TUBO – A conveying system revolution

**TUBO details**
- Vertical and horizontal conveying
- A-B, collection and distribution function
- Up to 30m distance / up to 20 t/h (wheat)
- Fully 3D capable

**Products released to sales**
- Wheat, wheat grist, flour, semolina
- Barley, malt and malt-grist
- White and brown rice
- Coffee, green beans, roasted beans and ground coffee
Many tested products

Grains
• Paddy, rice, wheat, maize, barley, rape-seeds, soy beans, feed pellets

Extruded product
• Corn flakes, honey rings, chocolate flakes

Nuts
• Peanuts, cashew nuts, walnuts, almonds

Coffee beans
• Green beans, roasted beans

Pasta
• Several short goods

Powders
• Flour, semolina, break-stock, ground coffee, milk powder
New potential

TUBO addresses four key concerns:

- **Sanitation:**
  - Fully enclosed system
  - Drive mechanics outside product stream

- **Layout flexibility:**
  - One TUBO replacing several conveyors
  - Reduced installation dimension, less floor space and/or lower building height

- **Low operating costs:**
  - Lower energy consumption than pneumatic transport
  - Reduced friction, no pulling cord inside conveyor and transport in product chambers

- **Gentle transport:**
  - Slow transport in product chambers reduces internal friction
  - Less product hand-overs with multidimensional layout
Excellent Sanitation
Hygienic machine concept

TUBO - Revolution in conveying systems

Aspiration air path

Conveying direction

TUBO made by Bühler (patent granted*)
Cleaning and filth managed

- TUBO has a simple design with few joints in the piping to get contaminated
- Tubits self-clean in free fall section
- Minimal aspiration and dust outlet manage fines after the final product outlet
- Special elements and cleaning cycle make cleanup easy
Layout Flexibility
Easy and cost efficient plant modifications

- Modification of an existing plant
- Normally done with elevators
  - 2 times penetration of shop floor for elevator
  - Penetration of shop floor for piping
- Implementation with TUBO on one floor
Flexibility is king!

- Flexible layout
- Several inlets and outlets
Feed mill in Burgholz
Flexibility is king!
Flexibility is king!
Brewery Locher Switzerland – 1. Plant with total TUBO equipment

- Complete malt silo with only one TUBO
- Distribution and collection of material
- Number of TUBOs: 7 units
  Number of conventional conveyors if this solution had been chosen: 12 units
- Additional TUBO benefit
  ➔ no risk of explosion!
Lower Costs
Prevention of active/passive explosion protection
New mill concept

- Height of building is given by elevator
- High investment costs (building, fundament)
- Higher operating costs (heating, ventilation)
Remodeled plant concept

TUBO - Revolution in conveying systems

Unnecessary space

Perfect building utilization

3D conveying without basement
Pneumatics cost more

- At any moment, the internal volume of a pneumatic conveyor is mostly empty
- To move the same mass, speed is increased
- Using air to push requires far more push due to slippage of air past product
- At the outlets, pneumatics need filters, cyclones, and/or airlocks to separate the product again with the air
- TUBO elements don’t slip so nearly 100% of energy put into the system is pushing the product reducing electrical costs and outlets are greatly simplified
Gentle Conveying
Pneumatics damage product

- Since pneumatic conveyance needs to make up for its poor volume usage with speed, products get banged up.

- Collisions with the bends, outlets, and against the product itself fragile product is damaged—it’s noisy, too!

- TUBO product flow is so slow and gentle in the pipe the vast majority never experiences any impacts at all.
Less breakage

- Low-speed conveying
- No conveying element connection needed, which also damages the product
- Gentle and slow transitions—horizontal or vertical
Thanks! Are there any questions?