

“Auxiliary Equipment Design for Natural Resins”

Dana Darley
Extrusion Auxiliary Services, Inc.
Dacula, GA
(678) 714-5218; fax (678) 714-5264
dana@extrusionauxiliary.com
www.extrusionauxiliary.com

Challenges for Melt Processing

- Low melt viscosity
- Thermal sensitivity
- Sensitivity to shear
- Corrosive
- Low melt strength
- Raw materials expensive and limited supply

Types of Screen Changers

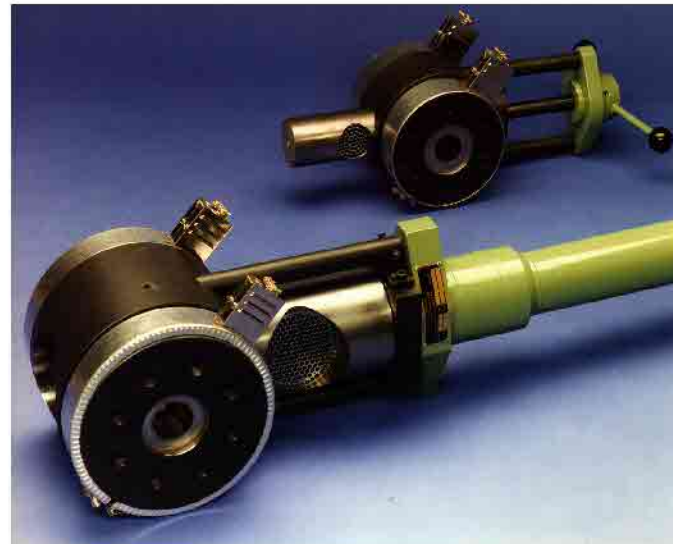
- Manual Screen Changer
- Hydraulic Screen Changer
- Dual or Single Piston
- Continuous Belt/Ribbon Type
- Multi-Segment Rotary Disc

Basic Design Considerations

- Stainless steel construction
- High open area to minimize shear
- Streamlined passages
- Low residence time
- Proper sealing against leaks
- Continuous operation where justified

Manual Screen Changer - *Strengths*

- Sizes: 30 mm to 150 mm
- Low capital costs
- Low operating costs
- Streamlined flow paths
- Minimum residence time
- Small in size



Manual Screen Changers - *Weaknesses*

- Process Interruption
- Line shutdown
- Air entrapment
- Limited open area
- Seal leakage/replacement



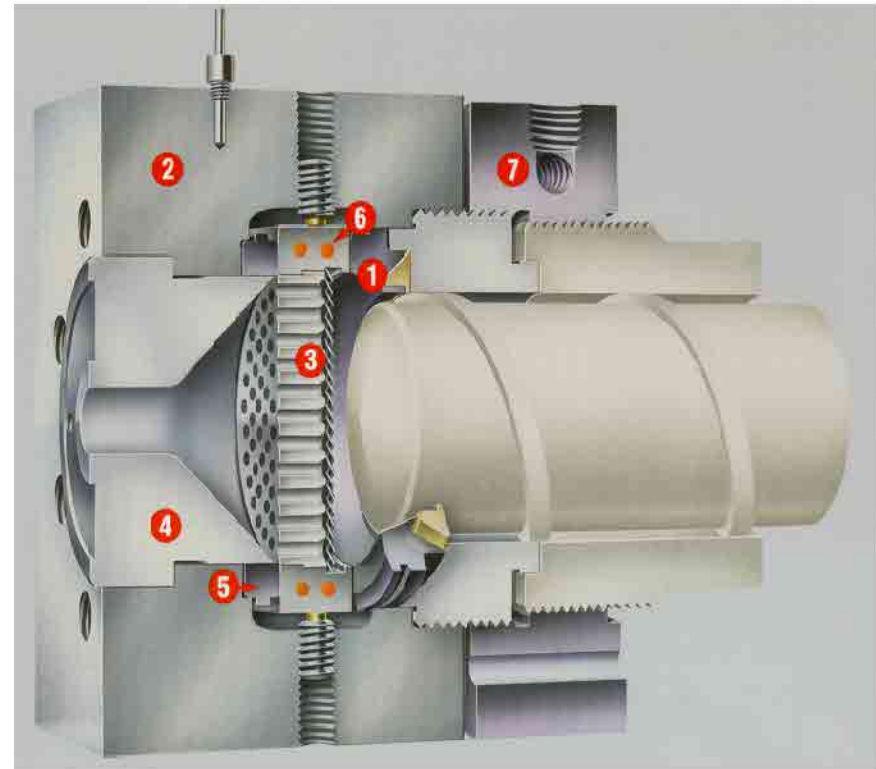
Hydraulic Screen Changer - *Strengths*

- Sizes: 70 mm to 380 mm
- Low operating costs
- Low capital costs
- Streamlined flow paths
- Minimal residence time
- Industry acceptance



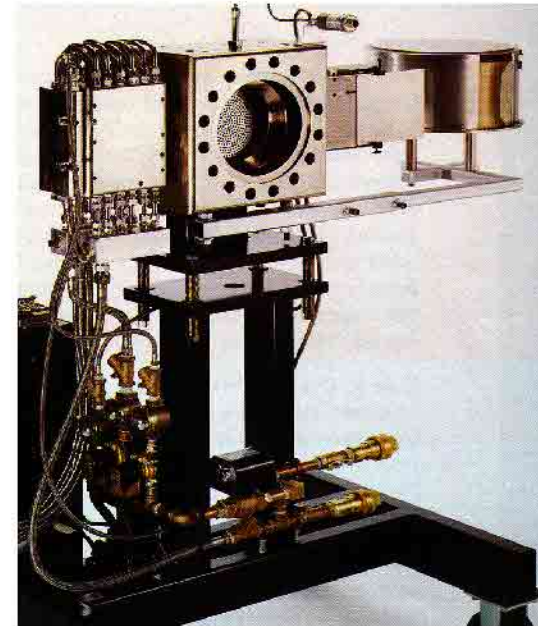
Hydraulic Screen Changer - *Weaknesses*

- Process interruptions
- Air entrapment
- Heated standby screen
- Limited open area
- Complicated hydraulics
- Seal leakage/replacement



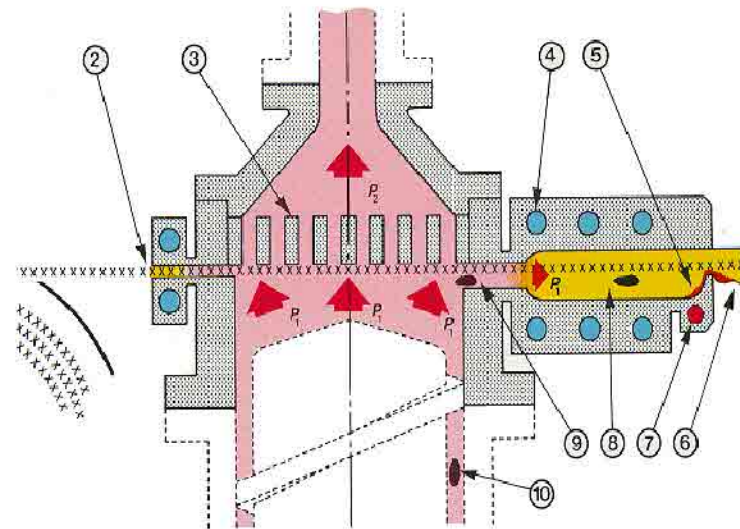
Belt Type Screen Changer - *Strengths*

- Constant differential pressure
- Streamlined flow paths
- Minimal residence time
- Low operator intervention



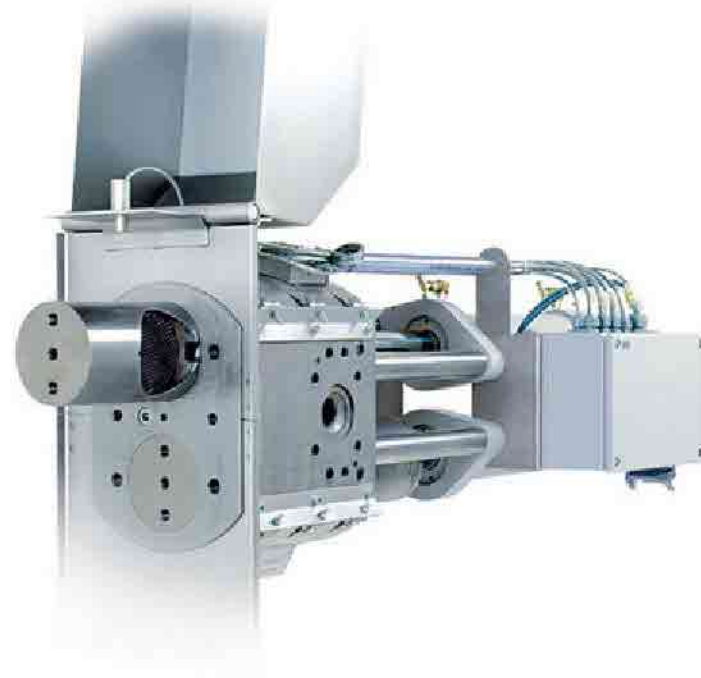
Belt Type Screen Changer - *Weaknesses*

- Limited size ranges
- Capital costs
- Operating costs
- Sophisticated controls
- High contamination
- Temperature dependent sealing
- Head/differential pressure limitation
- Limited applications with Natural Resins



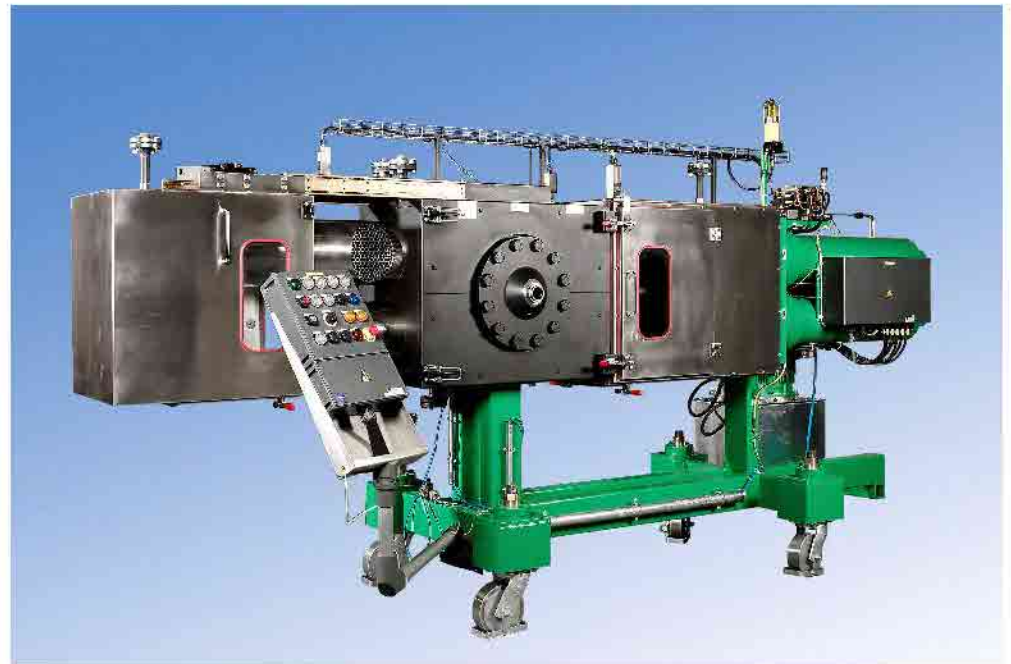
Piston Screen Changer - *Strengths*

- Sizes: 30 to 450 mm
- Continuous filtration
- Sealless design
- High open area
- Uses round screens
- Low capital & operating costs
- Variety of special applications



Piston Screen Changer - *Weaknesses*

- Cost relative to hydraulic
- Some pressure variations
- Increased residence time
- Operator skill level
- Size and installation



Rotary Screen Changer - *Strengths*

- Sizes: 30 mm to 250 mm
- Very constant pressure
- Streamlined flow paths
- Minimum residence time
- High automation
- Low operator intervention



