Utilizing the Heat Transfer Roll as a Dryer
Drying Methods

IR

Impingement

Contact
Web Temperature / Evaporation Rate over Time

Ref: Krieger GmbH Hot-Air Dryer Systems
Energy Requirements

• Energy for the system heat-up
• Energy for the process
• BTU/hr [Kcal/hr]
System Energy

- Heating medium
- Storage tank and piping
- Heat transfer roll(s)
Process Energy

- Heat input to product
- Evaporation of liquid
- Ambient losses
Heat Transfer Roll Design

- Double shell-spiral baffle
- Variety of heating mediums
- Variety of materials of construction
- Variety of coatings
Design Optimization

- Dictated by energy requirements
- Spiral channel design
- Coefficient of Heat Transfer
- Operating surface area
- Temperature control
Contact Drying

- Intimate contact between dryer (roll) and the product
- High Overall Heat Transfer Coefficient
- Accurate computer modeling
Modeling the System

- Completely dry the web or retain a percentage of moisture
- Length of contact, number and size of heat transfer rolls required
- TCU operating parameters
- +/-1 deg. F Temperature uniformity
Minimize or Eliminate Problems

- Tension control
- Edge curl
- Web tracking
- Splotches / Smearing
- Sticking / Picking
- Discoloration
Application

- Drying
- Tempering
- Annealing
- Curing
- Preheating
- Cooling
Thank You

Questions?
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