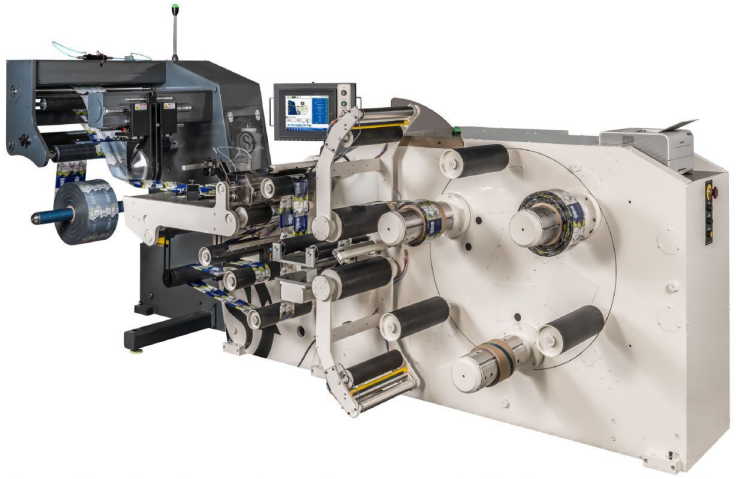




Finishing Step

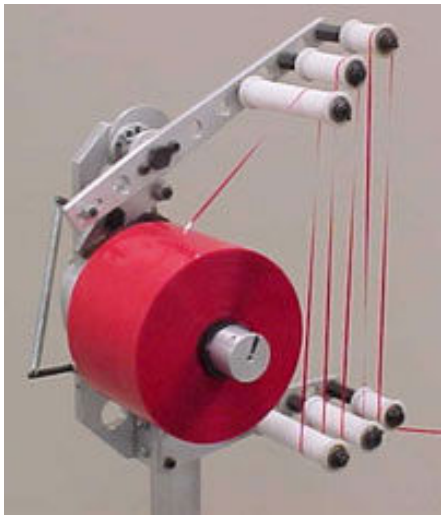
Do I need to inspect after seaming?

- 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



Implementing Tamper evident, Security, and Brand protection features

Implementing Tamper evident, Security, and Brand protection features



Implementing Tamper evident, Security, and Brand protection features

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How do we get the converted sleeves on the containers?

Sleeve Application Systems

Application & Shrinking

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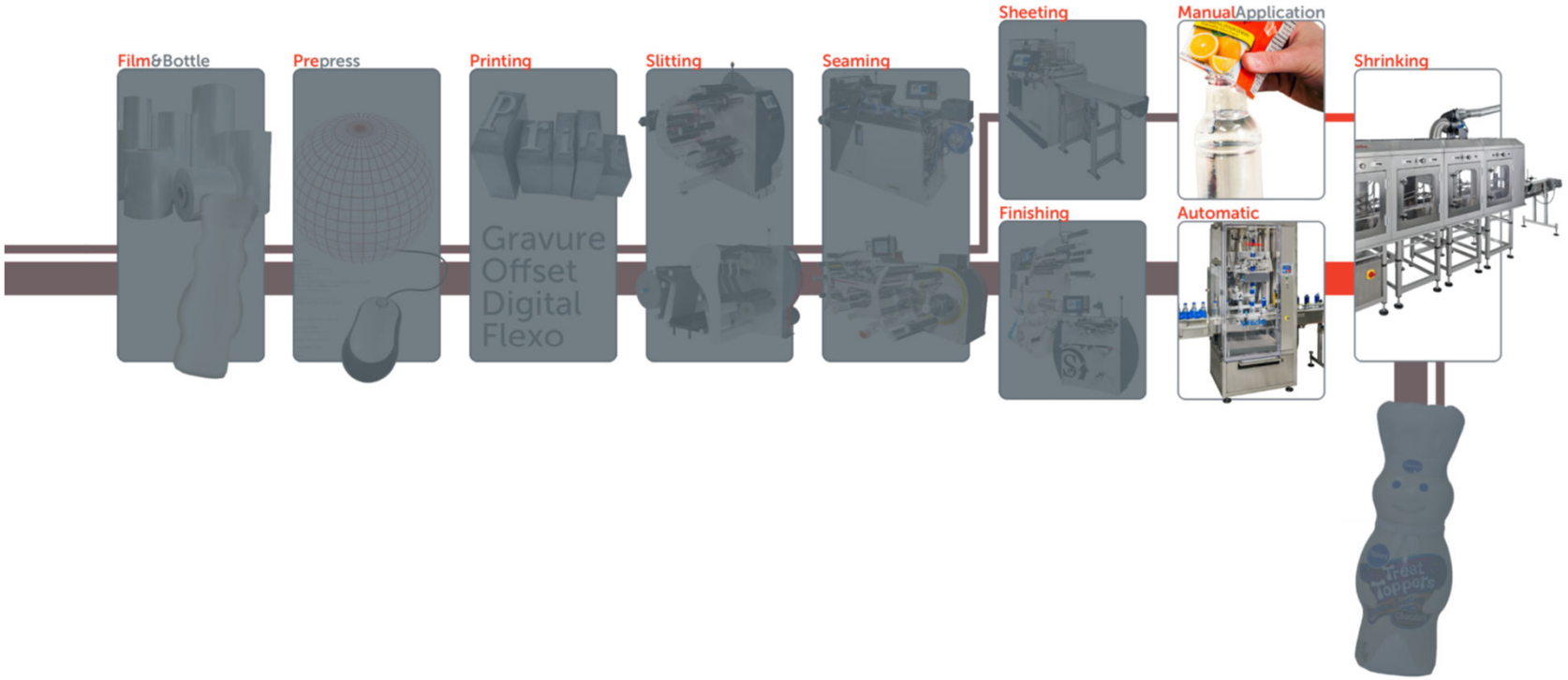

Application Systems | Carousel/Rotary

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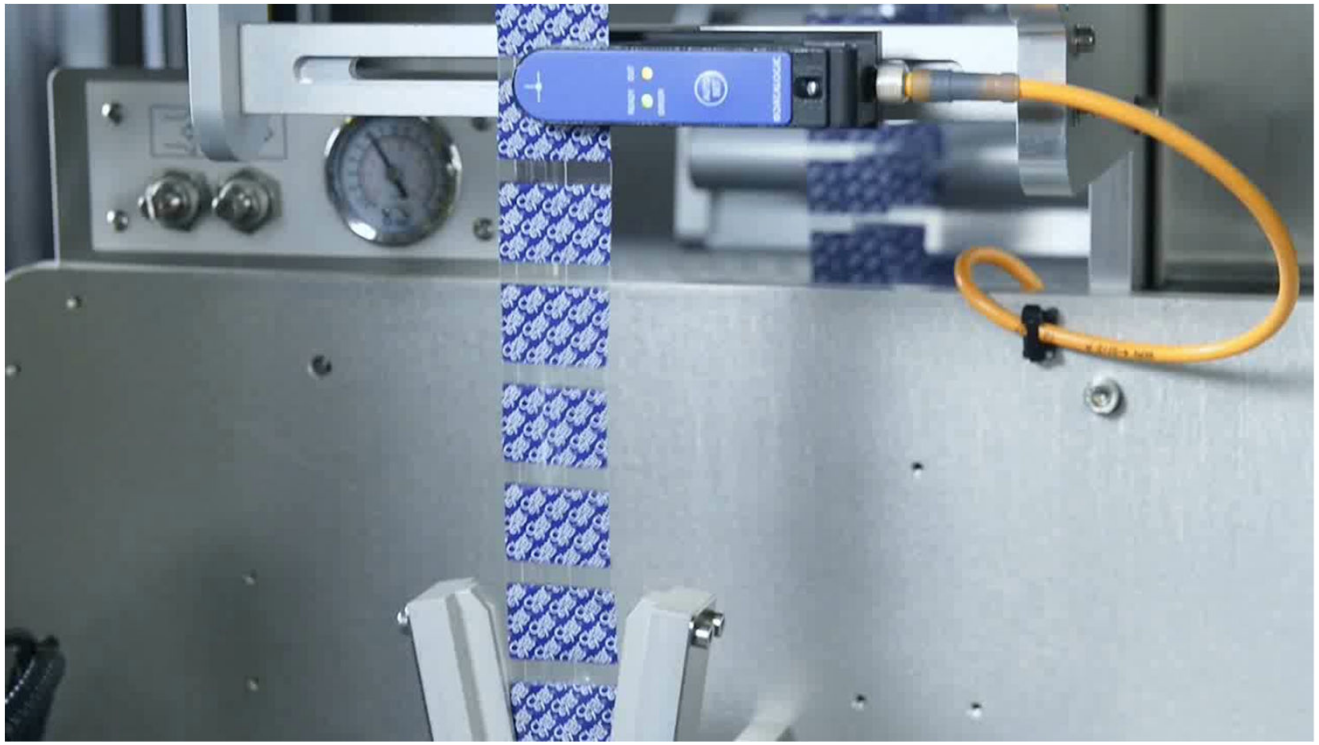
Application Systems | Direct Apply



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Application Systems | Vertical/Mandrel

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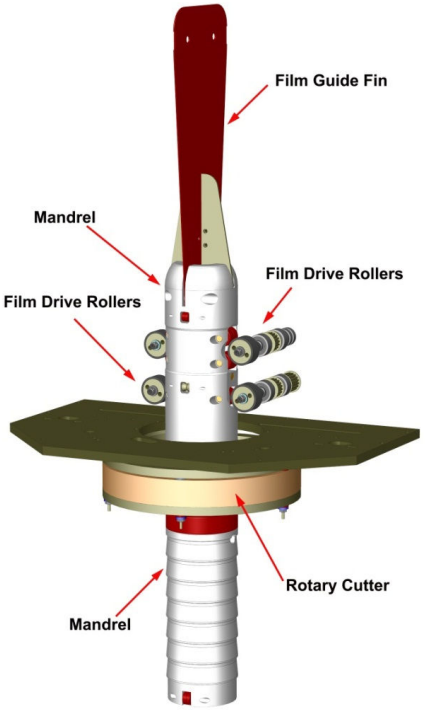

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How do we shrink the sleeves?

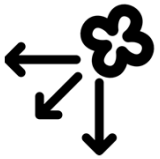
Heat Tunnels

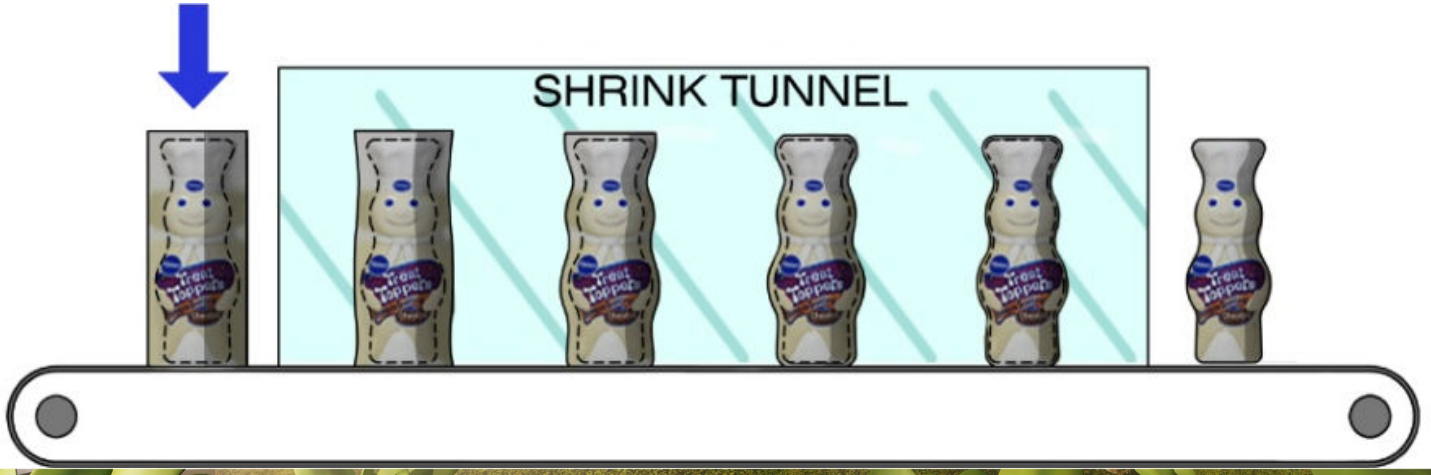
Three ways that heat transfers; convection, radiation and conduction

Hot air re-circulating tunnels (Convection)

Infra-red radiant heat tunnels (Radiation)

Steam tunnels (Conduction)





Shrink Tunnels | Hot Air

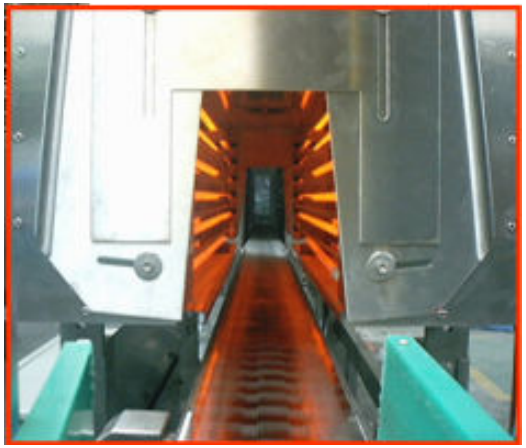
Convection: Hot air re-circulating tunnels

Advantages	Disadvantages
Good temperature control	High ambient heat
Heat zones possible	High velocity air
Directable heat	Heat shadows possible

Shrink Tunnels | Radiant

Radiant: Infra-red heat tunnels

Advantages	Disadvantages
Good temperature control	High ambient temperature, particularly in the upper part of the tunnel
Heat zones possible	Difficult to direct heat
Good heat transfer properties – excellent for pre-heating	Heat resistant conveyors required

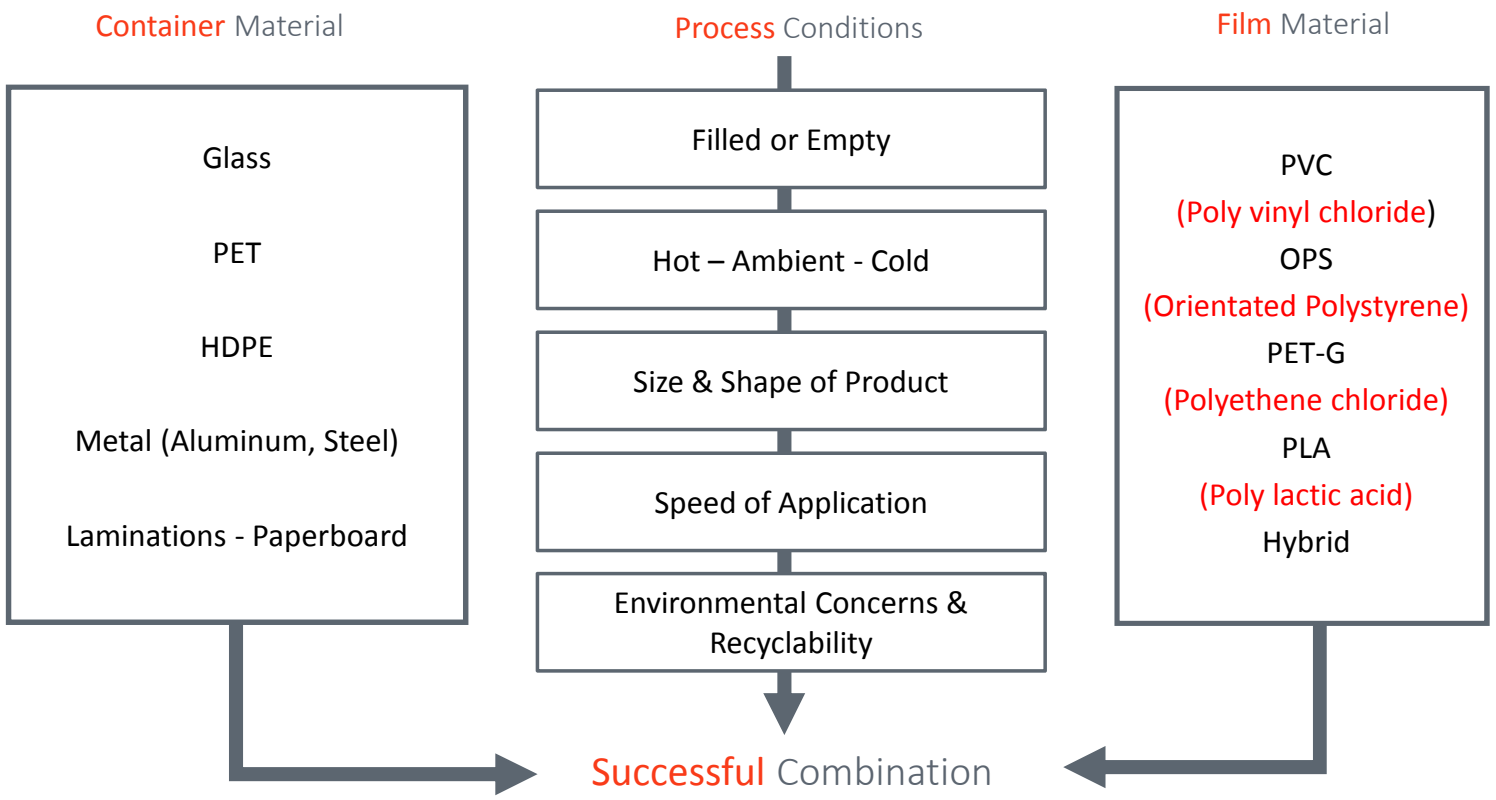


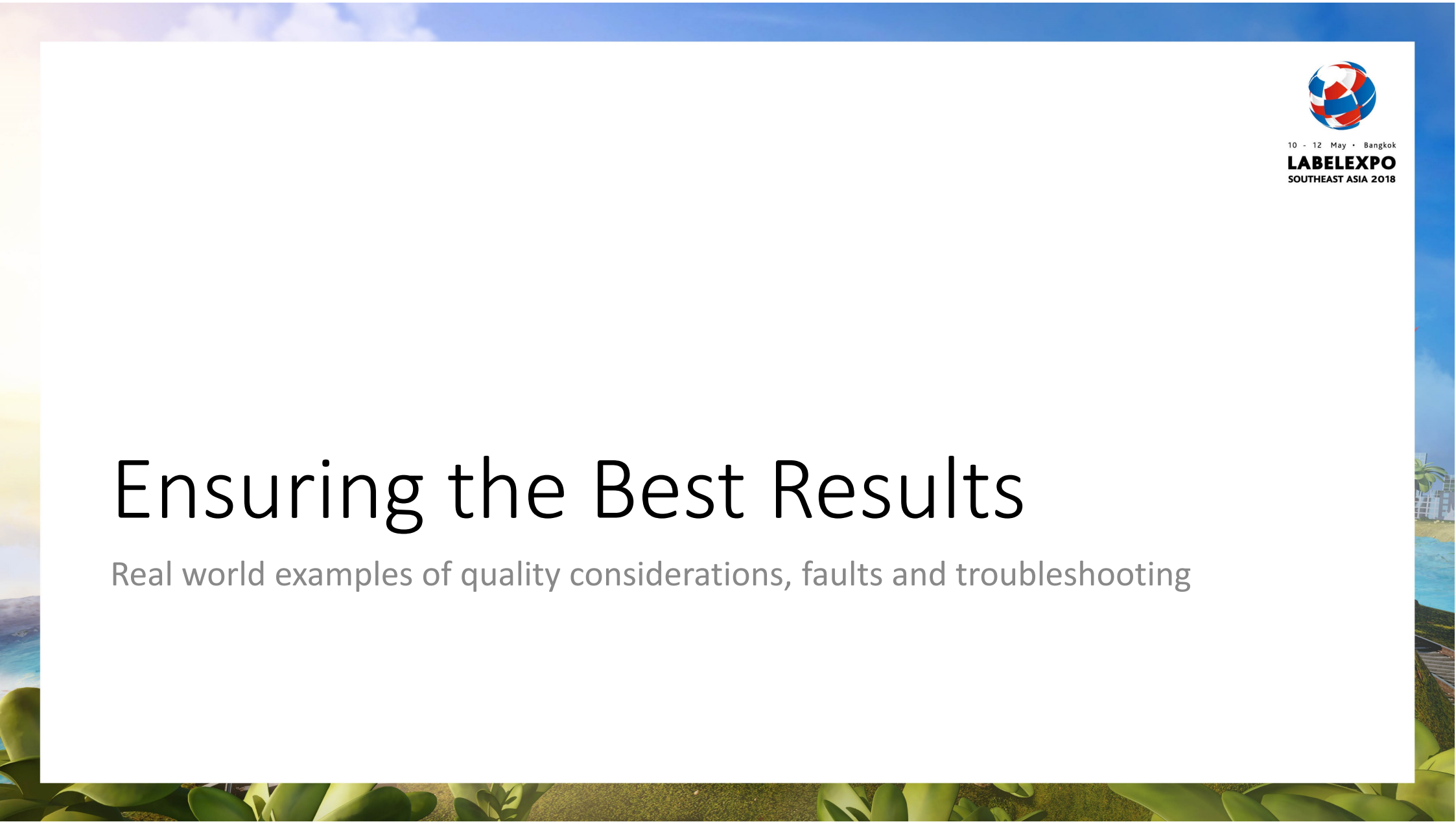
Shrink Tunnels | Steam

Conduction: Steam tunnels

Advantages	Disadvantages
Excellent heat transfer properties	Extraction required
Uniform shrinking onto contoured containers	Steam required!
Product subjected to lower temperatures	

There is no one-size-fits-all solution





Ensuring the Best Results

Real world examples of quality considerations, faults and troubleshooting

Container Selection and Shape

Container Shape…

Container Shape…

Container Shape…

Container Shape…

Container Material…

Container Material / Handling…

The Importance of Film Selection

Film Material…

Film Material…

The Importance of Graphics

Pre-press…

Pre-press…

Pre-press…

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The Importance of Ink Selection

Ink...

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Ink...

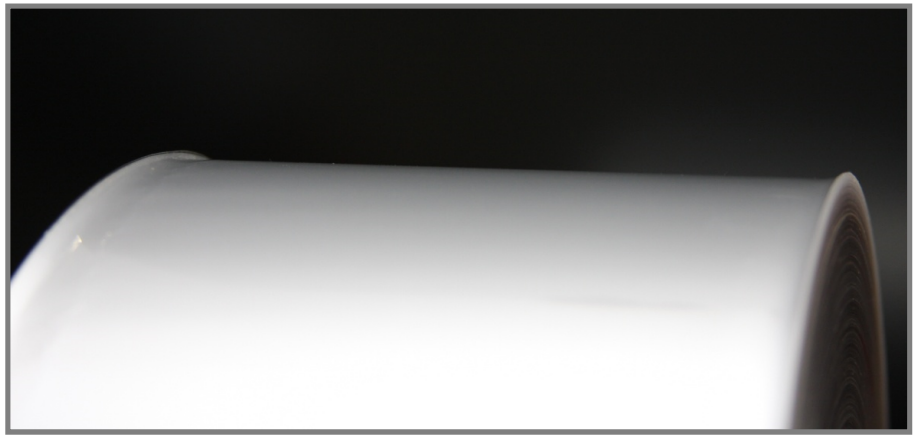
Ink...

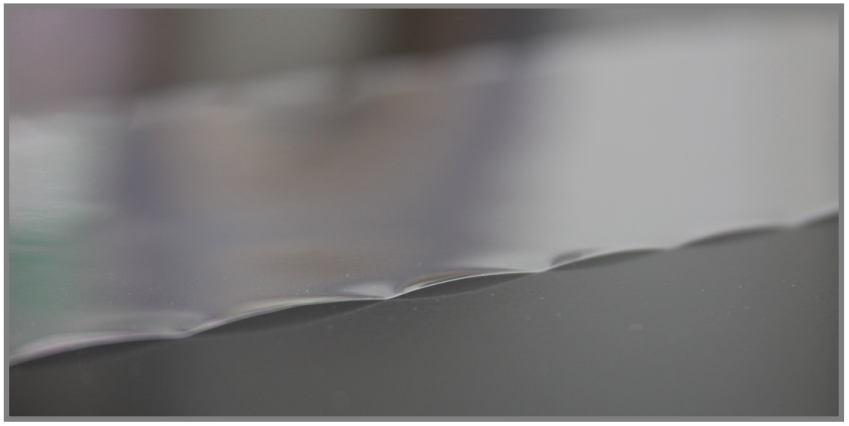
Ink...

Issues of Ink/Printing…

Slitting and Seaming

Slitting…






AVATRASTES

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Sleeve Application and Shrinking

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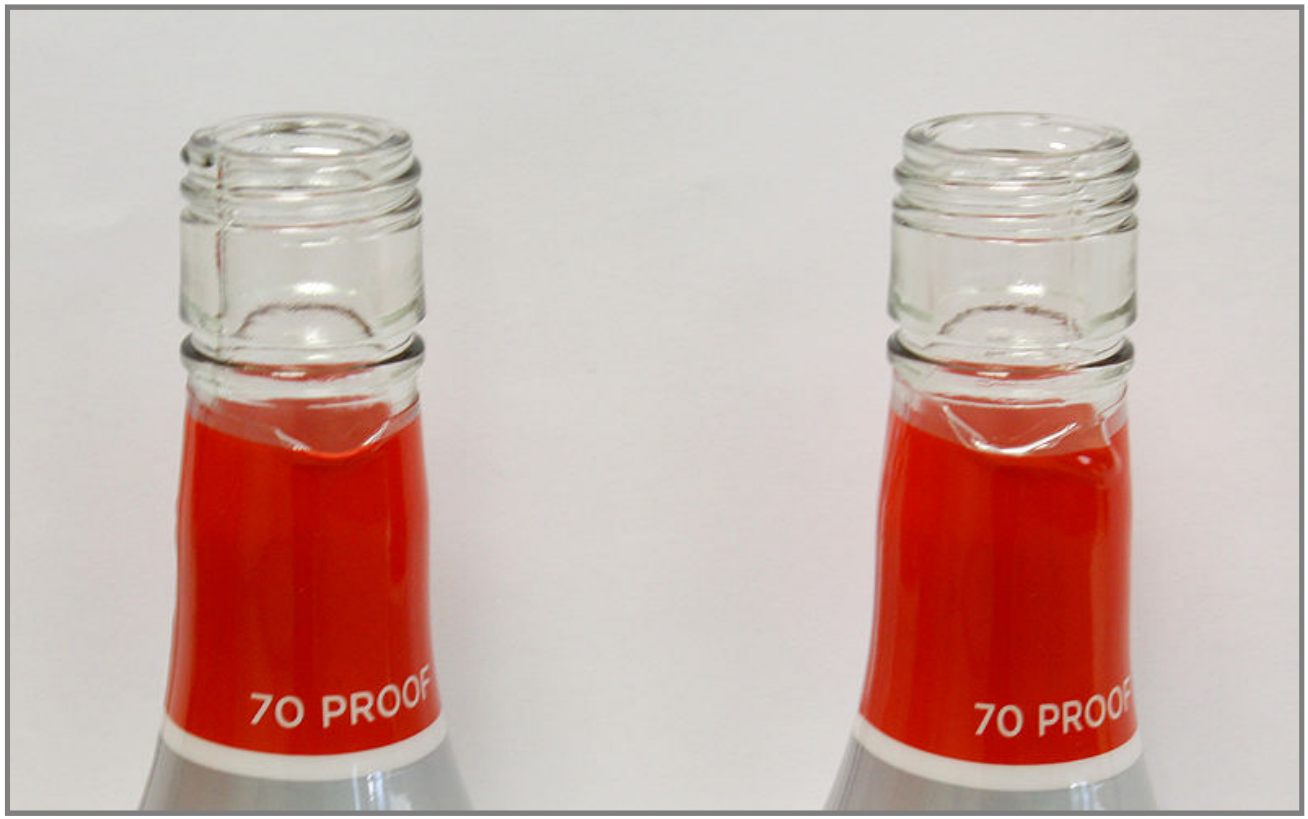

For Discussion…

For Discussion…

For Discussion…

What does it look like when it is done right?