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Cracker Packaging Technology:
Stacks and Piles and Slugs! Oh My!

B&CMA 89th Annual Tech Conference
1. Distribution Systems

A. **Sheet Breaker** (Saltine, Graham, etc)
B. **Cooling Conveyors**
C. **Product Shingling**
D. **Strip Breaker** (Saltine, Graham, etc)
E. **Product Spreading**
   a) Spreader Conveyor (Saltine, Graham, etc.)
      i. Belted
      ii. Vibratory
   b) Channeling Board (Snack, Water, etc.)
F. **Product Dump**
G. **Belted Distribution**
H. **Vibratory Accumulation**
1. Distribution Systems

Round Cracker Slug System
1. Distribution Systems

Individually Molded Cracker Slug System

A. Sheet Breaker (Saltine, Graham, etc)
   - Located at Oven Exit
   - Breaks Sheets of Crackers into Strips
   - Adjustable for Varying Cracker Lengths
   - Not Dependent on Cracker Width
   - Sheets Must Be Broken Into Sheets Prior to Turns or Turnover Drums
1. Distribution Systems

A. Sheet Breaker
1. Distribution Systems

B. Cooling Conveyors

- Multiple Conveyors Due to Length
- Small Diameter End Rollers
- Automatic Belt Tracking
- Large Diameter Drives
- Belted Turn Conveyors
- Multiple Passes
- Turnover Drums, Reversing Chutes
1. Distribution Systems

B. Cooling Conveyors

- Center Mounted Drive Section
- Full Wrap Drive
- Large Diameter Drive Roller
- Adjustable Nosebars
1. Distribution Systems

B. Cooling Conveyors

Automatic Belt Tracker  Belt Tracker Sensor

Belted Turn Conveyor  Small Diameter End Rollers
1. Distribution Systems

C. Shingle Conveyor
- Stacks Product with Change in Height/Speed
- Small Diameter End Rollers
- Manual Height Adjustment

D. Strip Breaker
- Breaks Shingle Stacked Strips into Individual Crackers
- Offset Edge Aligning Wheels
- Multiple Sets of Offset Breaker Wheels
- Breaker Wheel Material Can Be Product Dependent
- Auto Lift of Breaker Wheels
- Extending Discharge End Roller
1. Distribution Systems

D. Strip Breaker

Edge Aligning Wheels

Breaker Wheel Arrangement
1. Distribution Systems

E. Product Spreading
   a) Spreader Conveyor
      I. Belted
      II. Vibratory
   b) Channeling Board

Common Applications
- Non-Round Crackers such as Saltines, Grahams, Shapes, etc.
- Introduction of Rails for Automatic Loading
1. Distribution Systems

E. Product Spreading

a) Spreader Conveyor

i. Belted

- Spreads Centerlines Between Lanes for Rails
- Capable of Edge Tracking
- Aligns Product Edges
- Extremely Wide at Discharge
- Requires Product to be Delivered on Centerlines
1. Distribution Systems

E. Product Spreading
   a) Spreader Conveyor
      i. Belted
1. Distribution Systems

E. Product Spreading

a) Spreader Conveyor
   i. Belted

   - Vibratory
     - Spreads Centerlines Between Lanes for Rails
     - Evens Product Shingle in Direction of Travel
     - Capable of Edge Tracking
     - Aligns Product Edges
     - Extremely Wide at Discharge
     - Requires Product to be Delivered on Centerlines
1. Distribution Systems

E. Product Spreading
   a) Spreader Conveyor
      ii. Vibratory
1. Distribution Systems

E. Product Spreading
   b) Channeling Board
      ➢ Spreads Centerlines Between Lanes for Rails
      ➢ Can Be Used for Merging
      ➢ Capable of Edge Tracking
      ➢ Capable of Merging/Spreading Nested Lanes
      ➢ Aligns Product Edges
      ➢ Extremely Wide at Discharge
      ➢ Requires Product to be Delivered on Centerlines

Common Applications
   ➢ Round Crackers such as Snack, Water, etc.
   ➢ Automatic Merging
   ➢ Introduction of Rails for Automatic Loading
1. Distribution Systems

E. Product Spreading
   b) Channeling Board
1. Distribution Systems

E. Product Spreading
   b) Channeling Board

Incoming Product Sensors
Linear Actuator for Adjustments

“Our equipment is our reputation”
1. Distribution Systems

F. Dump Conveyor
   - Removes Specific Lanes of Product in the Event of Down Time on Downstream Equipment
   - Pneumatically Actuated
   - Automatic Product Re-Shingle
   - Product Rejected to Dump Conveyor or Tote
1. Distribution Systems

F. Dump Conveyor
1. Distribution Systems

G. Belted Distribution

- Transfers Shingle-Stacked Product to Automatic Feeding Locations
- Side Flexing Mat Top Chain
- Combination of Belted Conveyors and Belted Turns
- Dead Plates or Small Diameter End Rollers
- Requires Decision Based on Extra Width for Automatic Belt Tracking Compared to Extra Cleaning of Mat Top Chains
1. Distribution Systems

G. Belted Distribution
1. Distribution Systems

H. Vibratory Accumulation

- Conveys Shingle-Stacked Product in Individual Pans
- Increases Product Shingle if Downstream Equipment is Inoperable
- Stores Approximately 30 Seconds of Production for Each 8’ Pan Section
- Pan Speeds Vary Individually to Reduce Backlog When Downstream Equipment Resumes Operation
1. Distribution Systems

H. Vibratory Accumulation
1. Distribution Systems

H. Vibratory Accumulation

Cracker Distribution Systems
2. Feeding Stacks / Piles

A. Distribution Method
   a) Hand Loading
   b) Low Backpressure Conveyor
   c) Automatic Loading

B. Shuttle Feeding

C. Disk Feeding

Common Applications
- Graham Crackers
- Snack Crackers
- Saltines
2. Feeding Stacks / Piles

A. Distribution Method
   a) Hand Loading
   b) Low Backpressure Conveyor
   c) Automatic Loading

   - Minimal Accumulation
   - Cost Effective
   - Extremely Flexible
     - Lane Balancing
     - Stack Height
     - Groups
   - Minimizes Floor Space
   - Requires Significant Labor
2. Feeding Stacks / Piles

A. Distribution Method
   a) Hand Loading
2. Feeding Stacks / Piles

A. Distribution Method
   a) Hand Loading

B. Low Backpressure Conveyor
   - Greater Operator Access
   - Moderate Accumulation
   - Moderate Cost
   - Moderate Floor Space Use
   - More Dedicated Distribution
2. Feeding Stacks / Piles

A. Distribution Method
   b) Low Backpressure Conveyor
2. Feeding Stacks / Piles

A. Distribution Method
   c) Automatic Feeding
      - Continuous Product Supply
      - Can Include Accumulation
      - Higher Cost
      - Dedicated Distribution
      - Requires Significant Floor Space
      - Requires Balancing Number of Lanes to Product Stack Height and Wrapper Speed
      - Minimal Flexibility
2. Feeding Stacks / Piles

A. Distribution Method
   c) Automatic Feeding
2. Feeding Stacks / Piles

A. Distribution Method
   c) Automatic Feeding

B. Shuttle Feeding
   Automatic loading of rigid products with consistent thickness. The bottom product is continuously stripped from a vertical stack contained in a gravity chute or chute elbow. A reciprocating plate loads product directly into the flights of a horizontal wrapper at speeds up to 400 packages per minute. Shuttle Feeders can be hand loaded or fed from a fully automatic distribution system. Feeding can scar product surface due to shearing.
2. Feeding Stacks / Piles

B. Shuttle Feeding

Common Applications
- Running a Variety of Package Types
- Groups of Product Stacks
- Taller Stacks
2. Feeding Stacks / Piles

B. Shuttle Feeding

- Product Thickness Must Be Consistent
- Stack Height Can Vary By No More Than ¼ of the Thickness of a Single Piece
- Capable of Building Stacks
- Can Scar Product Surface Due to Shearing

2. Feeding Stacks / Piles

B. Shuttle Feeding

- Lowerator Can Be Used For Taller Stacks
- Interleaves with Pusher
- Reduces Breakage
2. Feeding Stacks / Piles

B. Shuttle Feeding

Disk Feeders offer high speed automatic loading of rigid product with consistent thickness. The bottom product is continuously stripped from a vertical stack contained in a gravity chute or chute elbow. A rotating disk loads product directly into the flights of a horizontal wrapper at speeds up to 600 packages per minute. Disk Feeders can be hand loaded or fed from a fully automatic distribution system. These feeders are ideal for loading individual portions or stacks of crackers.
2. Feeding Stacks / Piles

C. Disk Feeding

**Common Applications**
- Dedicated High Speed Loading
- Product Stacks
- Restaurant Packs
2. Feeding Stacks / Piles

C. Disk Feeding

B. Disk Feeding

- Product Thickness Must Be Consistent
- Stack Height Can Vary By No More Than 1/4 of the Thickness of a Single Piece
- Can Scar Product Surface Due to Shearing
2. Feeding Stacks / Piles

C. Disk Feeding

3. Feeding Slugs

A. Distribution Method
   a) Low Backpressure Conveyor
   b) Automatic Loading

B. Multi-Lane Slug Loader

C. Single-Lane Slug Loader
3. Feeding Slugs

**Common Applications**
- Saltines
- Snack Crackers
- Multi-Grain
- Club Crackers
- Graham Crackers
- Half Slugs

3. Feeding Slugs

A. **Distribution Method**
   a) Low Backpressure Conveyor
   b) Automatic Loading
3. Feeding Slugs

A. Distribution Method
   a) Low Backpressure Conveyor
      - Hand Loaded
      - Moderate Cost
      - Moderate Floor Space Use
      - Less Dedicated Distribution
3. Feeding Slugs

A. Distribution Method
   a) Low Backpressure Conveyor

   b) Automatic Loading
      - Minimal Labor
      - Can Include Accumulation
      - Higher Cost
      - More Dedicated Distribution
      - Continuously Supplied
      - Requires Significant Floor Space
      - Minimal Flexibility
3. Feeding Slugs

A. Distribution Method
   b) Automatic Loading
B. **Multi-Lane Slug Loader**

The Multi-Lane Slug Loader delivers precise slug measuring from multiple lanes of on-edge product. Loads slugs of product directly into the continuous motion wrapper flights at speeds up to 150 slugs per minute using a powered rake transfer.

Product can be fed automatically or hand loaded. This feeder is ideal for thin product with rounded edges.

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3. **Feeding Slugs**

B. **Multi-Lane Slug Loader**

- Ideal for Thin Product with Rounded Edges
- Can Be Hand or Automatically Fed
- Precise, Adjustable Slug Length from Operator Interface
- Powered Rake Transfer
- Requires Spring Loaded Leading Lug in Wrapper
3. Feeding Slugs

B. Multi-Lane Slug Loader
3. Feeding Slugs

B. Multi-Lane Slug Loader
<table>
<thead>
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<th>3. Feeding Slugs</th>
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<tr>
<td><strong>B. Multi-Lane Slug Loader</strong></td>
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![Multi-Lane Slug Loader](image-url)
3. Feeding Slugs

B. Multi-Lane Slug Loader

The Single Lane Slug Loader delivers precise slug measuring from a single lane of on-edge product. This machine mounts in line with an on-edge horizontal wrapper and loads slugs of product directly into the continuous motion wrapper flights at speeds up to 150 slugs per minute.

Product can be fed automatically or hand loaded into a single gravity chute. This feeder is ideal for thin product with rounded edges.
3. Feeding Slugs

C. Single-Lane Slug Loader
- Ideal for Thin Product with Rounded Edges
- Cost Effective
- Fixed Slug Length for Each Overhead Chain
- Contoured Powered Side Belt Transfer
- Requires Spring Loaded Leading Lug in Wrapper
- Speed Limited by Operators Ability to Load
3. Feeding Slugs

C. Single-Lane Slug Loader
3. Feeding Slugs

C. Single-Lane Slug Loader
Cracker Packaging Technology: Stacks and Piles and Slugs! Oh My!

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Thank You!