TUBO – A Conveying System Revolution

Grain Conveying

Innovations for a **better world.**

BÜHLER

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

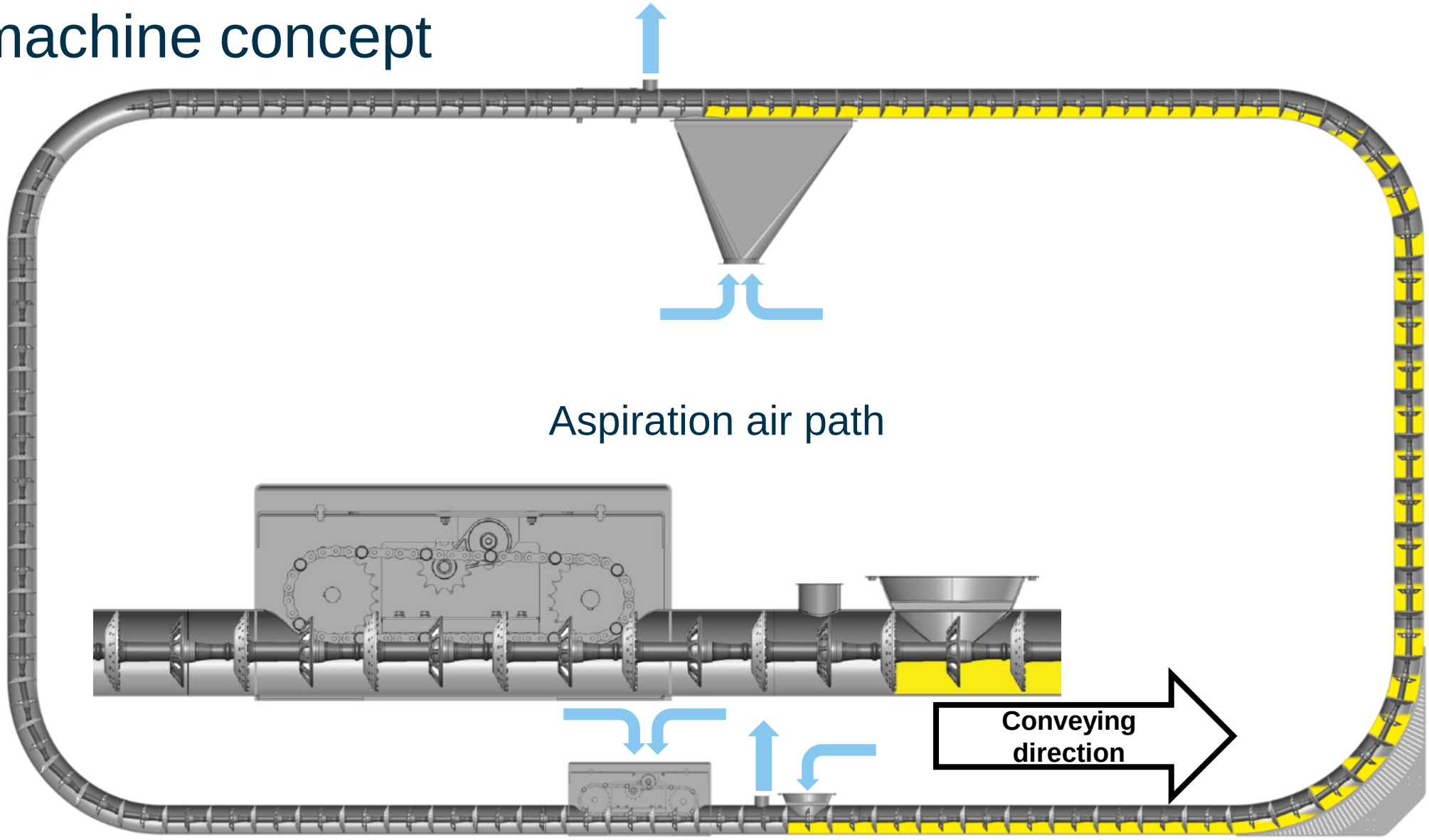
New potential

TUBO addressess 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

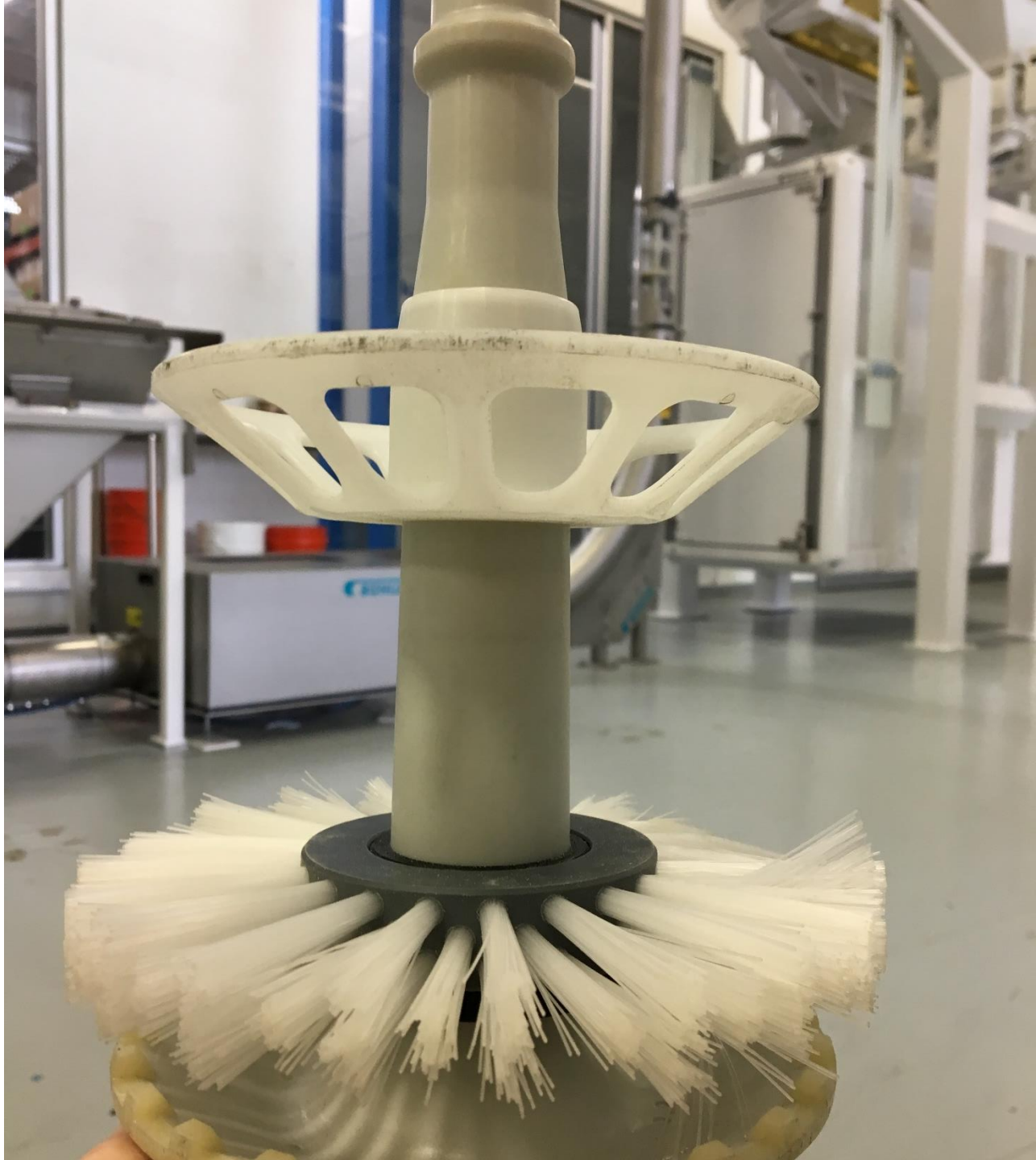
Hygienic machine concept



TUBO
made by
Bühler
(patent granted*)

Cleaning and filth managed

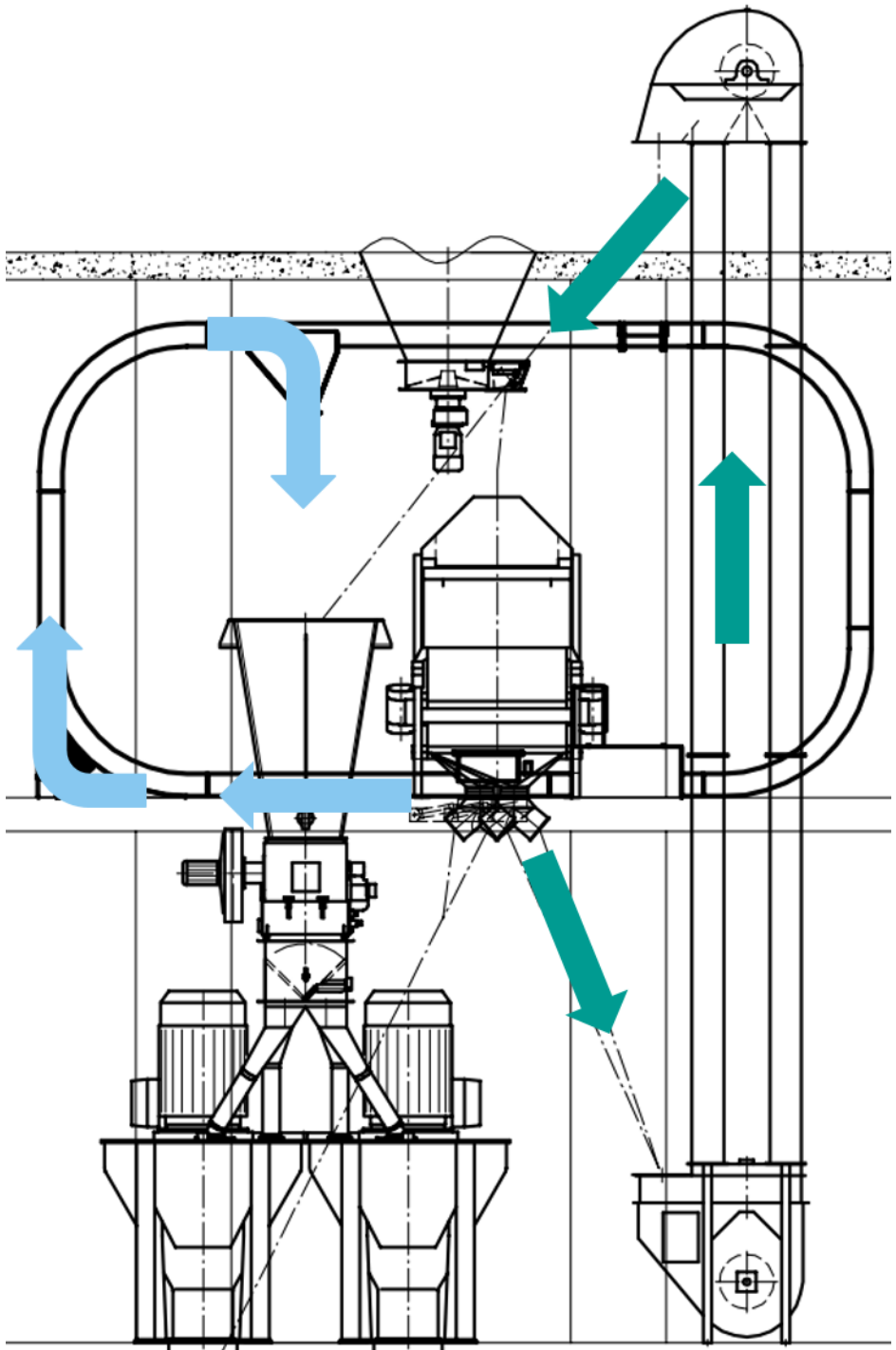
- TUBO has a simple design with few joints in the piping to get contaminated
- Tubits self-clean in free fall section
- Minimal aspiration and dust outlet manage fines after the final product outlet
- Special elements and cleaning cycle make cleanup easy



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
- Implemenation with TUBO on one floor



Feed mill in Burgholz - Switzerland

Flexibility is king!

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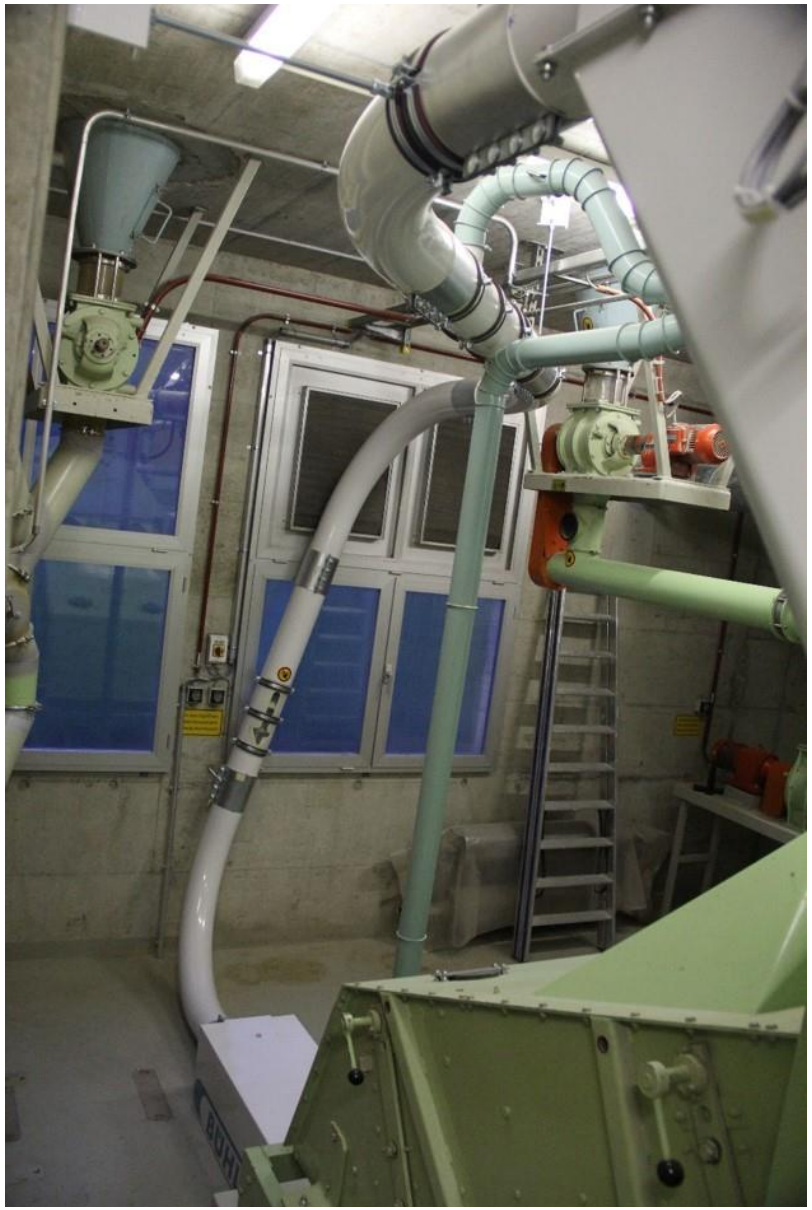
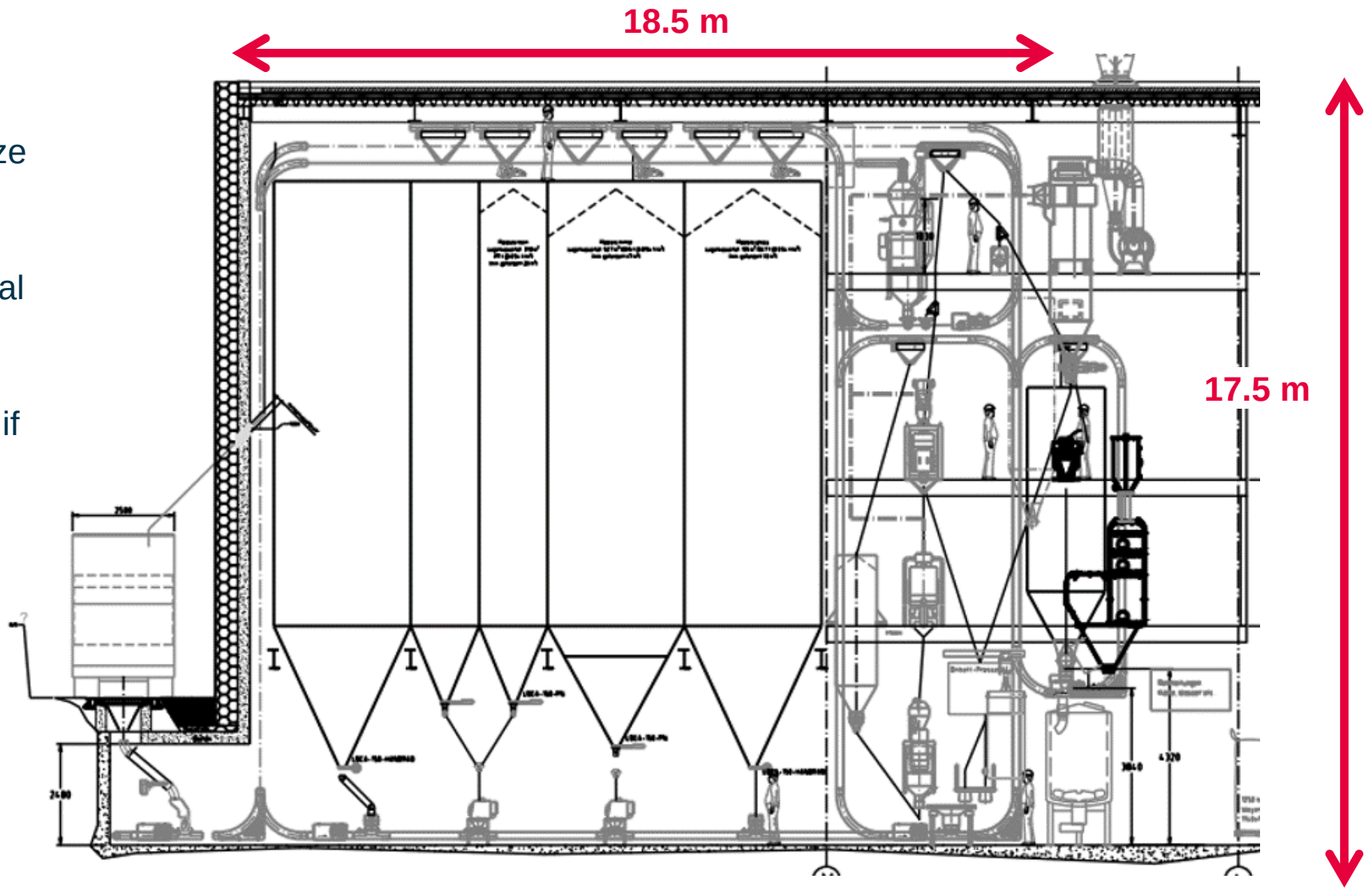


Flexibility is king!

- Flexible layout
- Several inlets and outlets

Brewery Locher Switzerland – 1. Plant with total TUBO equipment

- Complete malt silo with only one size 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 in brewing
  ➔ no risk of explosion!

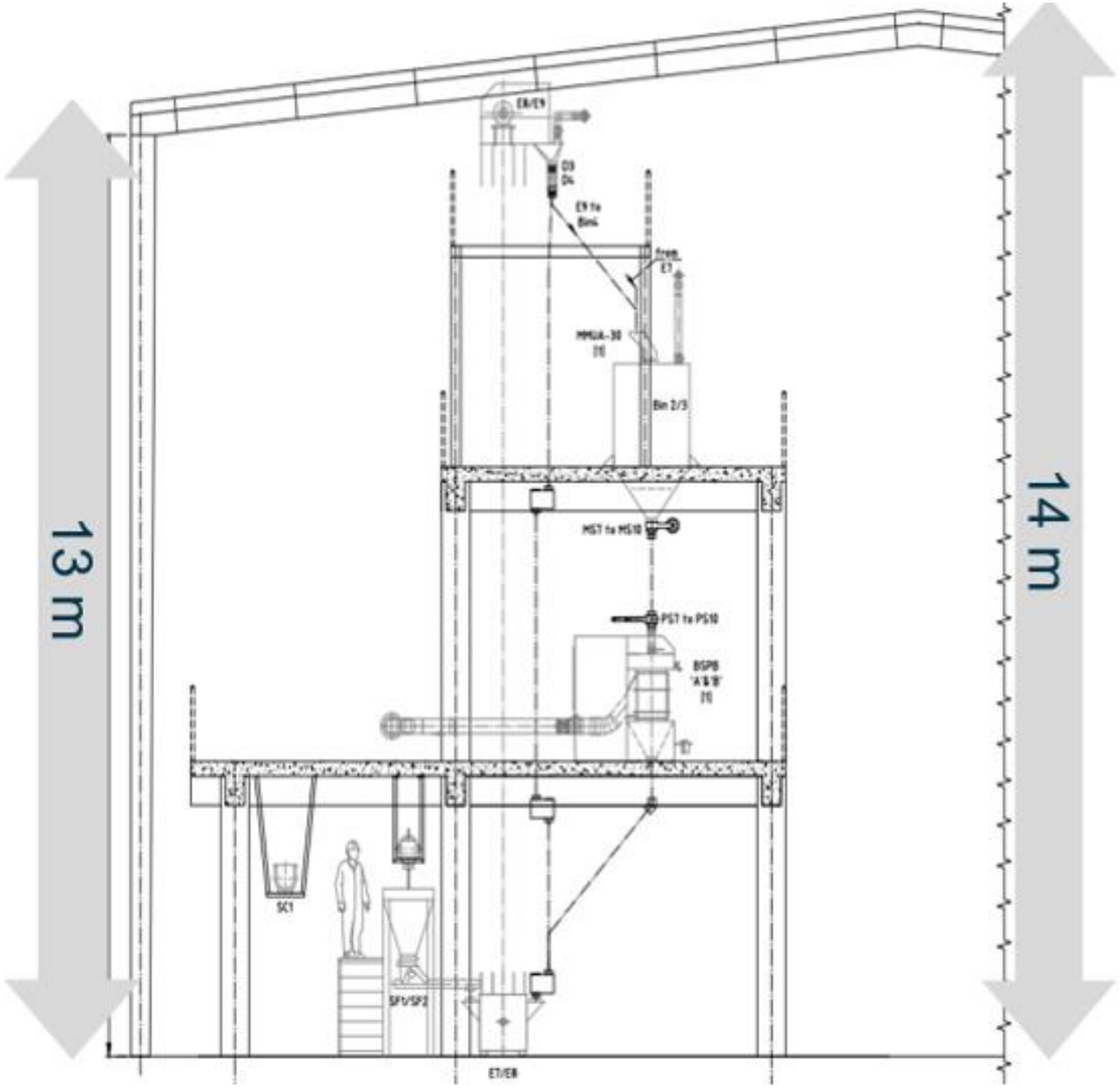


Lower Costs

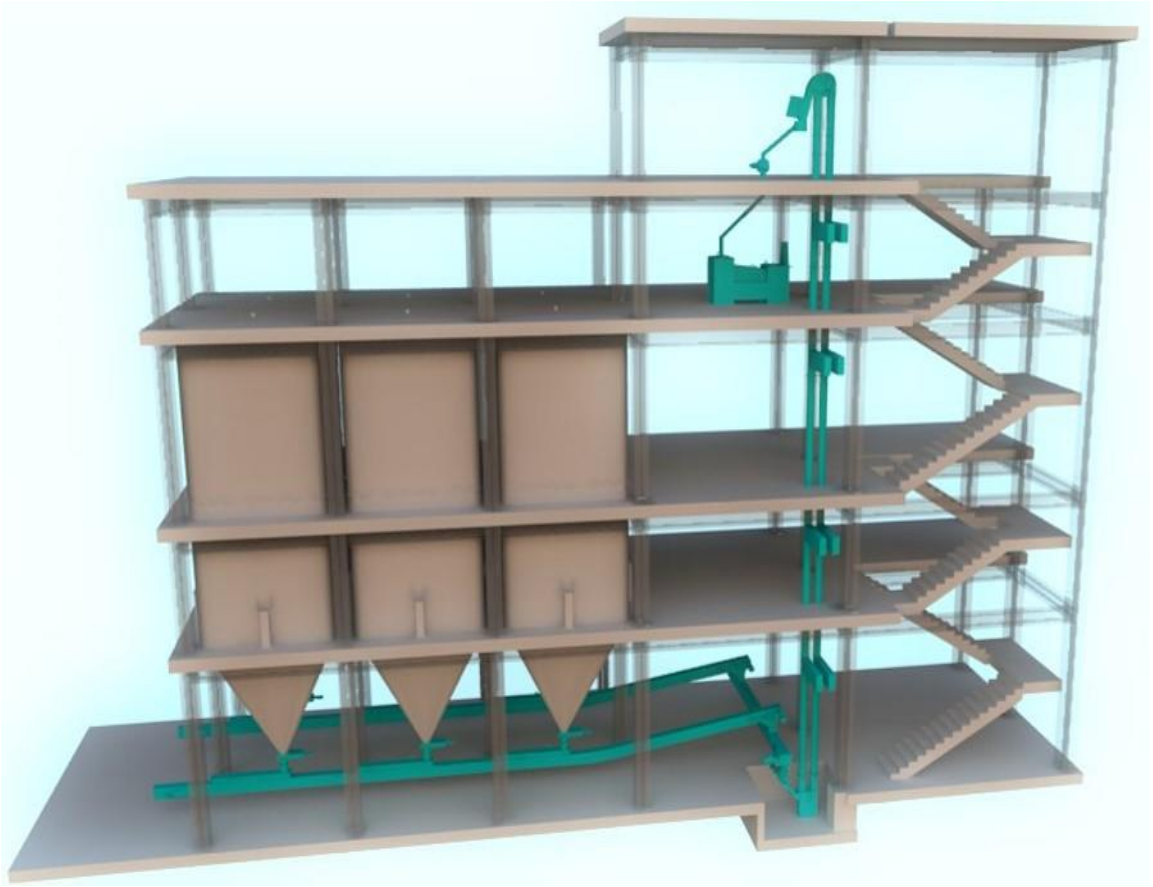
Prevention of active/passive explosion protection

New mill concepts

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

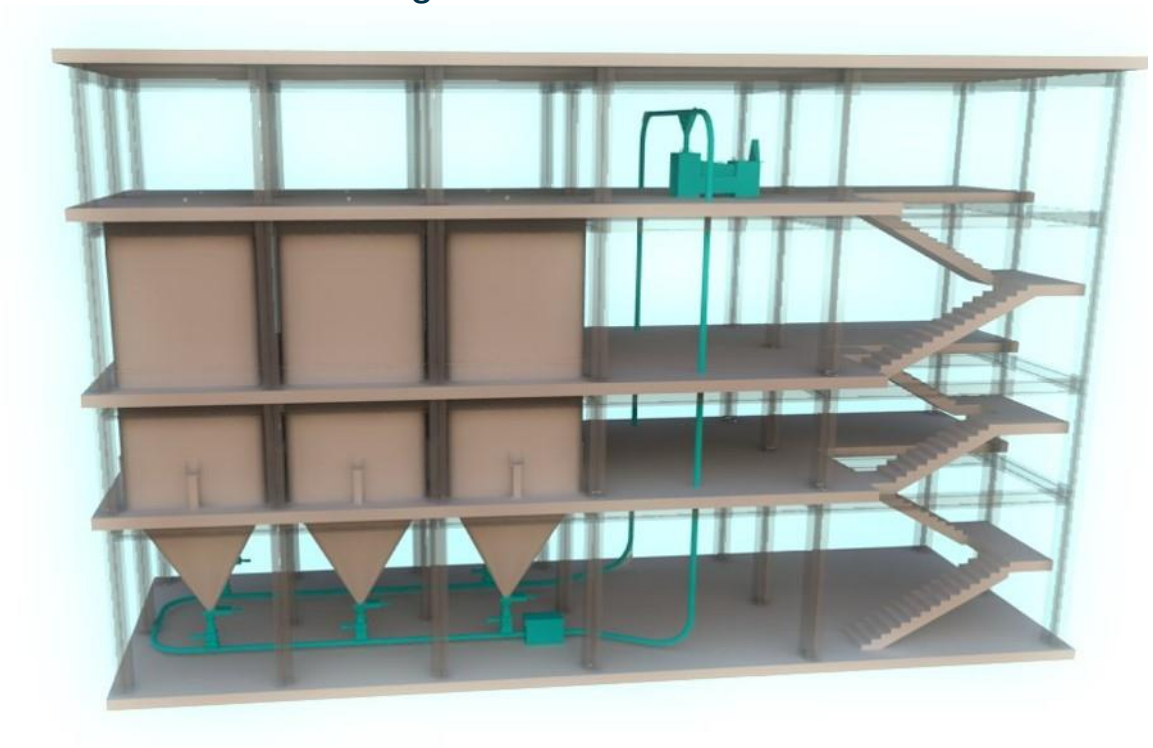


TUBO – New plant concepts



Unnecessary space

Perfect building utilization



3D conveying
without basement

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
- 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?