



# Latest Developments in Material Handling

Christoph Schumacher – General Manager Material Handling Plants & Systems

Coperion Technology Update 2025

# Ready for Future Mega Capacity Plants

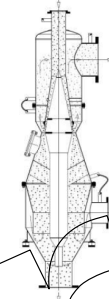


Key components for 1000 kta plants

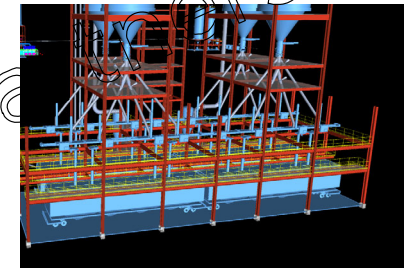
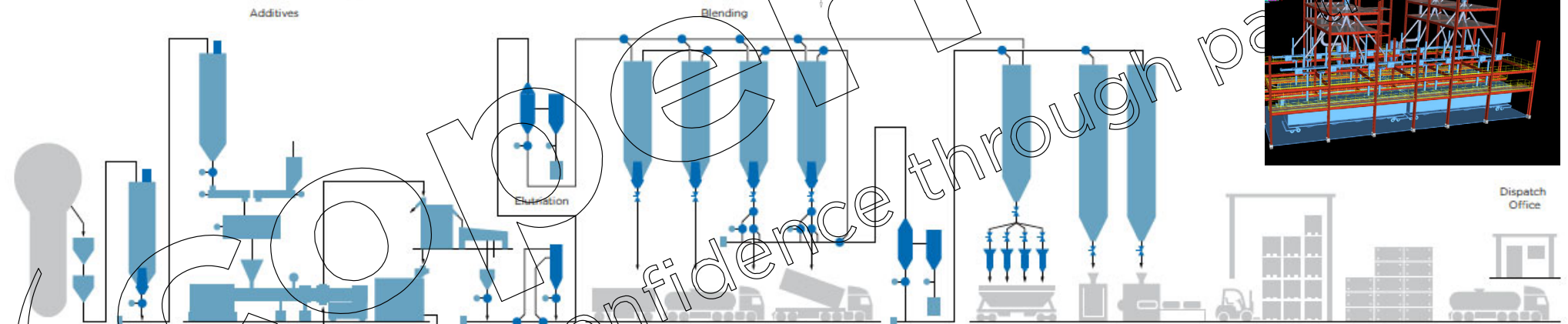
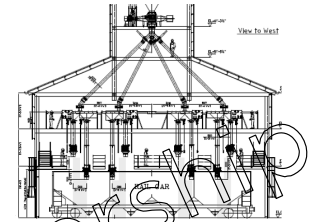
High Pressure Powder  
Rotary Valve ZXQ  
Capacity > 140 tph



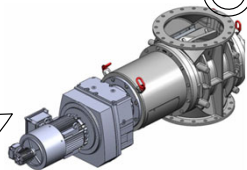
Pellet Cleaner /  
Elutriator UGS  
Capacity > 150 tph



Railcar Loading Facility  
Capacity > 400 tph

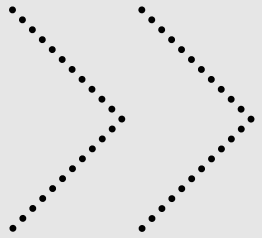


Process / Chopping Rotary Valve  
Capacity > 125 tph  
Torque up to 50 kNm



High Pressure Pellet  
Rotary Valve ZVH  
Capacity > 170 tph





# 1

CONTI-SCHUB® & INTACON

Slow-motion Conveying: Intelligent Air Control & Pipe Supports

# 2

Rotary Valve Special Improvements

New Purge Gas Seal Ring

# 3

Container & Railcar concepts

Loading / Unloading



# Dense Phase Conveying / CONTI-SCHUB®



## General Overview

- [Video: https://www.youtube.com/watch?v=48VxWo\\_qpMA](https://www.youtube.com/watch?v=48VxWo_qpMA)



# Basic Information on Dense Phase Conveying

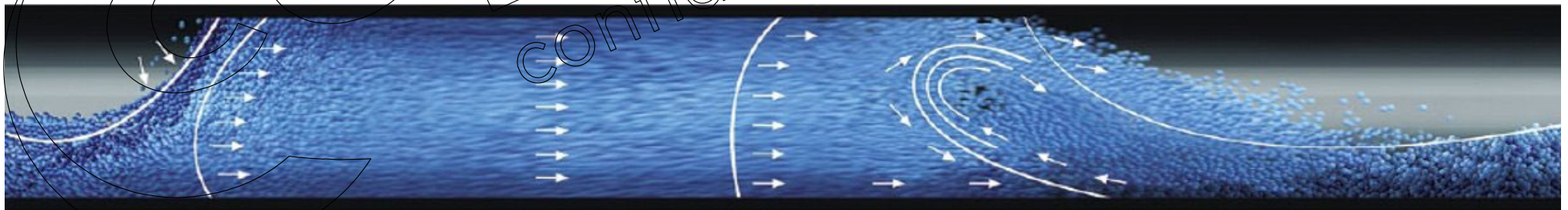
## Characteristics

### CONTI-SCHUB®

- Low gas velocity ( $v = 4 - 10 \text{ m/s}$ )
- High pressure drop ( $\Delta p$  up to 6 bar)
- High bulk concentration ( $\mu = 10 - 50$ )
- Instability limit (upper limit of the gas velocity)
- Obstruction limit (lower limit of the gas velocity)

### Product requirements

- Free-flowing bulk materials
- Narrow particle size distribution
- Negligible fines content
- Particle size  $> 0.5 \text{ mm}$
- Regular particle size: spherical, lens-shaped, cylindrical, cubic



# Description and Main Functions

INTACON® - intelligent airflow control

## INTACON®...

- ... is an intelligent control program for CONTI-SCHUB® / TAKT-SCHUB® systems with rotary valves, which automatically keeps the conveying status in the stable range under changing operating conditions.
- ... eliminates manual control setting of process parameters dependent on product and conveying rate.
- ... determines the optimum gas flow rate for each product, throughput and conveying line length depending on the stability criteria for plug conveying.
- ... regulates the product throughput (airlock speed) as a function of the maximum permissible conveying pressure.
- ... operates an air flow control unit with continuous adjustment range (LMR-7 or LMR-X) via standard signals.
- ... avoids product destruction during blow empty by adjusting gas flow.

## INTACON® main functions

- Starting
- Air quantity optimization
- Pressure monitoring
- Capacity maximization
- Blow empty

# CONTI-SCHUB®



## Improvements

### Next Generation INTACON

- Parameter setting instead of programming
- Scalable Hard- and Software
- New structure of software
- Intelligent Air Control with fuzzy logic

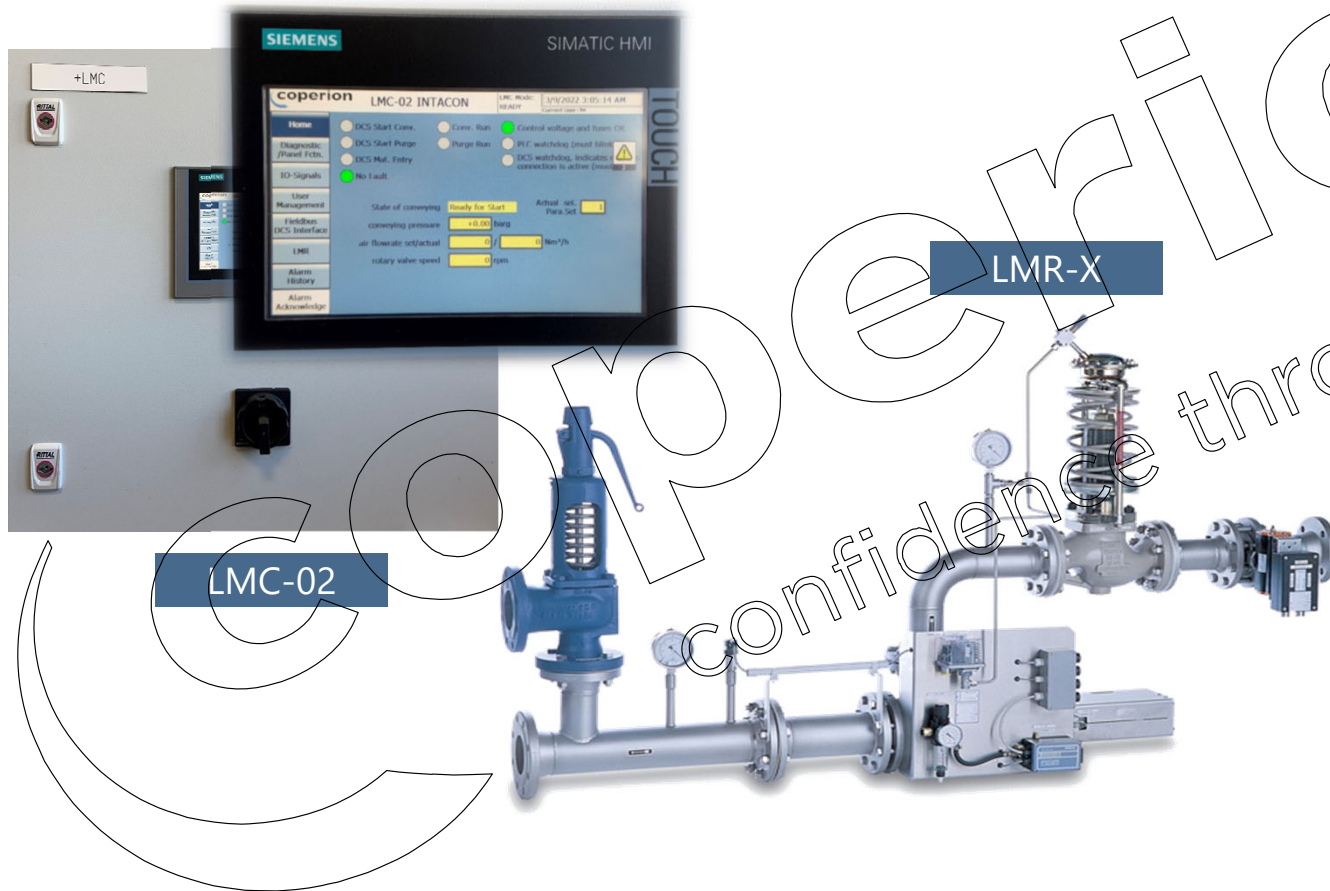
### Next Generation Pipe supports

- Simplified installation
- Easy access for inspection of damping elements
- Simplified exchange of worn elements
- Sensor feedback for predictive maintenance

Next generation of  
Coperion's intelligent air  
control system (INTACON) &  
Pipe Supports

# Next Generation INTACON

INTACON® - **INT**elligent **Airflow** **CON**trol



LMC-02

LMR-X



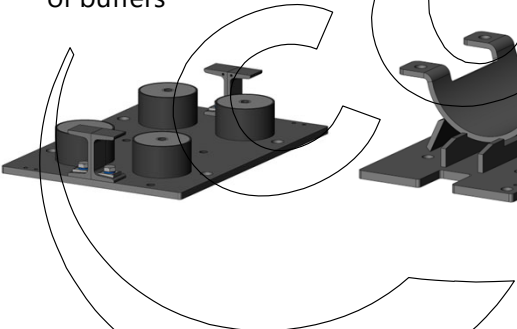
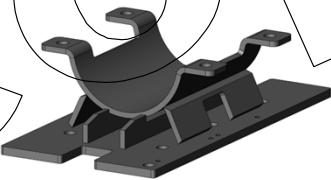



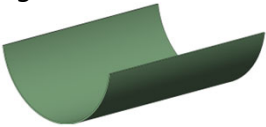
- Modern controller state of the art
- New comfortable Display
- New interfaces (Profibus / Profinet / Modbus RTU)
- Same design like ecoblu
- Simple configuration possibilities
- Better diagnostic possibilities
- Longtime archive for conveying parameters/values
- Webserver for customer access
- Possibility of remote diagnostic

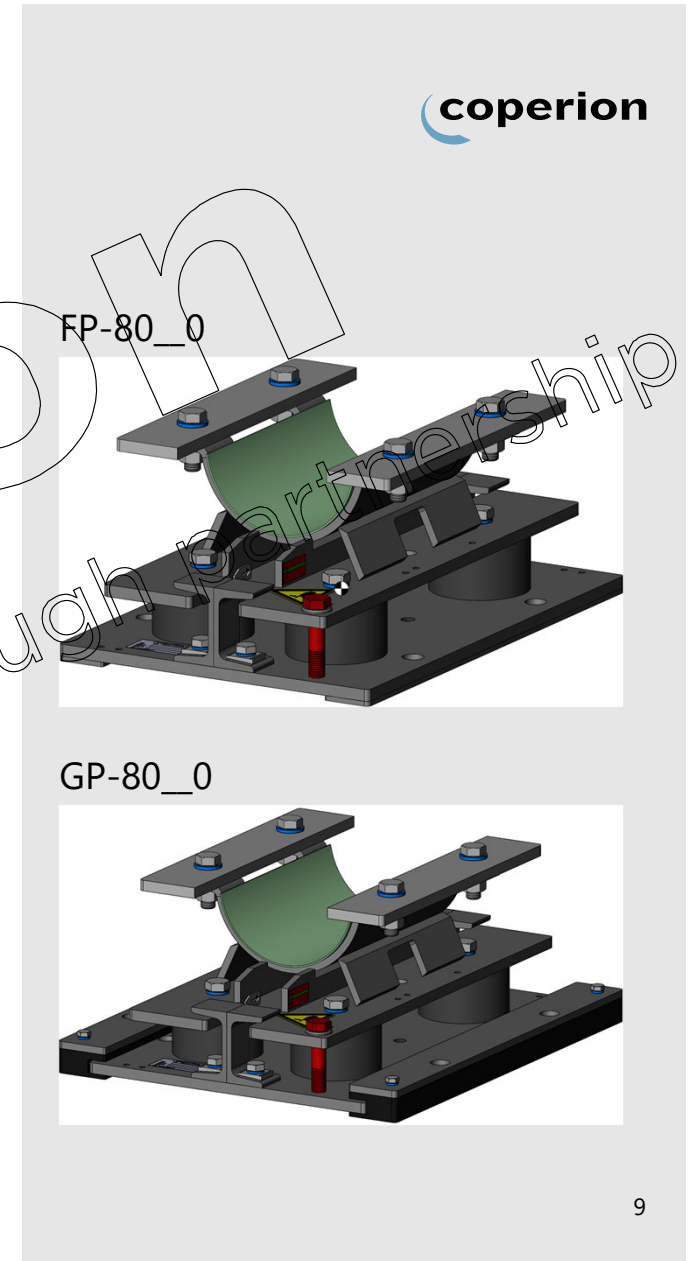


# Next Generation of Pipe Supports

## Optimization of fixed support and guiding support

- Modular system to reduce complexity
- 2 pipe support types consist of 4 modules → spare parts management
- Sensor integration for force feedback → predictive maintenance

Damping unit	Pipe bracket	Specific modules	Common parts
With three load groups, adjustable via number of buffers	Eight sizes from DN 150 to DN 400	Distance plate FP-80	Tappet in three versions
		 Slide shoe GP-80 	 Insulation insert in eight sizes 



# 1

CONTI-SCHUB® & INTACON

Slow-motion Conveying: Intelligent Air Control & Pipe Supports

# 2

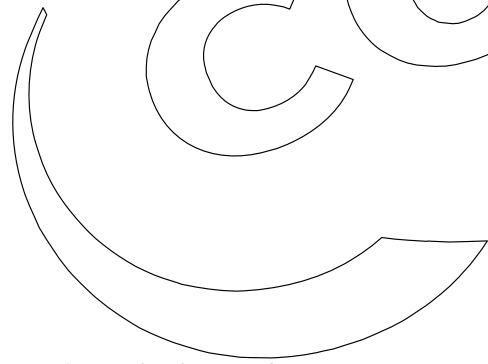
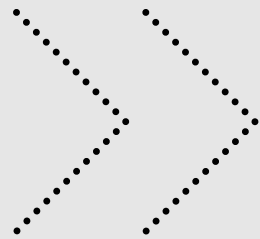
Rotary Valve Special Improvements

New Purge Gas Seal Ring

# 3

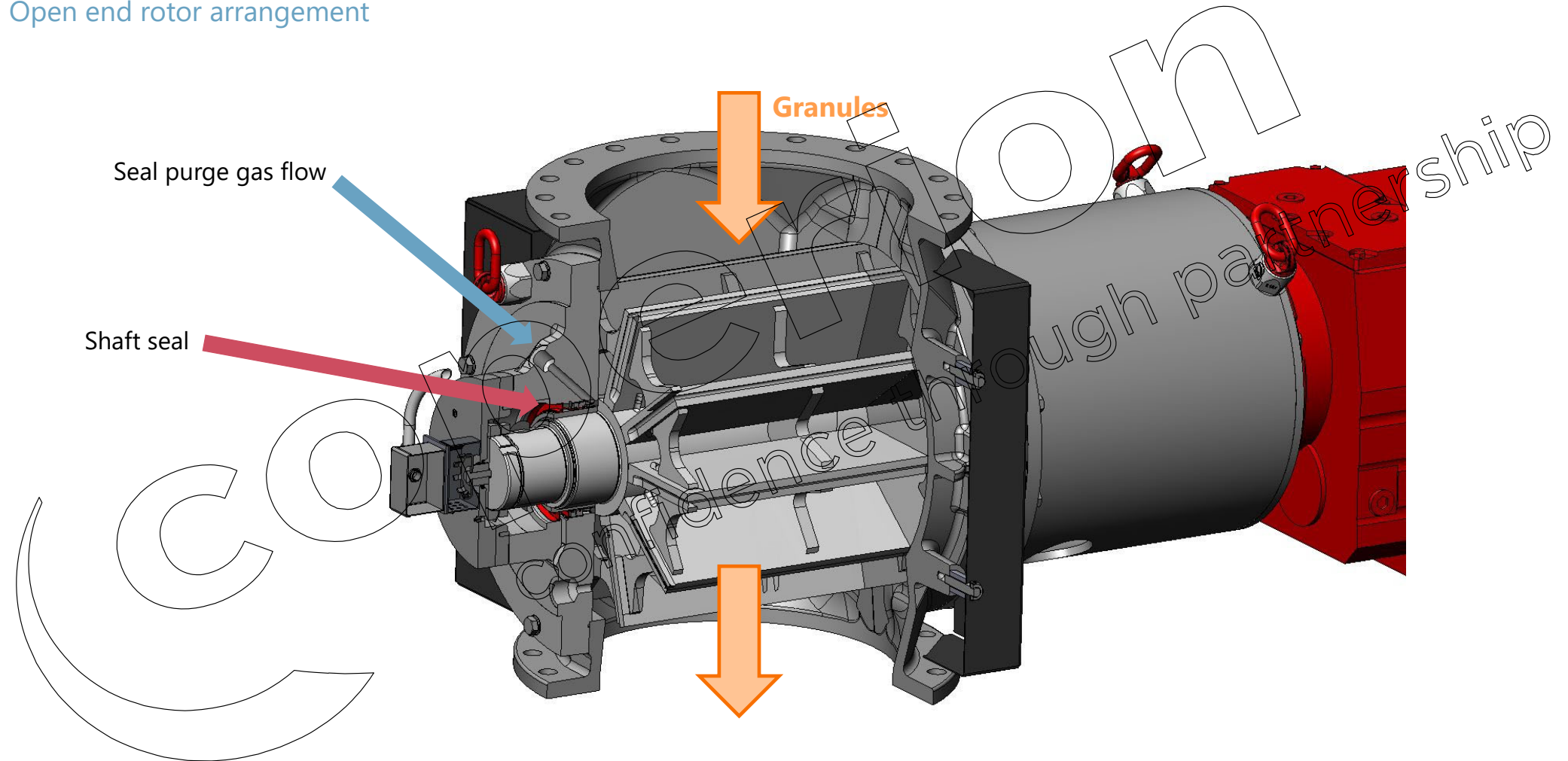
Container & Railcar concepts

Loading / Unloading



# Chopping Valves

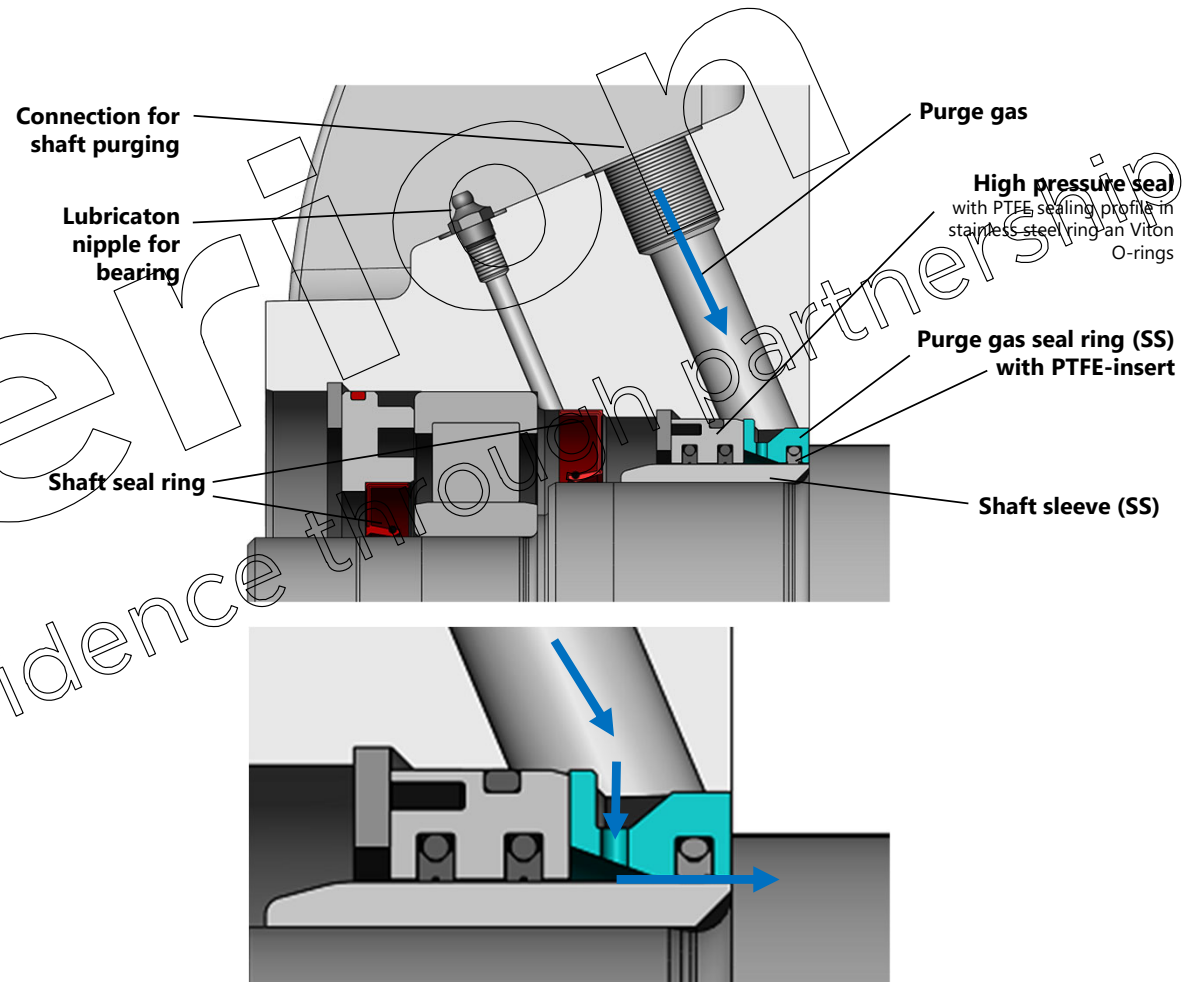
Open end rotor arrangement



# Sealing with Reduced Purge Gas Consumption

## New Purge Gas seal ring

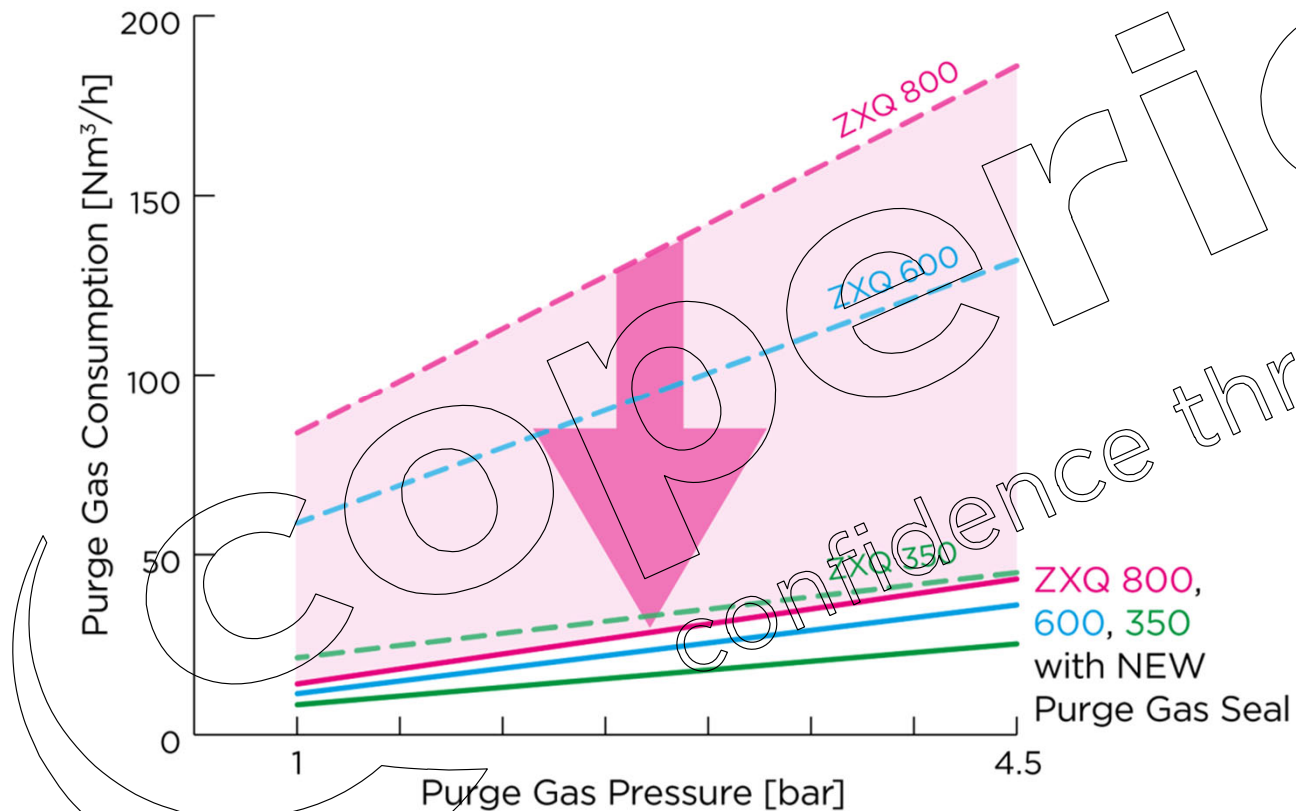
- WLM high pressure seal with upstream purge gas seal ring with PTFE insert
- Coperion developed a *new* purge gas seal, based on the proven principle of the WLM high-pressure seal for high pressure rotary valves (Z\_Q, ZAW), resulting in considerable reduction of the purge gas consumption
- New purge gas seal ring allows significant reduction of purge gas consumption





# Sealing with Reduced Purge Gas Consumption

New Purge Gas seal ring



Coperion Technology Update 2025



→ SAVINGS between 70 - 90% can be achieved \*\*)

System with 10 Rotary Valves:  
250 kUSD OPEX savings p.a. \*\*)

\*) The percentage saving depends on whether the comparison refers to an old heated (90%) or unheated (70%) version of the Z\_Q rotary valve

\*\*\*) (8000 hrs \* 100 m<sup>3</sup>/h \* 0.03 USD/m<sup>3</sup>) \* 10 RV

# High Capacity Powder Rotary Valve ZXQ 800

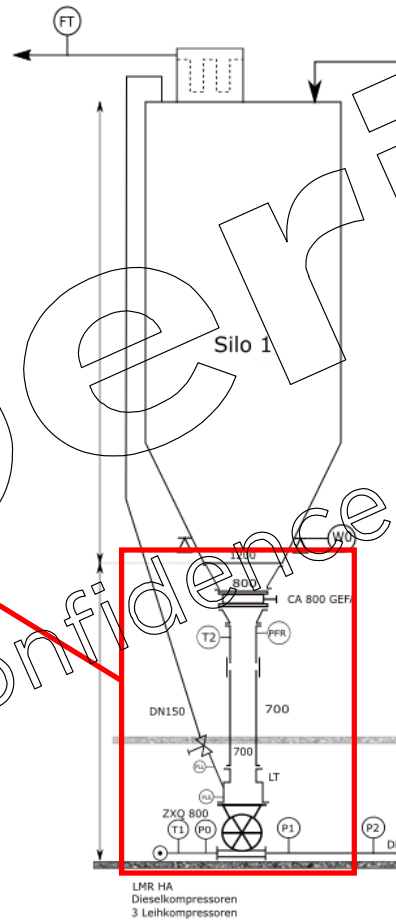


1:1 Full-Scale Tests at Test-Centre Coperion Weingarten



# High Capacity Powder Rotary Valve ZXQ 800

1:1 Full-Scale Tests at Test-Centre Coperion Weingarten



**Capacity tests executed  
with connected conveying system**

- 1,0 to 4,0 barg
- Product: LLDPE resin powder,  
bulk density 400 kg/m<sup>3</sup>,  
avg. particle size 0,4 mm

Operated  
Capacity  
150 .. 215 tph

# 1

CONTI-SCHUB® & INTACON

Slow-motion Conveying: Intelligent Air Control & Pipe Supports

# 2

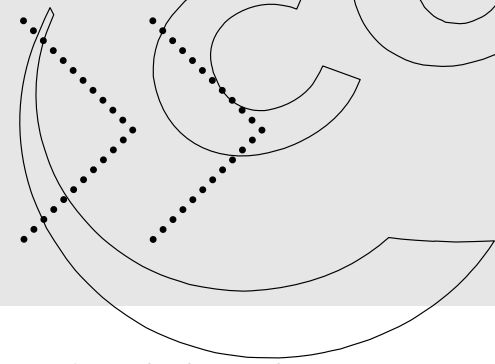
Rotary Valve Special Improvements

New Purge Gas Seal Ring

# 3

Container & Railcar concepts

Loading / Unloading





# Coperion Bulk Polymer Container Loading Systems



Semi-trailer tipping chassis mounted container

Guide rails to position truck



Guide rails

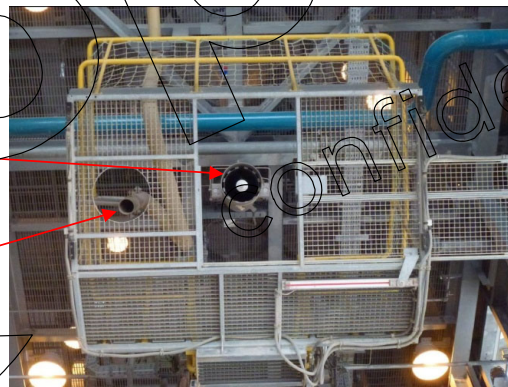
Container fully tipped



Access platform view from ground

Loading telescope  
With 'Stamper'

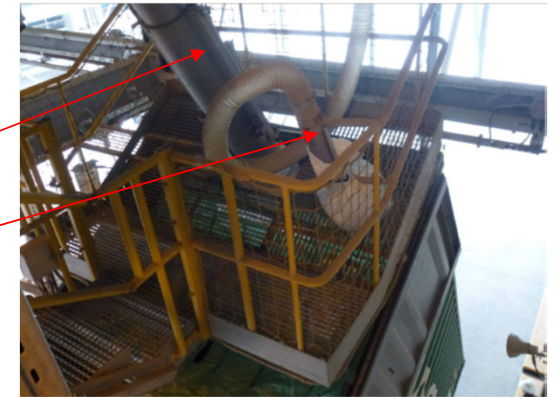
Inflation and  
vent pipe



Access platform view from platform

Loading telescope

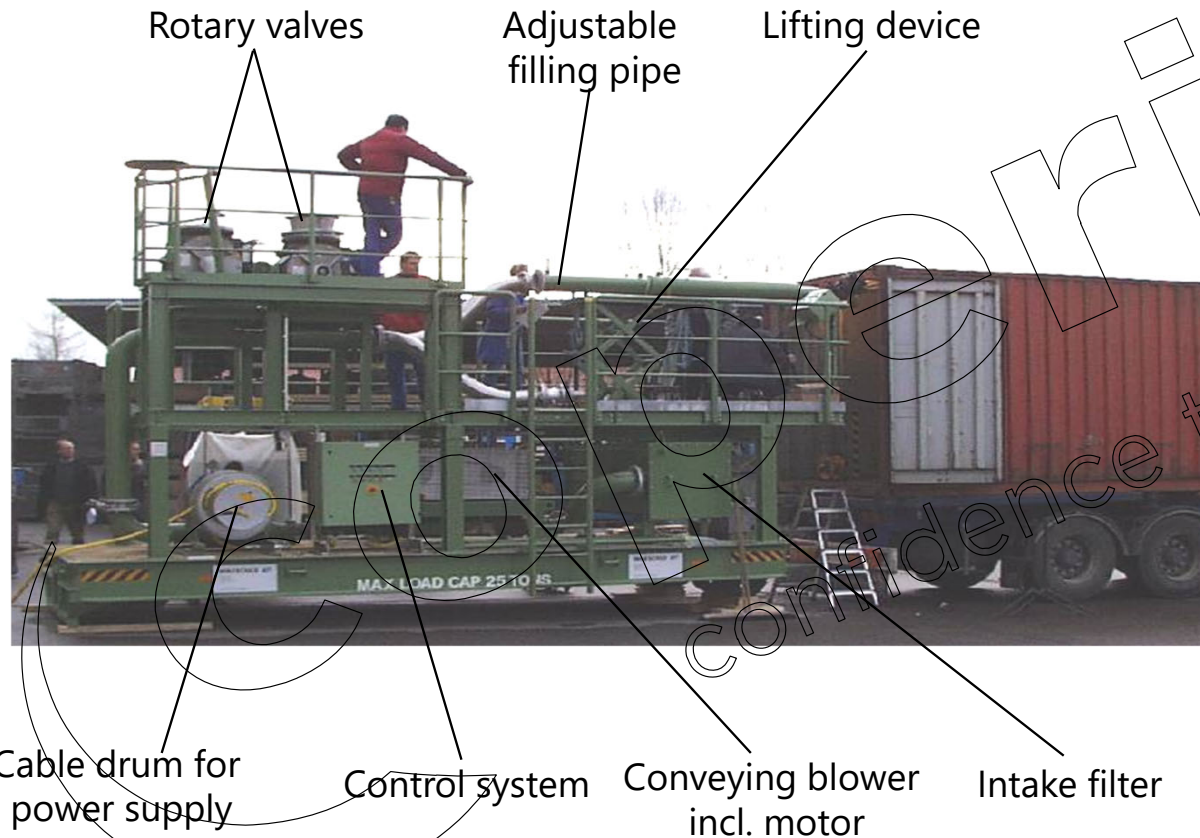
Vent and inflation pipe



# Coperion Bulk Polymer Container Loading Systems



Complete mobile fluid load system



Mobile FLUID LOAD<sup>®</sup> system with fully integrated conveying system and rotary valves with maximum flexibility for container filling applications.



# Coperion Container Unloading Systems



Complete station hung on container corner fittings



# Railcar Washing / Drying Systems

Complete System Integration





# Railcar Loading

## Installation Pictures





Thank you very much for your attention.



Coperion Technology Update 2025