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First-Class Handling for First-Class Products: Special Components in Material Handling Plants

Roadshow Japan Oct 2024

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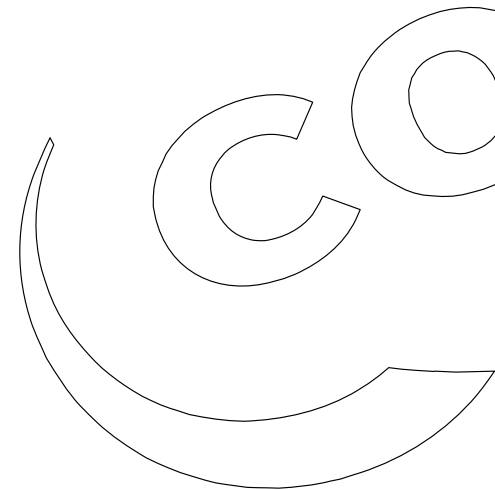
Contents

Pos.	Topics
1.	General Introduction on Components
2.	Rotary Valve Type and Application
3.	Features that benefit customer: <ul style="list-style-type: none">• Anti-chopping• Purge gas• Quick cleaning• Extraction Device
4.	Wear Protection Concept for Components
5.	Explosion Protection for Rotary Valve
6.	Diverter Valve

General Introduction on Components

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1



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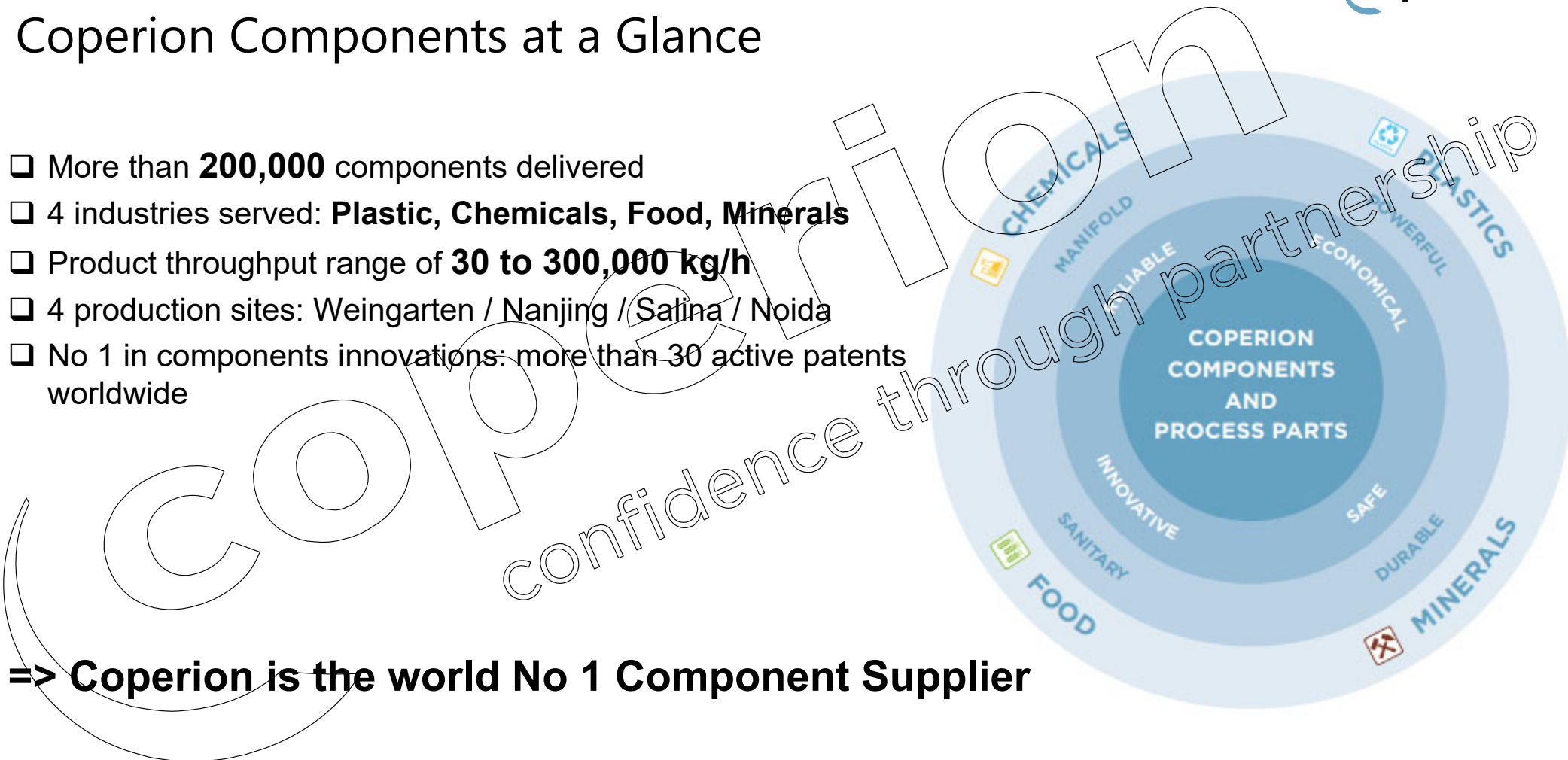
Coperion material handling component is tailored to every material and process requirement.



First-Class Handling for First-Class Products: Special Components in Material Handling Plants

Coperion Components at a Glance

- ❑ More than **200,000** components delivered
- ❑ 4 industries served: **Plastic, Chemicals, Food, Minerals**
- ❑ Product throughput range of **30 to 300,000 kg/h**
- ❑ 4 production sites: Weingarten / Nanjing / Salina / Noida
- ❑ No 1 in components innovations: more than 30 active patents worldwide



=> **Coperion is the world No 1 Component Supplier**

Coperion Components pursue **two** missions...

... unique devices which function **reliably** and **fulfil the needs** of customers

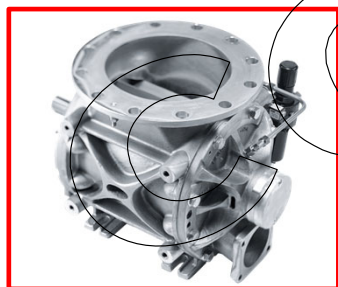


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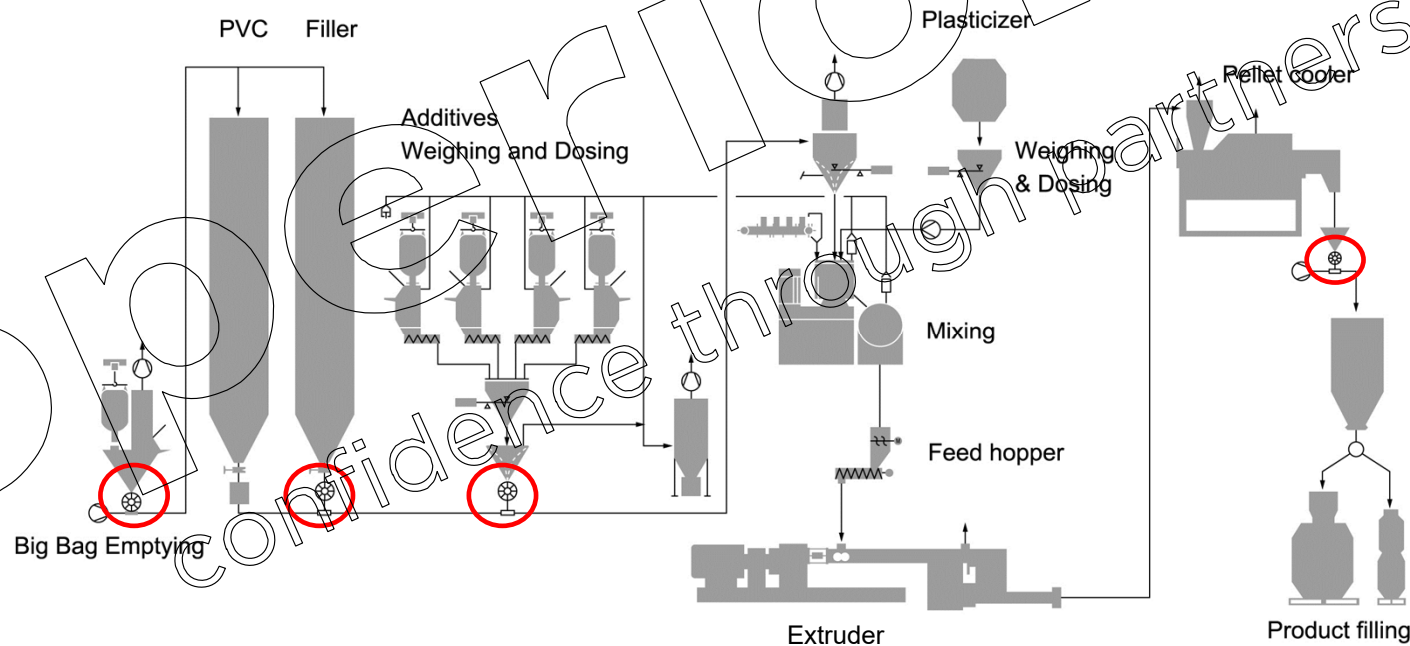
Component Application



Rotary valves_ZRD



Rotary valves_ZXD



Rotary Valve Type and Application

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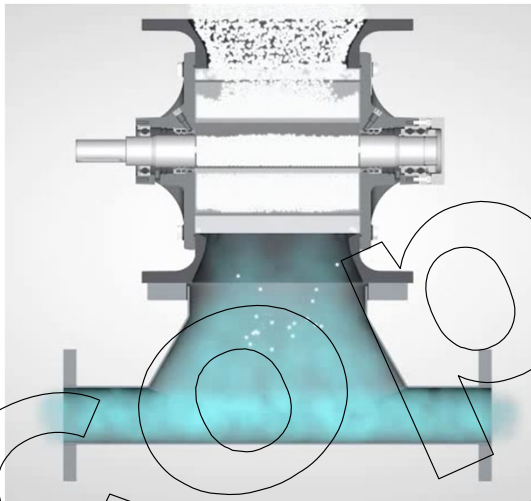
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confidence through partnership

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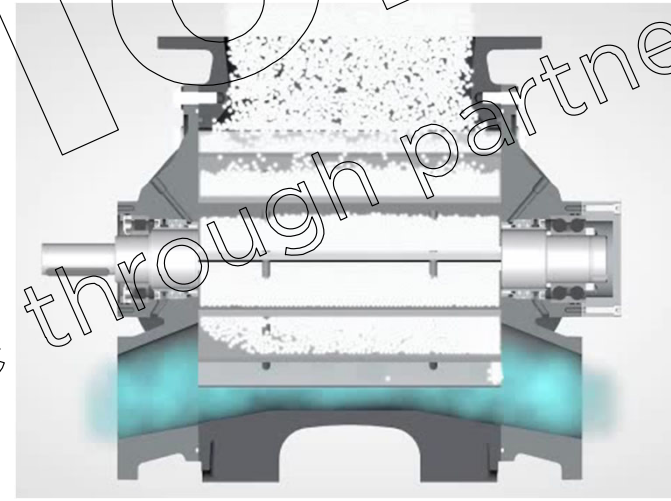
COPERION ROTARY VALVE TYPE

The **two** different executions:



>> Drop through rotary valve

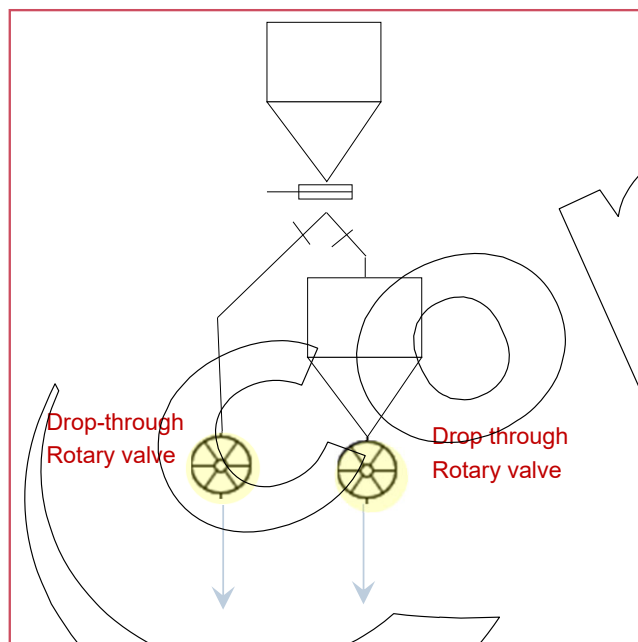
- Universal application
- Emptying by **gravity**
- Feeding to a pneumatic conveying system, or suction conveying



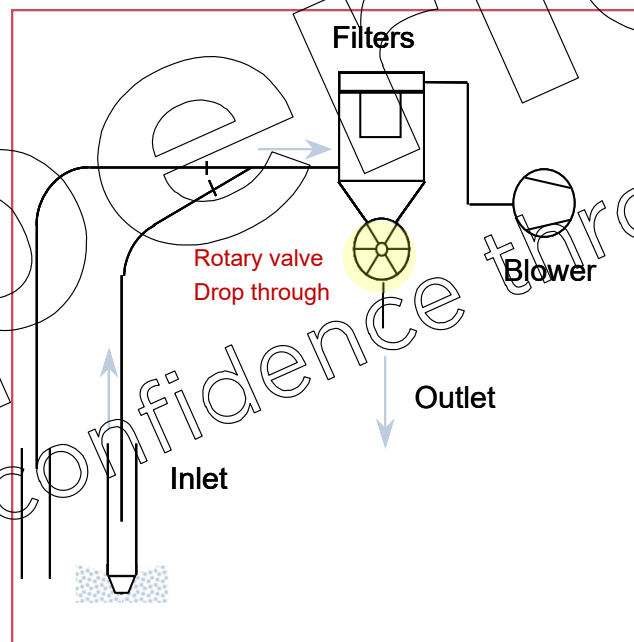
>> Blow through rotary valve

- Emptying the chambers with **conveying gas**
- Better efficiency
- Suitable for **adhesive and cohesive products**
- Only in combination with pneumatic conveying system

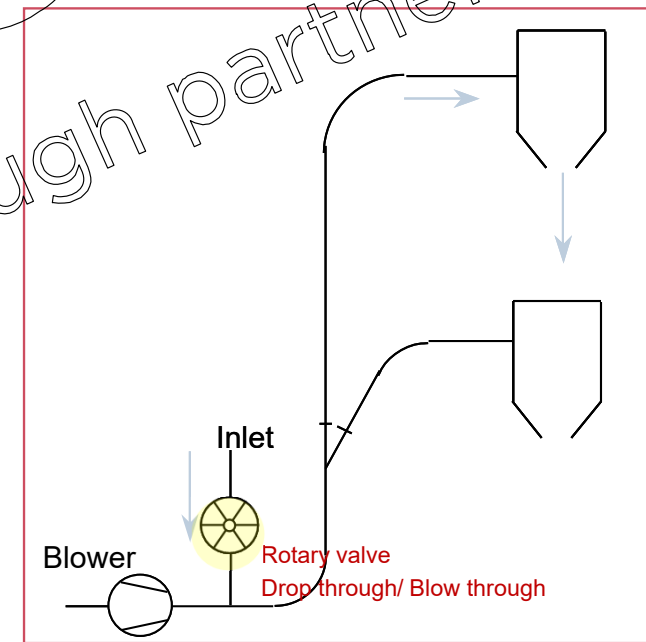
ROTARY VALVE - APPLICATIONS



- Gravity discharging

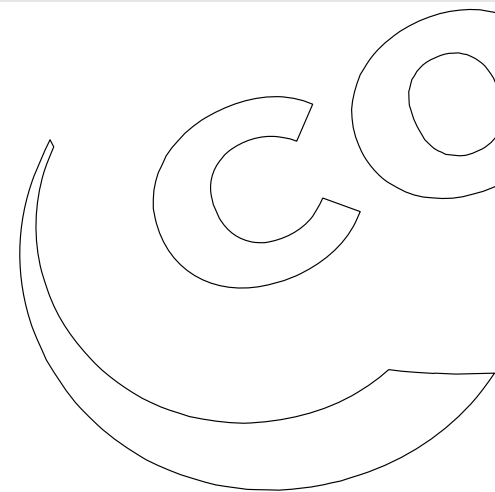


- Vacuum conveying



- Pressure conveying

Features that Benefit Customer



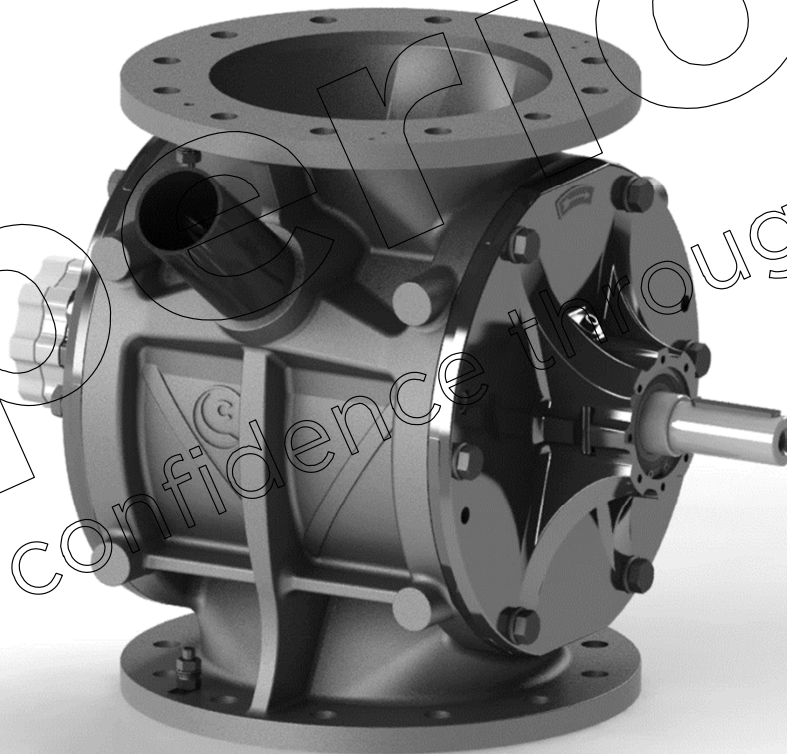
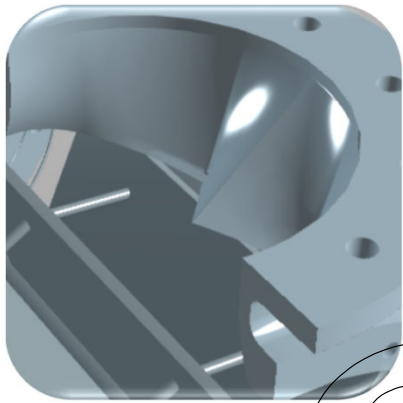
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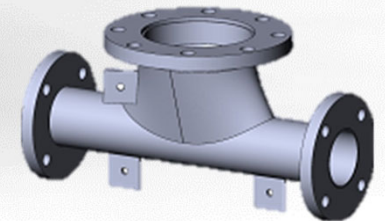
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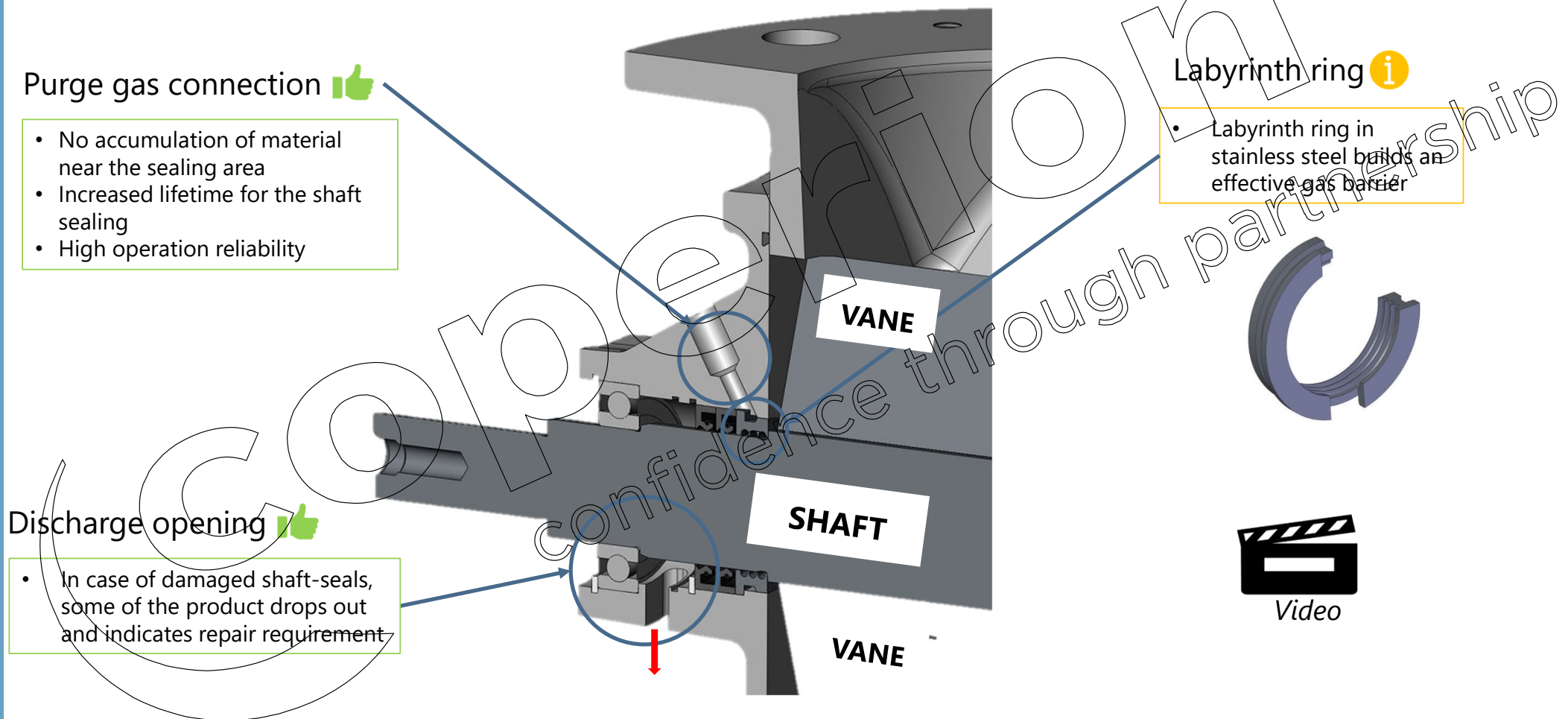
3.1 Anti-Chopping Inlet for Pallets



- Special inlet geometry – **high product quality** built for gentle product handling (patented)
- Large inlet – **Higher filling rate**
- With feeding shoe suitable for feeding bulk materials into pneumatic conveying systems



3.2 Purge Gas – High Operation Reliability



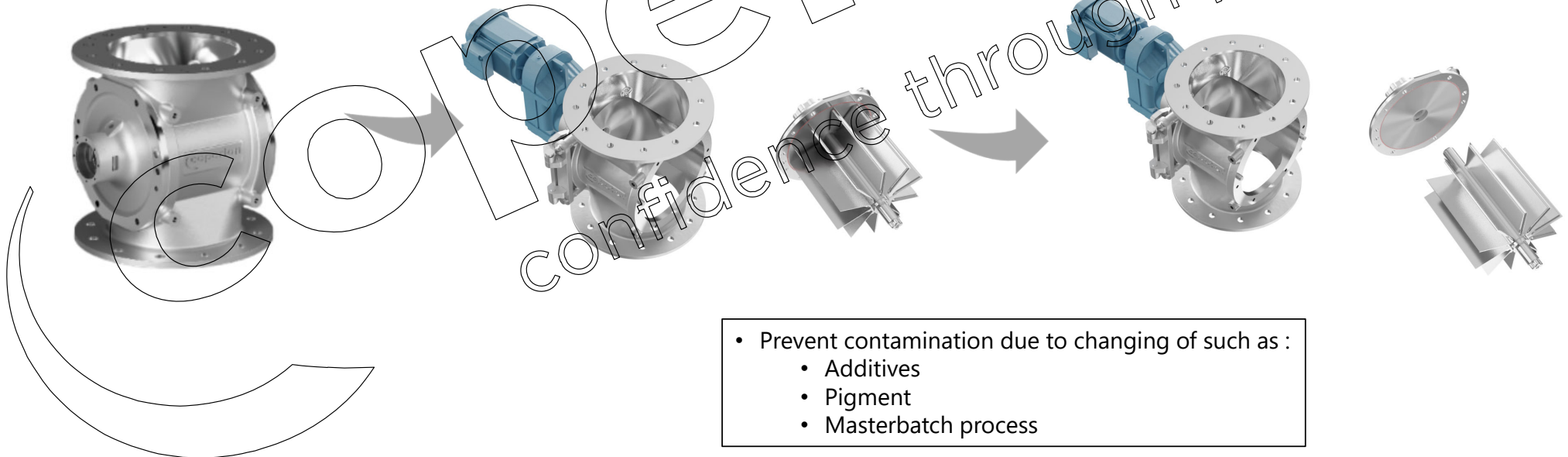
3.3 Quick Cleaning

Benefit - helps to prevent product contamination.

Rotary Valve .1
= without quick cleaning

Quick cleaning version .2

Quick cleaning version .3



3.4 Extraction Device - FXS

Benefit - improves personnel safety and efficiency when cleaning the rotary valve

Unique:

Hinge-design allows **best access** for cleaning and inspection

(FXS = Full Access System)

FXS-2: Additional access from drive side for cleaning and inspection

FXS-1: Access from rotor side

Quick cleaning coupling .3

-> rotor can be detached from endplate

Quick cleaning coupling .2

3.4 Extraction Device - FXS

Video



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3.4 Extraction Device

Benefit - improves personnel safety and efficiency when cleaning the rotary valve

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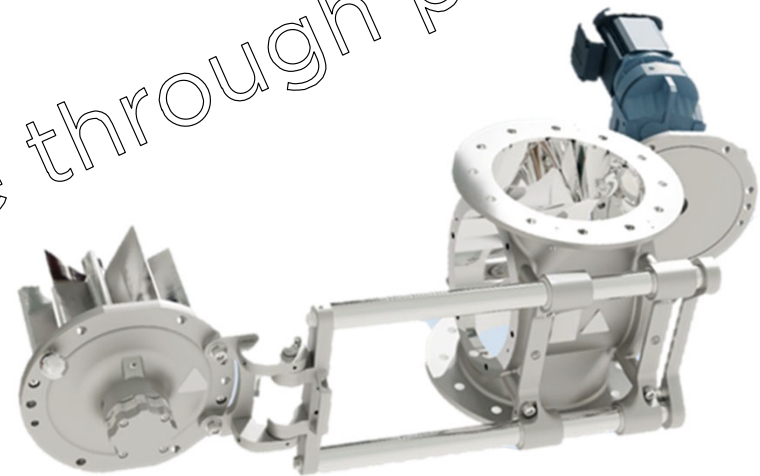
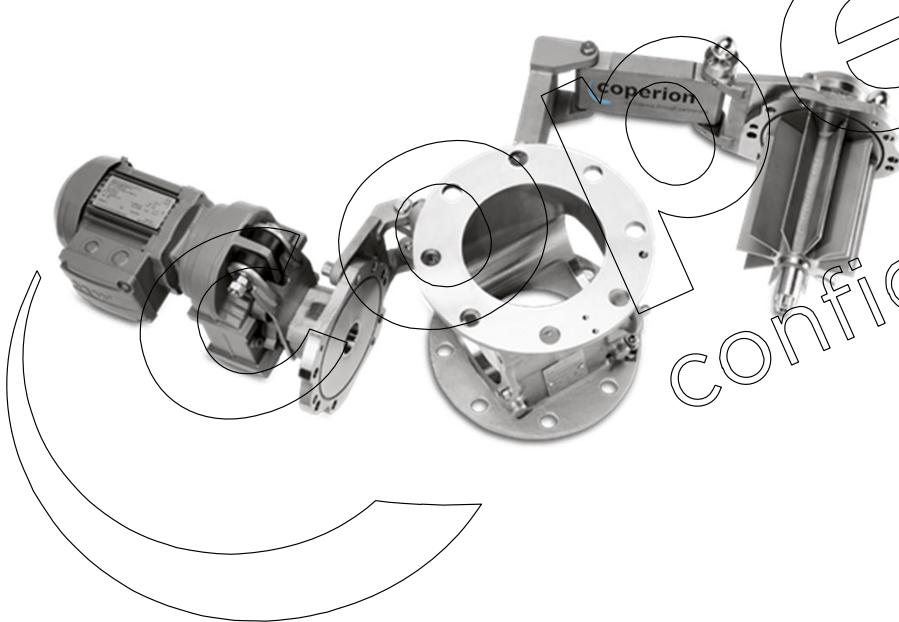
NEW



FXS



FXL



3.4 Extraction Device - FXL

Video



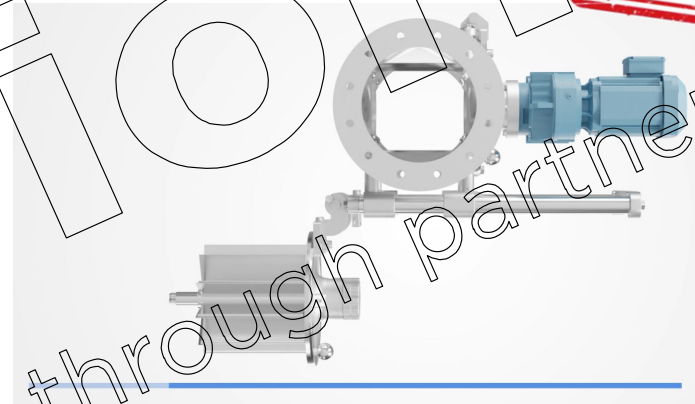
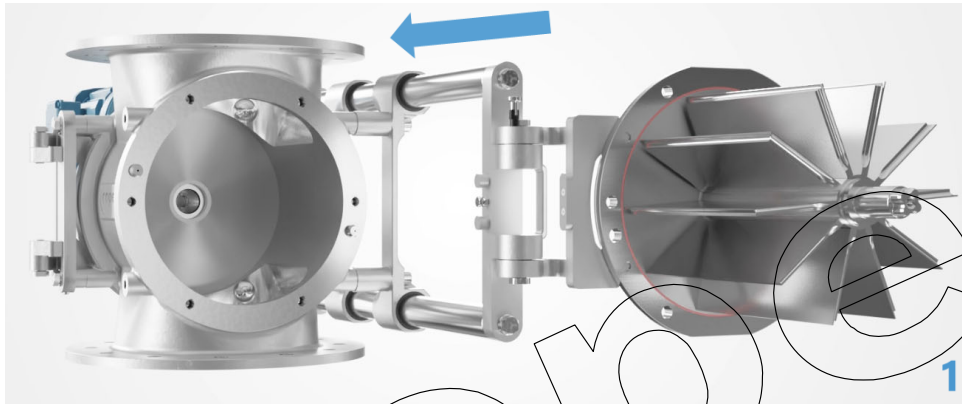
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3.4 Extraction Device - FXL (FXL = Full Access Linear)

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NEW

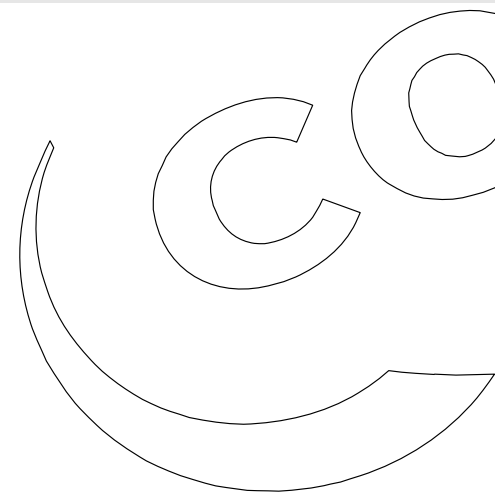


Space Saving Design

- > rotor and bars never in the way
- > full and best access for cleaning and inspection

Wear Protection Concept for Components

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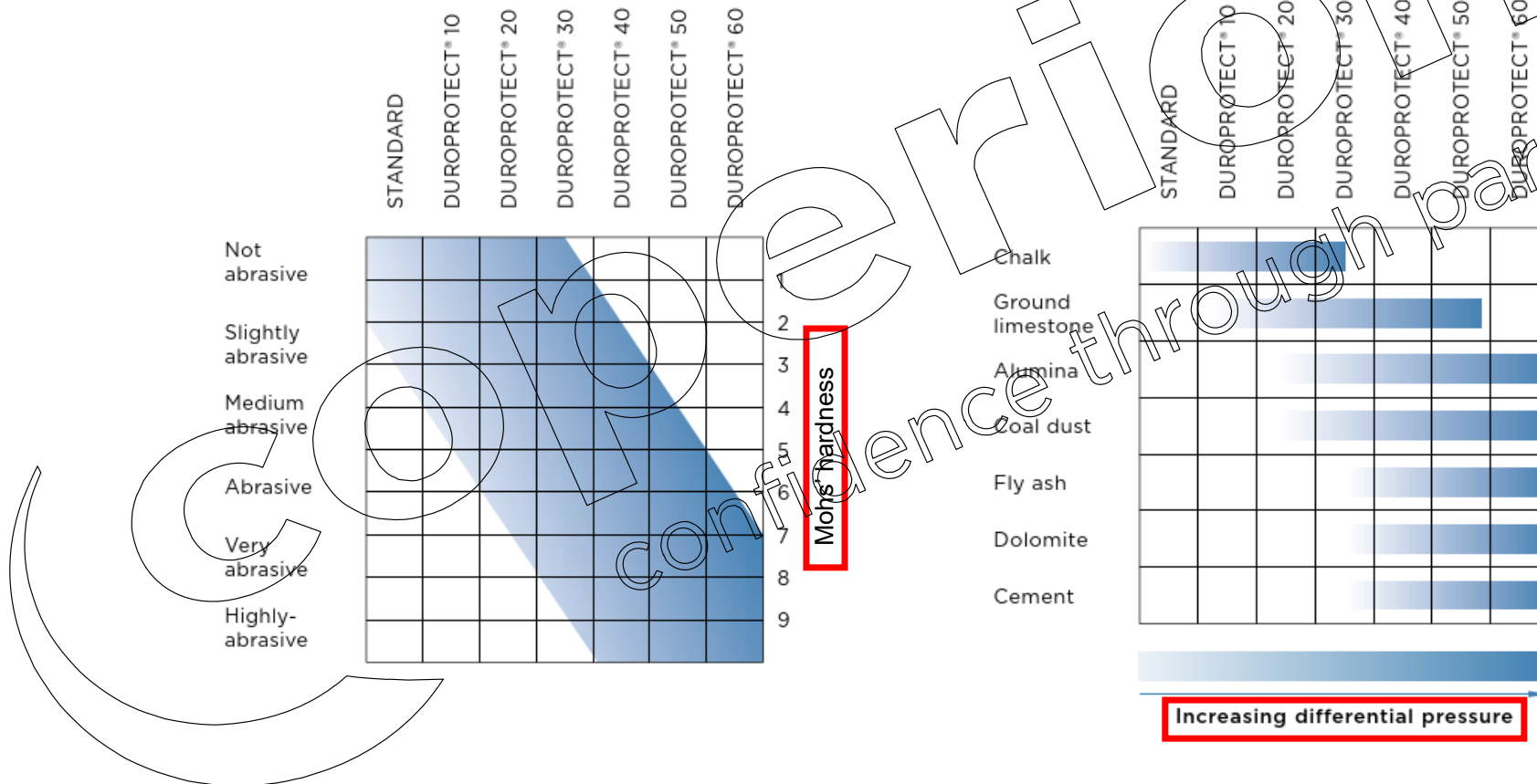
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>> Track-proven wear protection concepts for a long service life


A **high degree of availability** and a **long service life** with abrasive products such as glass fibre, titanium dioxide, talcum, silica, and other minerals in general are only possible with an **effective protection concept** which not only takes into account the **product characteristics** but also the **operating conditions**.



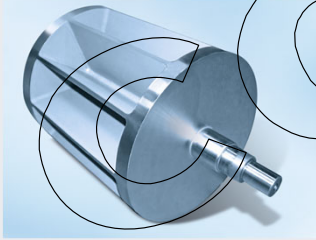
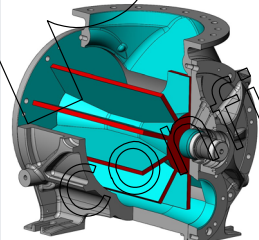

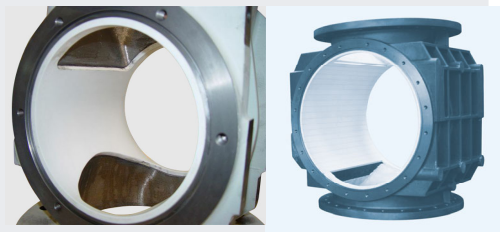
DuroProtect® Concept



Combination of 3 coatings for successful wear concept

DUROPROTECT®	DP 10	DP 20	DP 30	DP 40	DP 50	DP 60
Housing	DUROCHROM®	DUROCHROM®	DUROCHROM®	DUROCHROM®	DUROCARB®	DUROCERA®
Side covers	DUROCHROM®	DUROCHROM®	DUROCHROM®	DUROCHROM®	DUROCARB®	DUROCARB® DUROCERA®
Rotor	D-rotor Steel	C-rotor Steel	C-rotor DUROCHROM®	C-rotor DUROCARB®	C-rotor DUROCARB®	C-rotor DUROCARB®
Abrasiveness / Pressure difference						
	Low					High

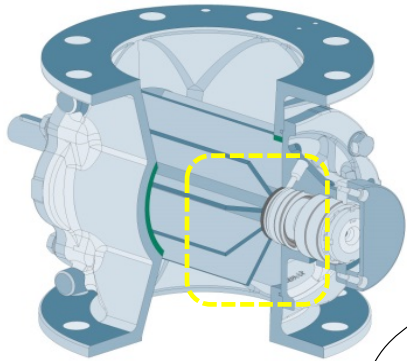
Combination of 3 coatings for successful wear concept

DUROCHROM	DUROCARB		DUROCERA
<ul style="list-style-type: none"> - Hard chrome coating up to 400µm - Rotor tips, side plate and housing - Ensures low leakage gas in the long term 	<ul style="list-style-type: none"> - Rotor chambers and side plate tungsten carbide sprayed 	<ul style="list-style-type: none"> - Rotor bridge tungsten carbide welded 	<ul style="list-style-type: none"> - monolithic or seamlessly inserted full ceramic in the housing bore - Highest wear protection
			

Component in wear protection

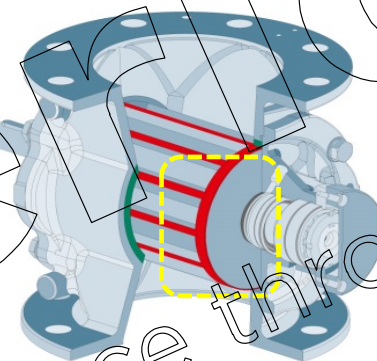
DUROPROTECT 10, ROTARY VALVE TYPE ZRD **FOR SLIGHTLY ABRASIVE BULK MATERIAL**

- > Very low air leakage rate
- > Wear protected by the use of chrome coating



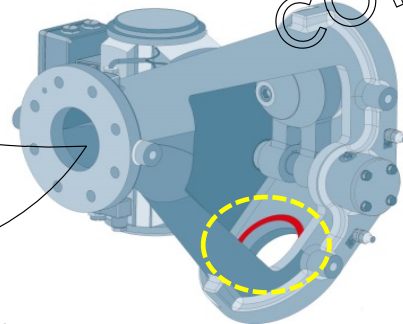
DUROPROTECT 20-60, ROTARY VALVE TYPE ZRC **FOR HIGHLY ABRASIVE BULK MATERIAL**

- > Design incorporates erosive wear protection (closed rotor)
- > Wear protection with chrome coating, tungsten carbide and ceramic reinforcement



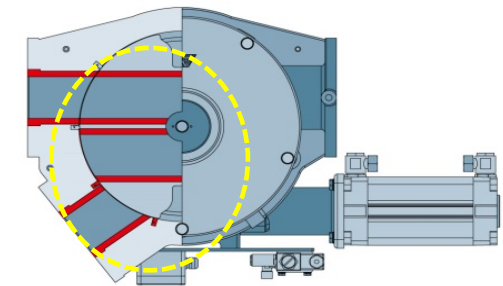
TWO-WAY DIVERTER VALVE TYPE WRK WITH **WEAR PROTECTION RING**

- > Wear protected by a cushion of bulk material
- > Minimal number of seals and moving parts
- > Available as a diverging and converging diverter
- > Can be installed in all positions
- > 45° outlet for the connection of conventional pipe bends



TWO-WAY DIVERTER VALVE TYPE WZK, **WEAR RESISTANT VERSION**

- > Residue-free
- > Wear protection with customized pipe inserts
- > Available as a diverging and converging diverter
- > Can be installed in all positions



Explosion Protection for Rotary Valve

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ATEX Conformity

Benefit – For plant safety

Explosion test at notified body



Coperion flame- and pressure surge proof rotary valve design
→ Ensures highest safety in explosion hazard areas in your plant

ATEX Conformity

ROTARY VALVE



Application examples



ZRD	ZVD	ZXD	ZKD
Round inlet, drop through rotary valve	Round inlet, drop through rotary valve	Round inlet, blow through rotary valve	Rectangular inlet, drop through rotary valve
For powder	For granules and powder	For powder	For Powder

Your benefit



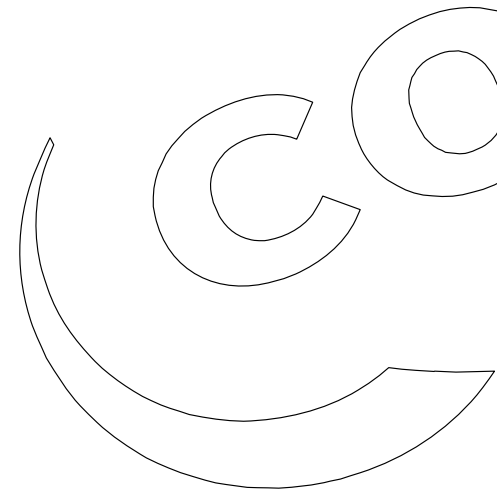
A wide certified product portfolio, which covers a major part of applications also if Atex Zones are considered.

Certification with a specific Declaration of conformity based on an EC Type Examination Certificate

Diverter Valve

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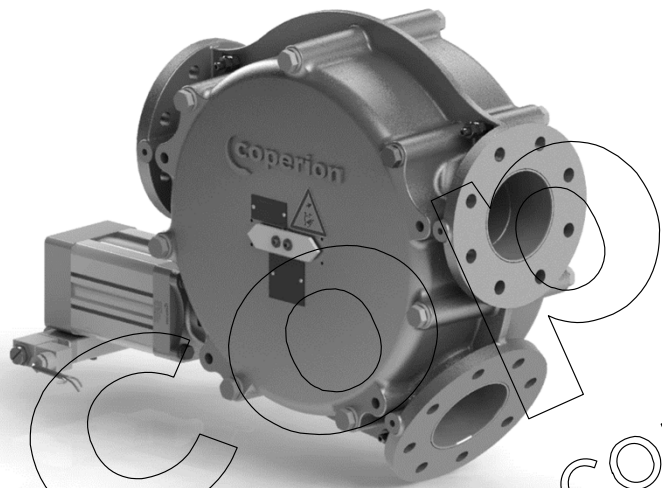
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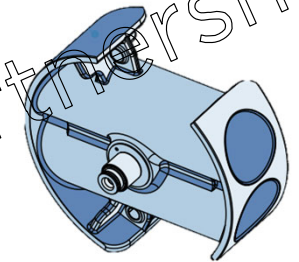
Diverter Valve - WZK

How does customer benefit from Coperion diverter valve?



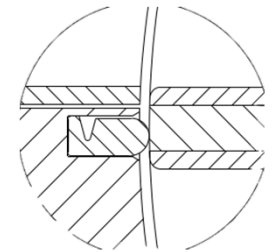
a. Dual-channel rotor – **No product contamination**

- Rotor is made of two pipes. Therefore, no mixing of material after diverting.



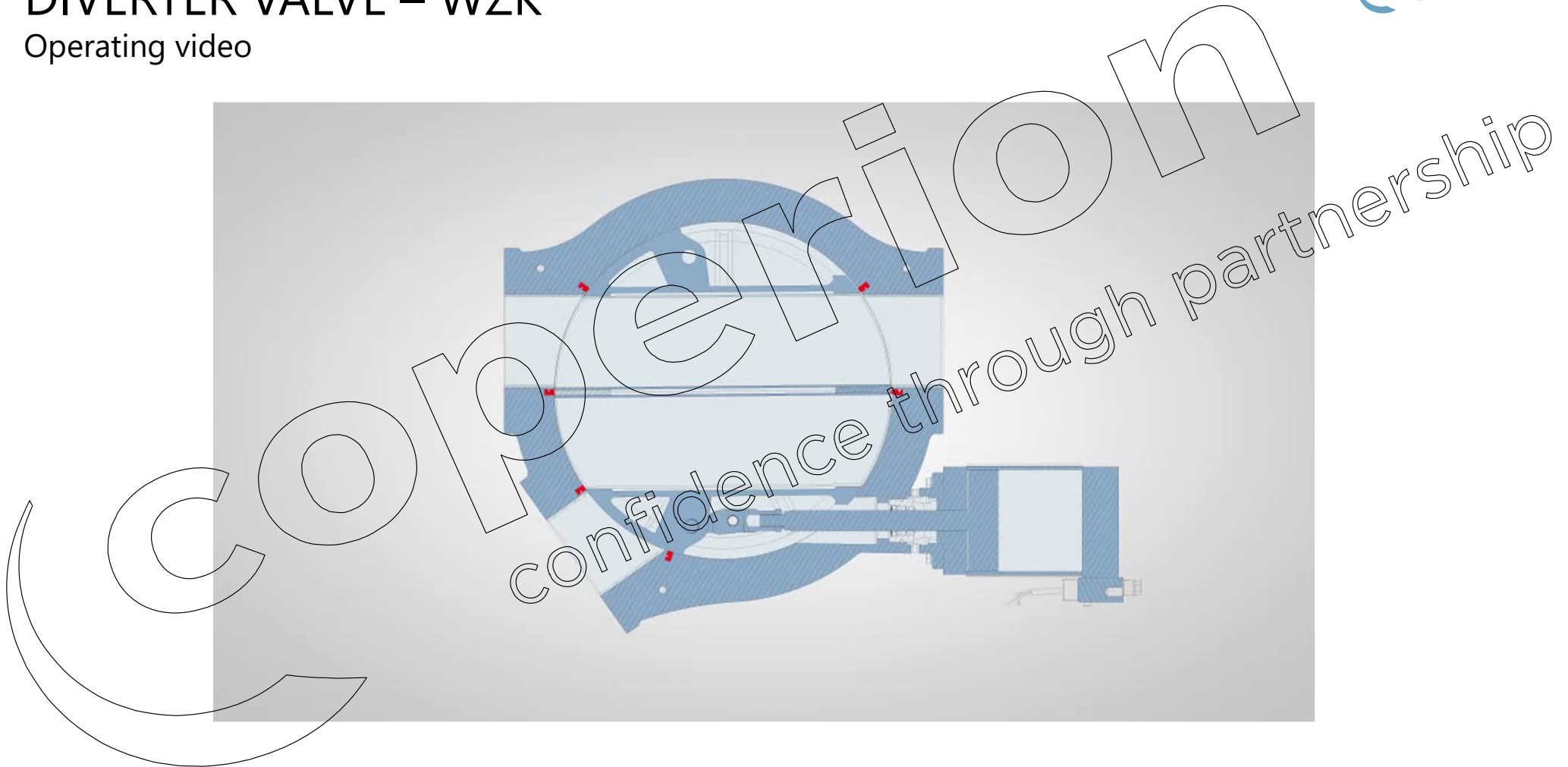
b. Patented rotor sealing: K-Seal – **Low maintenance cost**

- Sealing effect supported by delivery pressure, therefore no (external) additional pressure necessary. e.g. inflatable seals.



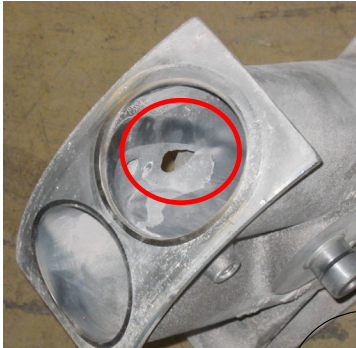
DIVERTER VALVE – WZK

Operating video



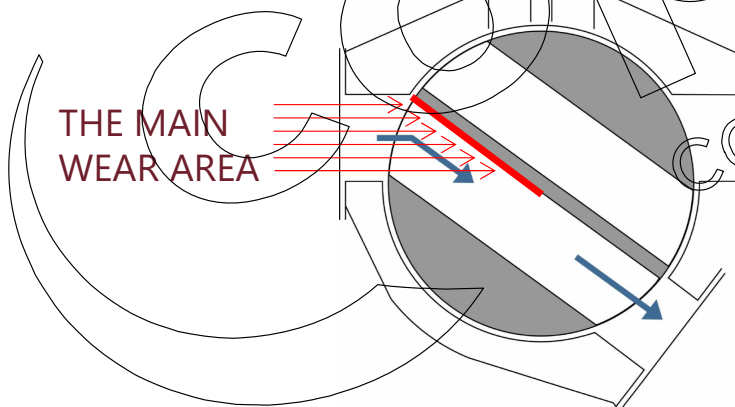
DIVERTER VALVE - WZK

What is the origin of wear?

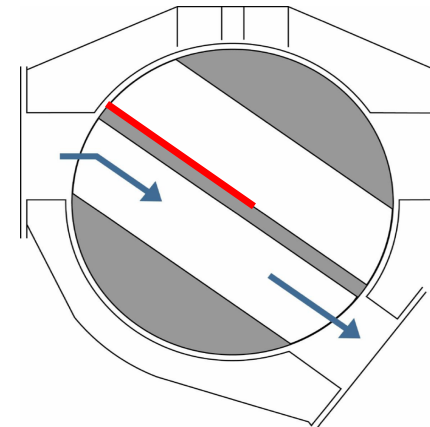


- c. Symmetrical rotor – **High reliability**
 - 180° turning is possible at the first signs of wear (allows double the lifetime)

The critical conveying position is the diverted position.



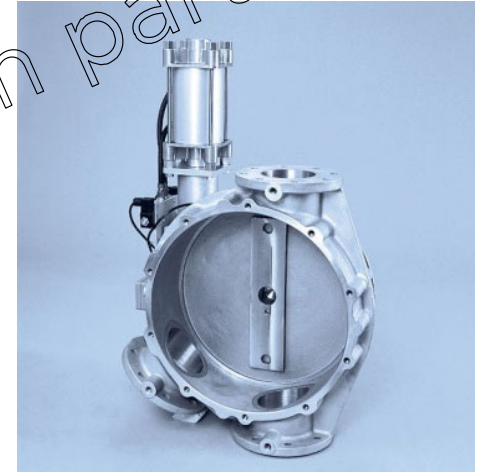
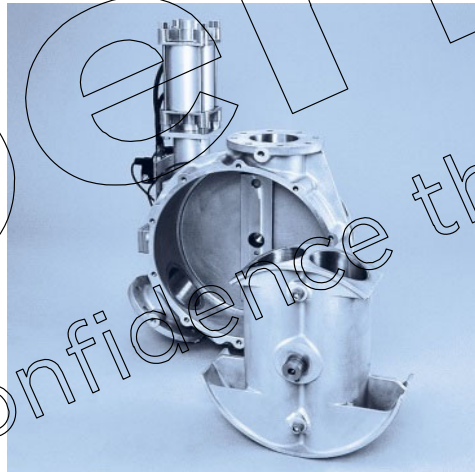
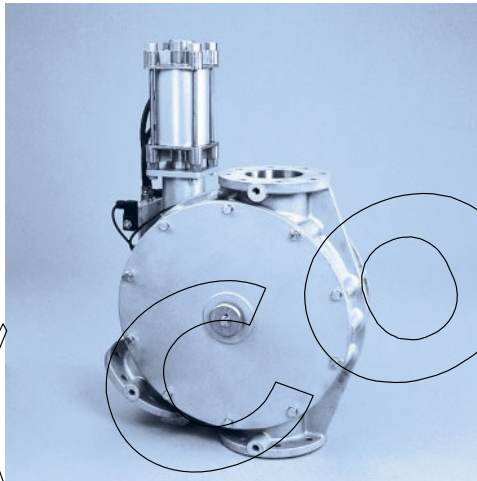
After 180° turning



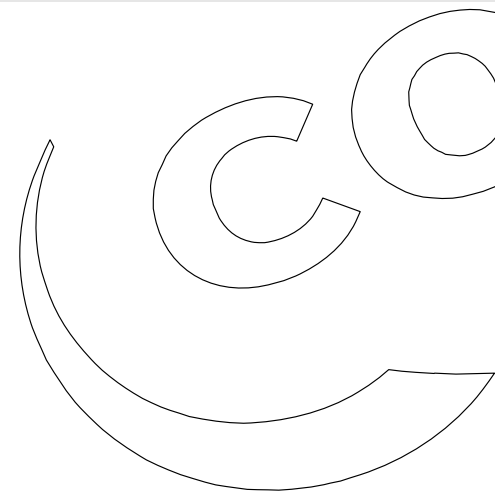
DIVERTER VALVE - WZK

d. Easy Maintenance

- Straight-forward disassembling procedure
- Reduces downtime
- Easily accessible to parts for replacement and maintenance



Conclusion



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Conclusion

✓ **Less product attrition**

- Anti-chopping geometry on Rotary valve inlet

✓ **To prevent contamination**

- Separate material flow channel in diverter valve WZK (dual channel)
- Quick cleaning rotary valve

✓ **Reduce downtime during maintenance**

- Quick access to rotary valve internal for cleaning or maintenance with the aid of extraction device (FXS/ FXL)
- No extra lifting equipment required
- Easy disassembling and assembling of WZK diverter valve

✓ **Ensures highest safety in explosion hazard area**

- Flameproof and pressure surge proof (up to 10bar) rotary valve
- ATEX conformity



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First-Class Handling for
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Special Components in
Material Handling Plants



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Thank you
very much for
your attention.

You're very welcome to follow us.

