Innovative Products for the Conveyor Industry
Material Handling Industry

- Global demand for material handling equipment expected to grow >4% thru 2016 to $123 billion

- Most growth = automated conveyors (globally $15.5 billion in 2012, up 18% over prior year)
Types of Conveyors

- Chain
- Screw
- Spiral
- Bucket
- Gravity
- Vibrating
- Belt
- Overhead
- Flexible
- Roller
- Drag Chain
- Vertical
Industries that Utilize Conveyors

- Packaging
- Pharmaceutical
- Food & Beverage
- Chemical
- Agricultural
- Automotive
- Electronic
- Aerospace
- Semiconductor
- Bulk Mining
Applications

- Straight tracks
- Curve tracks
- Chain guides
- Wear strips
- Guide rails
- Star wheels
- Timing screws
- Rollers
- Bearings
- Pillow blocks
- Sprockets
Engineering Plastics for the Conveyor Industry

- Polystone® M (UHMW-PE)
- Polystone® G (HDPE)
- Sustarin® C (Acetal)
- Sustamid® Nylon
- Sustadur PET
- SustaPEEK
- Detectable Plastics
LubX® C – The Smart Solution

- Lux® C is a new high-performance sliding material
- Designed and tested for the conveyor and material handling industries
LubX® C – The Smart Solution

- Compared to conventional sliding materials, conveying systems equipped with LubX® C require considerably less energy.

- LubX® C has been developed with great care to minimize the friction, but also with consideration to the wear properties against the sliding partner.
LubX® C Product Features

- Coefficient of friction up to 75% less than standard UHMW-PE
- Outstanding dry-running properties
- Energy saving
- FDA Compliant
- Noise reducing
- Eliminates the slip-stick effect (back-sliding)
- Increases process stability
- Specially designed to slide against steel and acetal chains (e.g. chain conveyors)

Smart energy saving with LubX® C
Slip-Stick Effect Video
Comparison of Sliding Partners

Sliding against Steel

Coefficient of sliding friction under dry conditions

LubX® C  UHMW

60% less friction
Comparison of Sliding Partners

Sliding against Acetal

Coefficient of sliding friction under dry conditions

75% less friction
Comparison of Sliding Partners

Sliding against PET

Coefficient of sliding friction under dry conditions

47% less friction
LubX® C Industry Segments & Applications

- **Industry Segments**
  - Conveyor
  - Packaging / Handling
  - Pharmaceutical
  - Food Processing

- **Applications**
  - Chain guides
  - Curve tracks
  - Wear strips
  - Guide rails

*Works best with high-speed conveyors and lightweight products!*
Availability of LubX® C

- Available in sheets: ¼” – 4” thick
- Color: Blue-Grey
Machined Tracks & Curves (standard & custom)
Machined Profiles
LubX® C Competition

- **Nolu S: Emerson / System Plast**
  - “Nolu S is a unique compound of UHMW and a solid lubricant.”
  - “It drastically reduces the coefficients of friction while maintaining characteristics of UHMW.”

- **Oil-Filled and Dry Slide: Quadrant**
  - “Modified with special lubricants, TIVAR® DrySlide has the lowest coefficient of friction of any of the TIVAR® products.”
  - “This advanced product uses oil filled polymers to lubricate mating surfaces with a dynamic coefficient of friction formula of less than 0.14.”
LUBX® C TESTING
What is Tribology

- **Tribology** is the science and engineering of interacting surfaces in relative motion
  - Includes the study and application of the principles of friction, lubrication and wear

- Measurements: sliding coefficient of friction, temperature, wear, roughness and contact surface
What is Tribology

- **Friction**: interaction between the contacting areas of the material bodies, which counteracts a relative movement

- **Wear & Tear**: progressive loss of material from the surface of a solid body caused by mechanical causes (contact with a solid or liquid)

- **Lubrication**: reduction in friction and wear by complete or partial separation of material bodies
Bottle Conveying System - Krones
Practical Test Apparatus (Bottle Conveying System)

- Determination of the coefficient of friction takes place under real conditions
- Different material pairings are possible
- Measurement of the temperature
- Measurement of the chain tensile force with the aid of a torque shaft
LubX-C / Polystone® M Natural (UHMW-PE) against Acetal

Coefficient of friction

1 ft /sec – 10 lbs

hours
LubX-C / Polystone® M Natural (UHMW-PE) against Acetal

![Graph showing temperature response of LubX-C and M-natural over time](image)

- **Temperature**
  - LubX-C: 72°F (22°C)
  - M-natural: 113°F (45°C)

- **1 ft/sec – 10 lbs**
  - Hours: 0 to 8
LubX-C / Polystone® M Natural (UHMW-PE) against Steel

coefficient of friction

1 ft/sec – 10 lbs

hours
LubX-C / Polystone® M Natural (UHMW-PE) against Steel

**Temperature**

- 81°F
- 72°F

**Graph:**
- LubX-C
- M-natural

**Axes:**
- 1 ft/sec – 10 lbs
- Hours
Energy input LubX-C / Polystone® M Natural (UHMW-PE) against Acetal

performance [W]  3.5 ft / sec – 30 lbs

LubX-C: \( \mu = 0.18 \) / M-natural: \( \mu = 0.29 \)
Selling Tools

- Product Samples
- Education
  - News Letters
  - Presentations
  - Webinars
- Joint Sales Calls
- Specifications
- Technical Support
Prospects & Lead Research

- **Online Sources**
  - http://www.mhpnn.com/
  - http://mhlnews.com/
  - http://www.cemanet.org/
  - http://www.packworld.com/
  - http://www.packagingdigest.com

- **NAICS Codes**
  - 333922: Conveyor and Conveying Equipment Manufacturing
  - 333923: Overhead Traveling Crane, Hoist, and Monorail System

- **SIC Codes**
  - 3531: Construction machinery
  - 3535: Conveyors and conveying equipment
  - 3537: Industrial trucks and tractors
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