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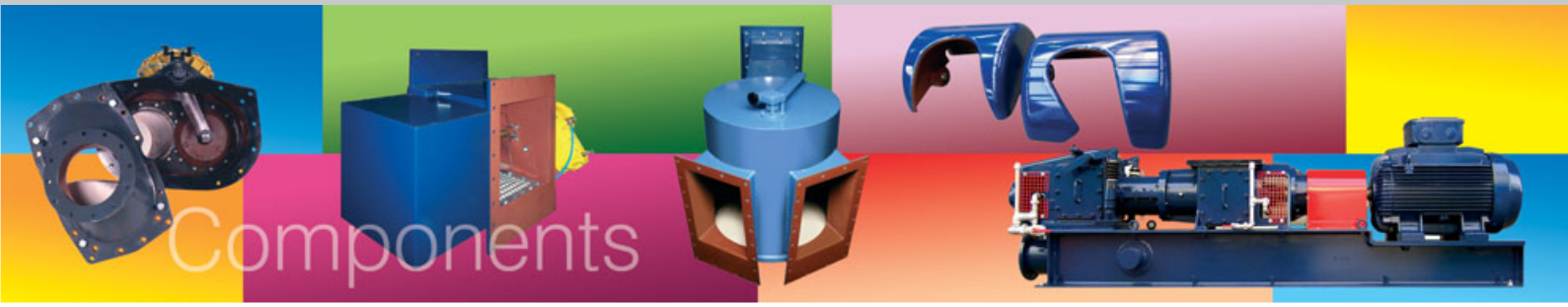

Components for material handling and process plants

We know how

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Flow Control Gate

The Claudius Peters Flow Control Gate is used wherever bulk solids have to be discharged from silos and bins, in a metered and controlled manner.

Especially in the cement and building materials industry Claudius Peters Flow Control Gates have been used successfully for many years for various applications as shut-off or dosing aggregate.

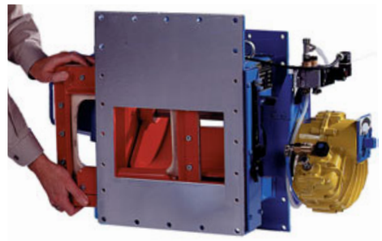
The Claudius Peters Flow Control Gate in standard design can be supplied with pneumatic actuator drive, servo-motor or as maintenance device with hand lever. The Claudius Peters Flow Control Gate program comprises various functions. Simple open/close functions under silos, positioning functions for material loading processes up to high-precision metering processes at weighing systems can be realized optimally by use of the Claudius Peters Flow Control Gates.

Advantages of a Claudius Peters Flow Control Gate

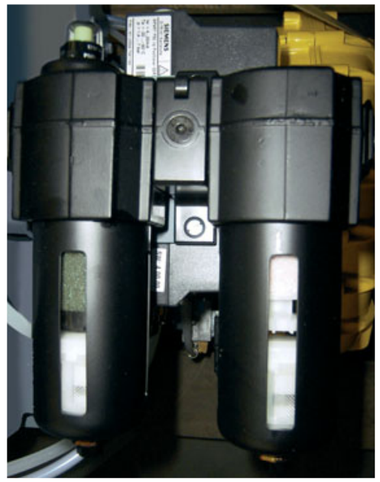
- Even and controlled material discharge out of silos
- Pneumatically controlled gates suitable for high dynamical process operations with high accuracy (e.g. belt weigher, flow meter)
- The compact modular design with exchangeable cassette-type sealing ensures easy maintenance at low maintenance costs
- Different designs of cutouts for optimal throughput & function
- Additional handwheel and a local control switch on the motor actuator drive for manual or electrical operation direct at machinery
- Flow control gates ready prepared for Profibus

By turning the roller inside the housing a flow cross section is released whose size and shape are always adjusted optimally to the corresponding task. To this end the material flow inside the flow control gate is constantly fluidized by the fluidizing bed bottom.

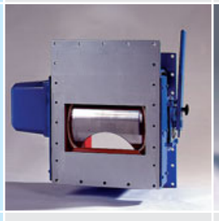
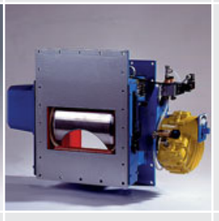
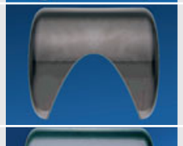
Short opening and closing times make the Claudius Peters Flow Control Gate a safe device for shut-off, metering and controlling.



Intelligent maintenance concept by changeable cassette



Preventive maintenance by air conditioning unit

Function	Types of drives			Roller design
	Manual (hand lever)	Motor (actuating drive)	Pneumatic (wing drive)	
				
Open/ Close Application	H (maintenance)	M (silo outlet)	P (silo outlet)	
Positioning Application		MP (loading systems, silo outlet)	PP (loading systems, silo outlet)	
Controlled Application		MCD (preheater feeding)	PCD (preheater feeding)	

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Flow Control Gate PCD (Pneumatic Controlled Digital)

The Claudius Peters Flow Control Gate is used wherever bulk solids have to be discharged from silos and bins, in a metered and controlled manner.

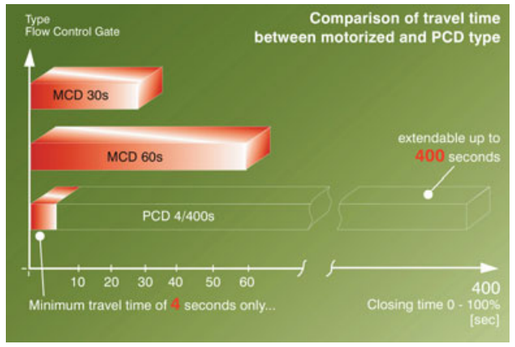
Especially in the cement and building materials industry the Claudius Peters Flow Control Gate Type PCD (Pneumatic Controlled Digital) has been used successfully for many years. This device is also used as dosing and shut-off device for special applications.

The Flow Control Gate PCD is equipped with an electro pneumatic controller with 4 - 20mA input and output signals for position transmission. If required, additional binary in- and output signals can be installed.

To indicate the two final positions, the Flow Control Gate PCD can additionally be equipped with a limit switch unit with micro or proximity switches.

Advantages of a PCD type

- For highly dynamical process operations (free selectable positions between 0 and 100 % down to 4 seconds)
- For highly accurate processes (e.g. belt weigher, flow meter)
- Controlled discharge for processes with high fluctuations
- Integrated emergency shut-down function
- Various binary in- / output signals available
- The compact modular design with exchangeable cassette-type sealing ensures easy maintenance at low maintenance costs



Detail of controller

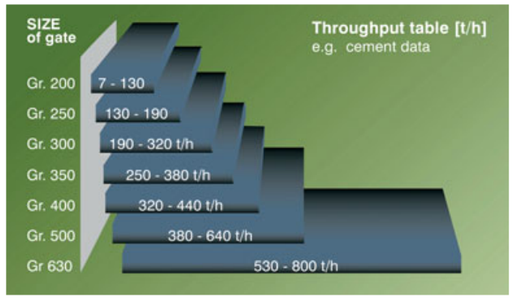
Preventive maintenance by air conditioning unit

Different designs of cutouts for optimal throughput & function

By turning the roller inside the housing a flow cross section is released whose size and shape is always adjusted optimally to the corresponding task. To this end the material flow inside the flow control gate is constantly fluidized by the fluidizing bed bottom.

Short opening and closing times make the Claudius Peters Flow Control Gate a safe device for shut-off, metering and controlling

Basic control device



Functions of Basic Control Device

- Electro-pneumatic controller with 4-20 mA input signal
- Analogue position feedback via 4-20 mA output signal
- High positioning precision of < 0,5%
- Local operation / display
- Binary input can be used as E.S.D (Emergency Shut-Down)
- Suitable for HART
- Diagnosis functions are possible (information on wear and operation)
- Alternatively available as Profibus controller
- Self-optimizing commissioning

Special design for ambient temperatures under -40°C

Integrated air tank for inconstant compressed air conditions on request

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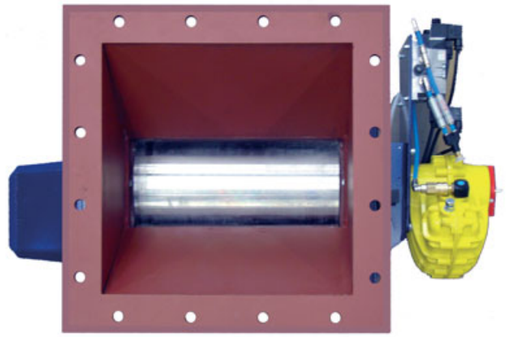
Flow Control Gates V (Vertical)

The Claudius Peters Flow Control Gate is used wherever bulk solids have to be discharged from silos and bins, in a metered and controlled manner.

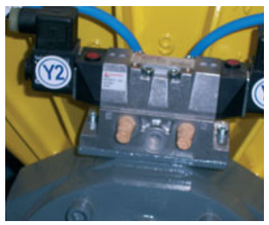
This type of flow control gate has been designed especially for all those applications where the space under the silo is limited and a classic side discharge cannot be used. The Claudius Peters Flow Control Gates Type V have been used for various applications as shut-off aggregate with simple dosing functions.

Special solution for VERTICAL throughput

- For dosing function with intermediate positions
- For installation under silos
- 100% tight sealing system
- Changeable sealing cassette for easy maintenance
- Available in sizes 200 x 200mm and 400 x 400mm

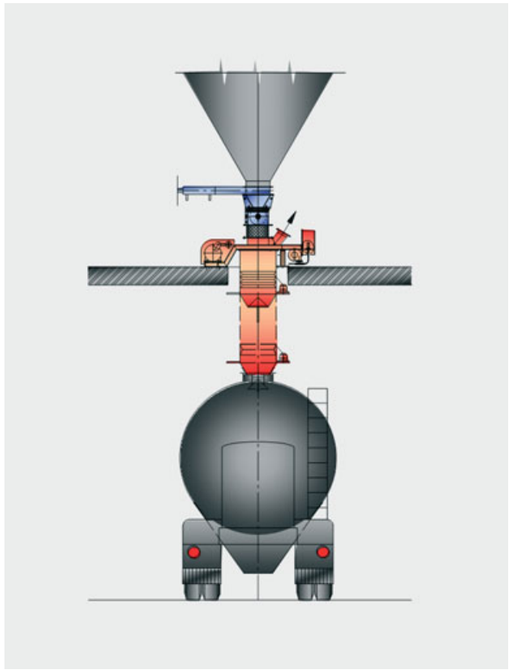


Roller design with cutout



Solenoid valves for intermediate positioning

Preventive maintenance by optional air conditioning unit



Silo discharge and truck loading

Manual flat shut off gate for maintenance

Stationary loading device

Flow Control Gate V Type with positioning function

Size [mm]	Installation height [mm]	Throughput [m³/h] at 300mbar pressure difference
200 x 200	520	15 - 200
400 x 400	520	30 - 500

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CLAUDIUS PETERS

FLUIDCON

Pneumatic conveying has always been an acceptable means for transporting fine materials from one location to the other.

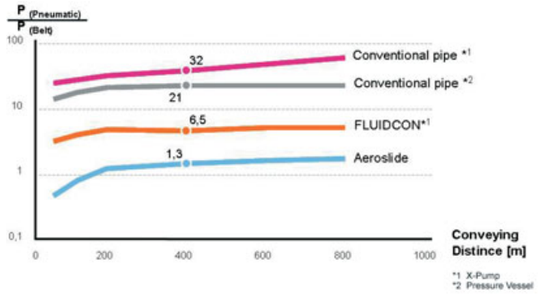
From a positive point of view, the initial investment and maintenance costs are typically lower when compared to mechanical conveying systems.

However, the energy consumption for the air supply on conventional pneumatic systems is considerably higher than other options power requirements.

The Claudius Peters FLUIDCON system utilizes the advantages of typical pneumatic conveying at considerably lower energy requirements.

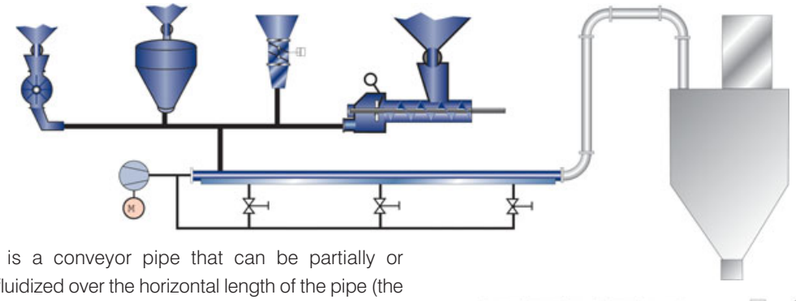
FLUIDCON has the benefits of less power consumption due to the incorporation of the aeroslide transportation principle within the transport pipe.

Additionally, it provides a dense phase system with increased bulk material load. Depending on the transport pipe routing, the new Claudius Peters FLUIDCON system can substantially reduce power consumption. FLUIDCON system can be used to convey all fine bulk solids which can be fluidized with low air velocities, and expands homogeneously during the process.



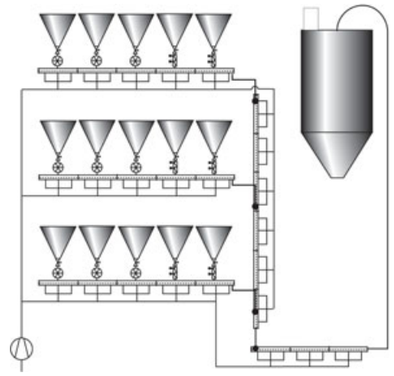
Advantages of Claudius Peters FLUIDCON Systems

- **Reduced operating costs - substantially less energy consumption compared to conventional pneumatic conveying**
- **High availability - the system is easily started or restarted even when solids remain in the conveying line**
- **Gentle material handling - this is due to lower conveying velocities starting at approximately 2-3 m/s and ending at approximately 5 -10 m/s**
- **Alternative feed systems - with a reduction in the conveying pressure, Claudius Peters X-Pumps (screw pumps) can be installed instead of conventional pressure vessels to insure savings in height and capital costs**



FLUIDCON is a conveyor pipe that can be partially or completely fluidized over the horizontal length of the pipe (the aeroslide principle). This air is used to fluidize but not to transport the material. The material transport air travels perpendicular to the fluidization air (the conveyor pipe principle) and passes in an axial direction. The pressure loss of the transport air flow substitutes for the inclination of an aeroslide. The Aeroslide principle turns the bulk solids into a fluid state with minimal internal friction and insures that the solids remain fluidized away from the bottom of the pipe and into the gas flow. These optimum conveying conditions allow the transportation of solids with lowest axial driving gas velocities in the feed point and acceleration section of the pipe. Therefore, it is possible to convey materials with minimal differential pressure and inclined uphill up to 30° with the FLUIDCON system.

The PETERS FLUIDCON system has proven to be a valuable alternative in bulk materials handling applications. Additionally this type of system can be utilized in ash removal plants. This system is particularly suitable for the removal of fly ash from a baghouse or ESP. The fly ash discharge points are connected to a common FLUIDCON conveying pipe and the ash is continuously removed and can be conveyed long distances.



The application of the FLUIDCON system for the conveying of dust below filter installations offers the following advantages compared to other conveying installations.

- **Lower investment cost**
- **Lowest gas and solids velocities**
- **Lowest conveying pressure**
- **Lowest wear**
- **Lowest power requirements**
- **Lower installation height**
- **Simplified material feeding**

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CLAUDIUS PETERS

Lump Breaker

The main function of the Claudius Peters Lump Breaker is crushing of lumps which have formed, for instance, due to hydration in silos or bins.

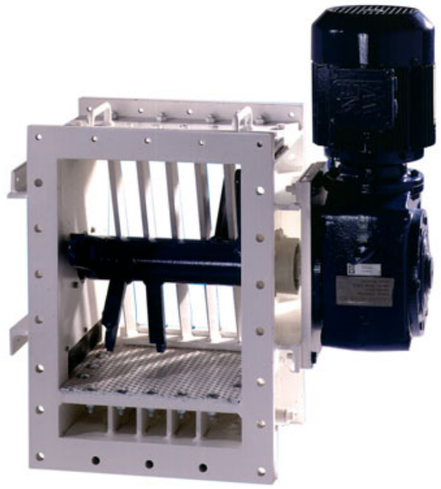
A horizontal or vertical type lump breaker is available and is used in the discharge area in front of the discharge equipment, for example flow control gates.

A rotor with crushing arms arranged radially and displaced on the shaft, draws the lumps against a grate where it crushes the lumps.

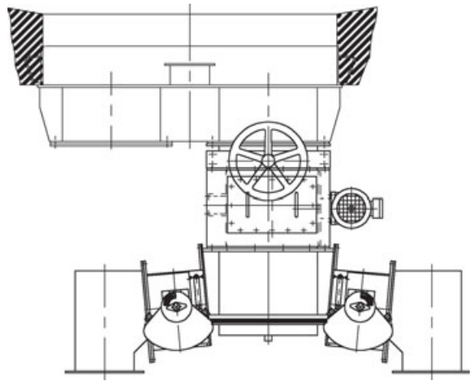
The operational safety of the Claudius Peters Lump Breaker is ensured by an optional overload cut-out with reversing duty. This is realized by an integrated control board.

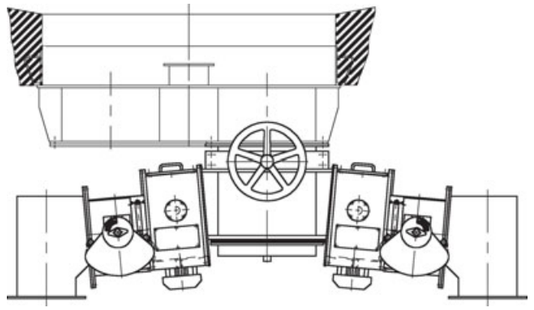
Advantages of the Claudius Peters Lump Breaker MH and MV

- Mass flow of cement up to 1000 t/h
- Available for all aeroslides and silo outlets
- Designed for high material temperatures up to 180 °C
- Low energy consumption 0,75 kW at 25 min-1
- Rotor and grate insert made of high wear resistant material designed for disagglomeration of lumps up-to a size of 40mm
- Easy maintenance
- Integrated rotary speed sensor
- Optional switchboard for integrated overload detection and reversing control

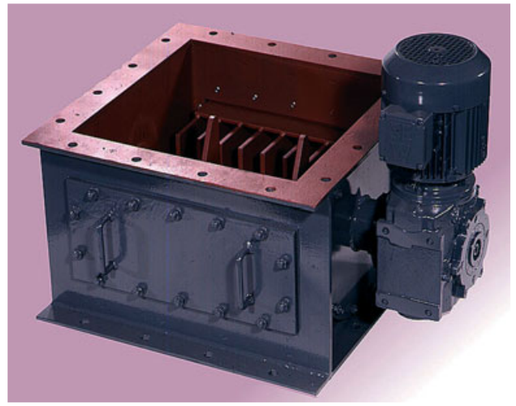


Detail of breaker and grid





Lump Breaker MV (vertical)



Lump Breaker MH (horizontal)

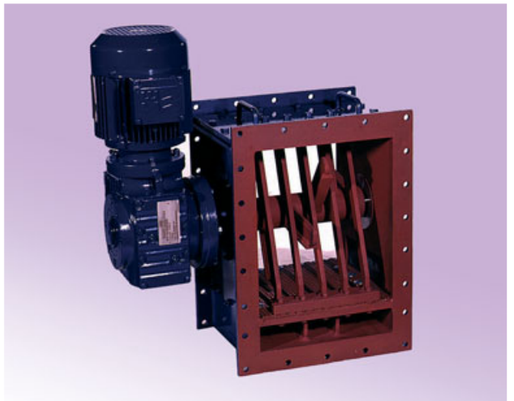


Table of sizes [mm]

Vertical type MV	Horizontal type MH
	250
	300
400 x 400	350
500 x 500	400
600 x 600	500
	630

CLAUDIUS PETERS

Mobile Loading Systems

The Claudius Peters Mobile Loader is a mobile fluidized conveying system for dustfree loading of vehicles with powdered bulk materials. The chute of the loader is equipped either with double bellows or for highly abrasive materials with steel cones and connects the silo discharge system and the vehicle in such a way as to preserve a totally closed conveying system.

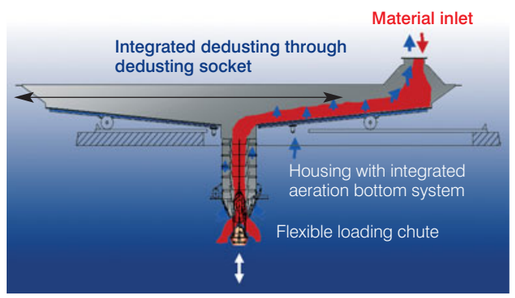
The bellows-type loading spout accommodates for the different heights of the vehicles and for the varying diameter of the inlet sockets on the vehicles.

All of the necessary controls for conveying flow readings and shut-off times are included with the loading equipment.

Advantages of Claudius Peters Mobile Loader

- **Short loading time**
- **Absolute dustfree loading**
- **Minimized maintenance**
- **Simplified procedure for positioning loading head onto filling socket**
- **Travelling range of up to 15 m eliminates vehicle movement**
- **Flexible arrangement for parallel loading**
- **Low construction height**
- **Low weight**
- **Stationary material inlet with integrated dedusting socket**
- **Compact loading chute with integrated winch, filling level sensor and shut-off cone**

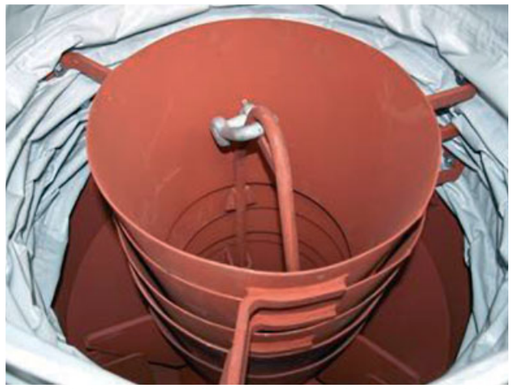
Mobile Loader with travelling ranges between 1 and 15 m



Loading and dedusting principle

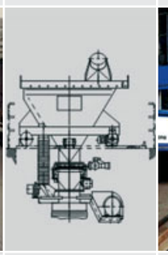
An extensive product range of different mobile loaders with various design topics allows an optimum in flexibility during engineering of loading facilities.

Beside stationary loading devices for simple truck loading applications travelling ranges between 1 and 15m can be realized.



Loading device with outer bellow and wear cones for abrasive materials (e.g. fly ash)

Loading device with outer and inner bellow for standard materials (e.g. cement)

Type	Mobile Loader				Stationary Loading Device	
	VME Single Side	VMD Double Side	TVM Hopper	VMR Swivelling Air Slide	Standard	F Type Integrated Filter
						
Loading Capacity [t/h] (based on cement)	250 (300)	250 (300)	250 (300)	250 (300)	250 (300)	150
Travelling Range [m]	3 - 7	7 - 15	1 - 15	3,5 - 7	-	-

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CLAUDIUS PETERS

Multi-Flow Elements

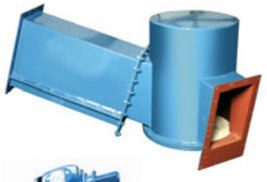
Os componentes de calhas air slide Claudius Peters consistem em vários elementos como válvulas de desvio, diversores, distribuidores, etc. Devido ao projeto modular, é possível integrar todos estes componentes no sistema de calhas air slide Claudius Peters.

One basic device can be supplied with different drive variants such as:

- **H (manual),**
- **P (pneumatic drive)**
- **M (motor actuator drive)**

Claudius Peters Aeroslide Multi-Elements achieve the maximum degree of component standardization.

From the basic aeroslide “pot”, Claudius Peters has developed a complete aeroslide modular design program.



Claudius Peters Diverter

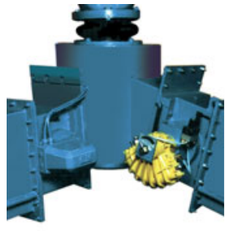
The unit changes the conveying direction.

Claudius Peters Two-Way-Gate

Controls the direction of the material flow in an aeroslide conveying system. Drive systems are flexible, offering a choice between manual, motor and pneumatic actuators.

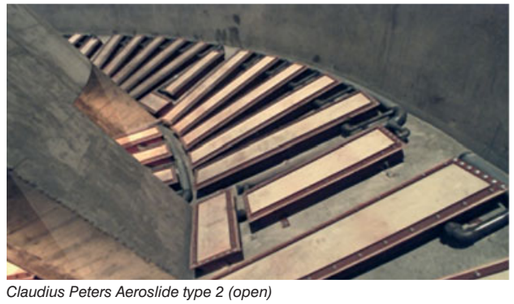
Claudius Peters Splitter

The unit divides into two conveying streams. The division of flow can be controlled between 10% and 90%, via the standard manual actuation or a motor actuator as alternative.



Claudius Peters Distributor

Distribution of the material flow to two or more outlets. Connection of two or more flow control gates controlling the discharge from a silo.



Claudius Peters Aeroslide type 2 (open)

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Claudius Peters Rotary Gate

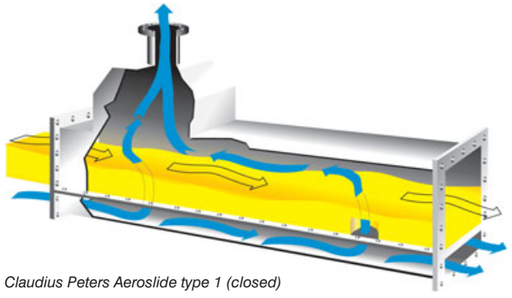
The Claudius Peters Rotary Gate is installed in vertical falling routes of pneumatic conveying systems to guide and control the mass flow.

As drive can be used a pneumatic vane drive, motor or manual hand wheel which is flanged directly to the rotating shaft, resulting in the highest safety possible by omitting the rods.

Claudius Peters Aeroslide Conveyance

Claudius Peters Aeroslides are extremely suitable for dust-free transport of large mass flows. They are used for all fluidizable dusts including hot material such as, for example, fly ash.

The Claudius Peters Aeroslides mainly consist of the air-conducting lower box, the air-permeable intermediate bottom and the material-conducting upper box.



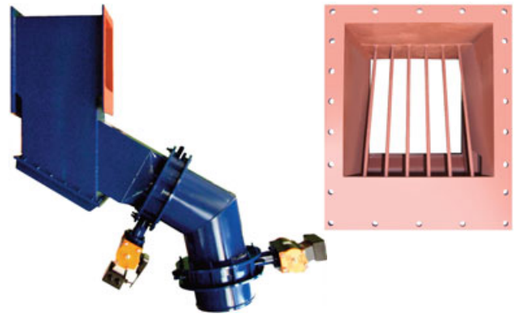
Claudius Peters Aeroslide type 1 (closed)

The Claudius Peters Aeroslides can be supplied in closed design (type 1) for conveyance and in open design (type 2) as aeration elements in silo bottoms.

Claudius Peters Gravity Separator

The Claudius Peters Gravity Separator can be installed in aeroslide systems. An integrated grid prevents throughput of lumps.

This separation leads to high service reliability and availability for the operation. The discharge can be designed with manual or pneumatic flaps



Claudius Peters Aeroslide type 1 (closed)

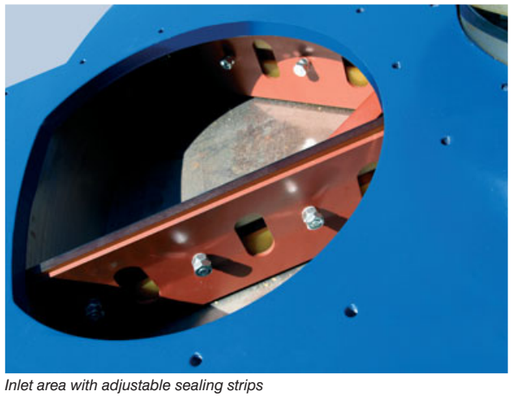
Types of Claudius Peters Aeroslides

Aeroslide Type 1	closed design (standard design)
Aeroslide Type 2	open design for silo aeration
Aeroslide Type 3	closed design with higher upper box (for longer conveying distances respectively higher air amount)

CLAUDIUS PETERS

Rotary Feeder DKZ

The Claudius Peters Rotary Feeder DKZ is based on the principle of the double chamber design and can be used alternatively to the Claudius Peters silo discharge devices applying the fluidization principle. The Rotary Feeder DKZ is used wherever bulk solids have to be discharged in a controlled and dosed manner from silos and bins. Due to its compact design and the resulting low constructional height, the rotary feeder is excellently suited as dosing element for loading plants, discharge device for mixing plants or feeding of packing plants. Contrary to vertical rotary feeders, the Rotary Feeder DKZ is equipped with an upper and a lower chamber. This way an uncontrolled discharge is prevented. Inlet and outlet lie one above / below the other.



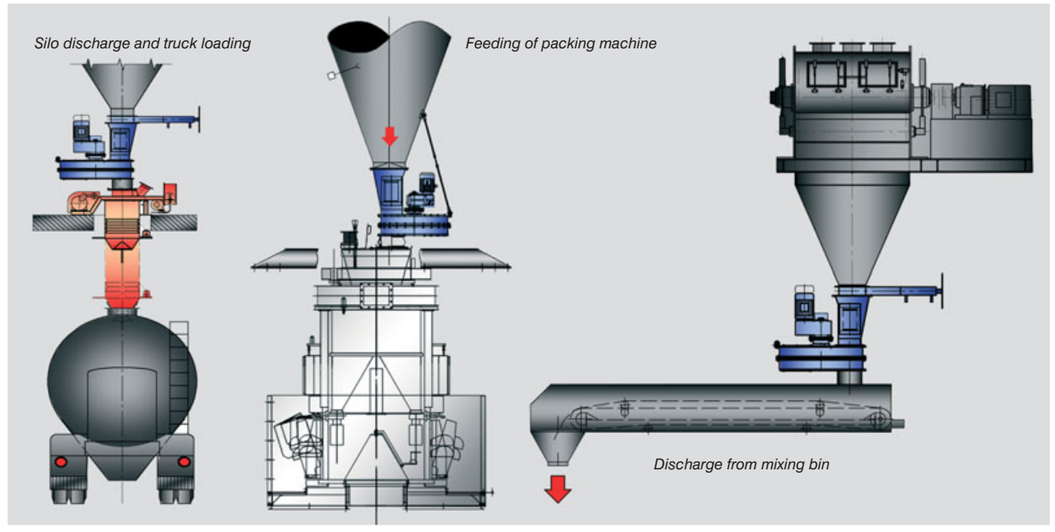
Inlet area with adjustable sealing strips

Advantages of Claudius Peters Rotary Feeder DKZ

- Low construction height
- Minimized gaps, thus optimum sealing behaviour
- Sealing strips can be adjusted optimally
- Easy maintenance by simple replacement of sealing strips
- Maintenance at low maintenance costs
- Flexible throughput capacities by optional frequency converter at the drive

The Claudius Peters Double Chamber Rotary Feeder can be supplied as DKZ1000 for capacities of up to 110 m^3/h and as DKZ1200 for capacities of up to 180 m^3/h. Special inlet pieces allow for an easy integration in the plant.

Solid motors ensure a trouble-free operation. To control the discharge capacity, these can be provided additionally with frequency converters.



Technical data

Type	Conveying capacity [m^3/h]	Diameter [mm]	Intermediate construction height [mm]	Motor capacity [kW]
DKZ 1000	110	1000	315	4
DKZ 1200	180	1200	365	5,5

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CLAUDIUS PETERS

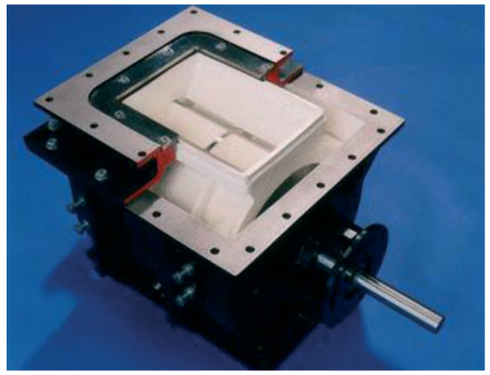
Rotary Feeder TWA

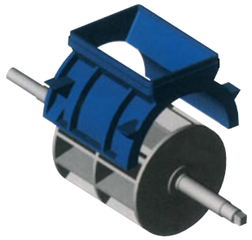
The TWA Rotary Feeder represents a drastic change in design compared with common rotary feeder technology. The 500 Brinell Ni-Hard rotor cell as well as the 500 Brinell Ni-Hard liner have clearly higher lifetimes than the traditional rotary feeders (e.g. coated with tungsten carbide). The wear is further minimized by a total of 12 chambers and thus 12 sealing webs.

In addition to a long lifetime, the rotary feeder construction shows further innovative features. The wear can be measured with the rotary feeder installed in place. Gap increases due to wear can be corrected in the installed condition and can be reduced to the original size. Due to the mechanical shaft seal the operational safety is further increased. Technically outdated solutions such as stuffing boxes or sealing gas labyrinths are no longer required.

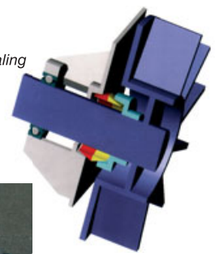
Fields of application

- Optimum use as feed element for pneumatic conveying systems
- Highest wear protection by ceramic inserts allow for conveyance of highly abrasive materials such as clinker, fly ash, alumina, sands, slag sand meal, metal sanding dust





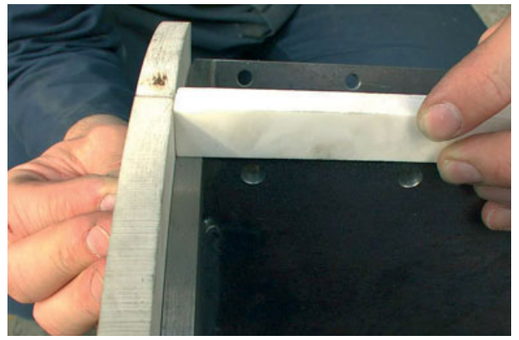
Mechanical sealing



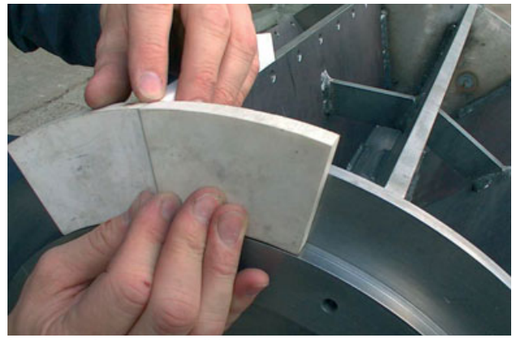
Ceramic plate lining of liner

Advantages of the Rotary Feeder TWA

- Rotor cell and liner in the basic version are of wear-resistant NiHard (Mohs' hardness 5)
- Feeder with ceramic plate lining at rotor cell and liner for highly abrasive materials (Mohs' hardness 9)
- Liner adjustable in installed condition in case of wear
- Mechanical shaft seals, practically maintenance-free
- Maintenance-free direct IP55 gear motor
- Exterior bearing, lifelong sealing
- Rotor cell and liner exchangeable for repair
- High-temperature design possible up to 220°C



Installation of ceramic elements at rotor perimeter



Installation of ceramic edge disks at the rotor

Rotary Feeder TWA with ceramic lining

The main requirements on modern high-capacity rotary feeders consist of an optimum wear concept as well as an intelligent shaft seal.

Wear occurring during operation at the rotor and the housing, leaky shaft seals and a high leakage gas quantity are often the main problems in the use of rotary feeders.

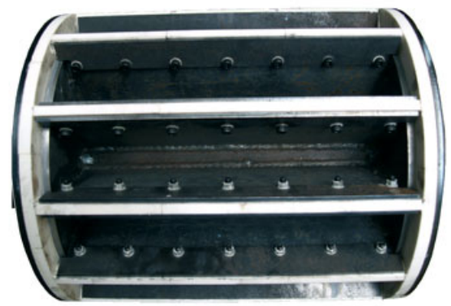
The development of the Rotary Feeder TWA is based in particular on these operational requirements. A combination of NiHard components and mechanical shaft seals increases the lifetime of the rotary feeder by almost ten-fold when compared with standard feeders. The maintenance requirements are drastically minimized.

The ceramic plates developed as option for the Rotary Feeder TWA show excellent lifetimes in practical use, even in case of very abrasive bulk solids.

The ceramic plates are cut in such way that they can be arranged in a self-supporting manner, similar to a Roman arch. To avoid movement the plates are fixed to the base material by means of a special ceramic epoxy resin. Compared to the common epoxy resin, this special epoxy is much harder and thus ideally suited for this task.

High production accuracy as well as an optimum adjustment of the clearance between rotor cell and bushing allow for an operation with the smallest gaps possible and lead to minimized leakage gas quantities.

TWA [Size]	Chamber volume [l/r]	Volume flow at 20 rpm [m³/h]	Construction height [mm]
200	3,4	4,1	328
250	7	8,4	374
300	14	16,8	450
350	24	28,8	520
400	34	40,8	578
500	80	96	710
600	125	150	780
800	225	270	924



Installed rotor cell with ceramic wear elements

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CLAUDIUS PETERS

Rotary Gate

The Claudius Peters Rotary Gate is installed in vertical falling routes of pneumatic conveying systems to guide and control the mass flow.

One basic device can be supplied with different drive variants such as:

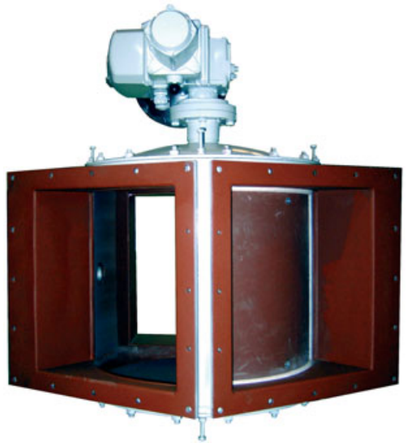
- **H (manual),**
- **P (pneumatic drive)**
- **M (motor actuator drive)**

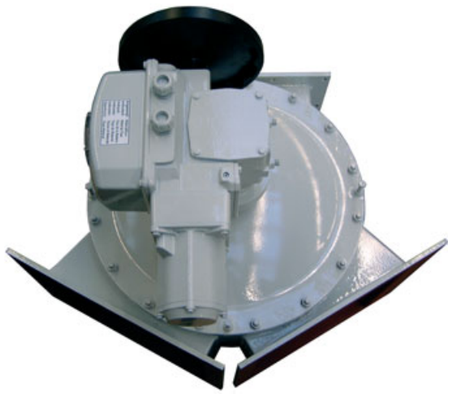
The drive is flanged directly to the rotating shaft, resulting in the highest safety possible by omitting the rods.

The drives are designed with sufficient reserves so that even under aggravated conditions a safe operation is ensured.

The Claudius Peters Rotary Gate consists of a cylindrical housing. Sealing of one outlet each is carried out by an adjustable gate. By turning the drive shaft, the gate shifts from one material outlet to the other. A flexible sealing, which is pressed against the housing wall by a compression spring, provides a dust-tight sealing of the locked outlet.

The drive is equipped with integrated micro switches which guarantee a safe positioning of the sliding gate.





Advantages of Claudius Peters Rotary Gate

- **Compact drive unit incl. all necessary monitoring devices**
- **Alternative feeding of two vertical material routes**
- **Dust-tight sealing of the closed outlet, even if the wear of the sealing increases**
- **Low flow resistance**
- **Simple replacement of wear parts**
- **Long service life**
- **High flexibility due to the modular design**
- **Manual adjustment for emergency operation**

Intelligent maintenance concept

For cleaning of the rotary gate and for inspection of the gate sealing, the housing is equipped with a large inspection cover. Replacement of the wear parts (wear plate and gate sealing) can take place while the rotary gate remains installed by disassembling the drive cover or the opposite inspection lid.

Lubrication of the bearings or the drive is not necessary.

The end positions can be precisely adjusted and can be indicated by limit switches integrated in the drive.

Process Technology

The material falling vertically is guided to the free outlet via the wear plate inclined by 45°. The sealing of the gate is covered by the gate on all sides so that the sealing is protected optimally against the wear caused by the bulk material flow.

The motor-driven variant is equipped with a handwheel and, if requested, with an integrated drive control system. The drive control includes an interlockable local control box and reverse contactors.

The pneumatic drive variant can also be adjusted manually by means of a wrench via a square.

Summary

Due to its modular and dust-tight design, Claudius Peters Rotary Gate is excellently suited for use as a branching and distributing device in pneumatic conveyor systems. The gate is characterized by high availability, long service life of the wear parts and easy maintenance.

Suited for all types of regular drives, the Claudius Peters Rotary Gate can be easily integrated in all plants.

The possibility to position the electric drive control with local control panel directly at the actuating drive allows for a simple and low-cost integration in the plant master control.

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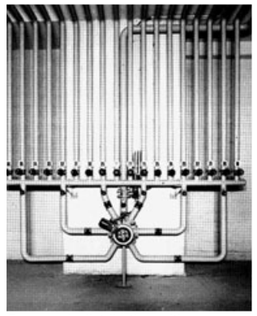
CLAUDIUS PETERS

Silo Aeration modification

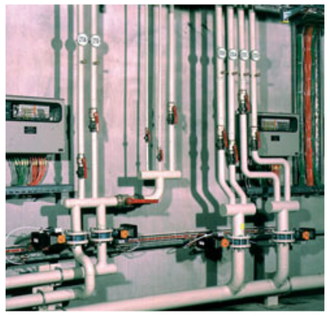
Conversion set for Claudius Peters Silos with mechanical air distribution systems

Claudius Peters Silos of former construction types have been equipped with an air distributing system with motorized rotating distributor.

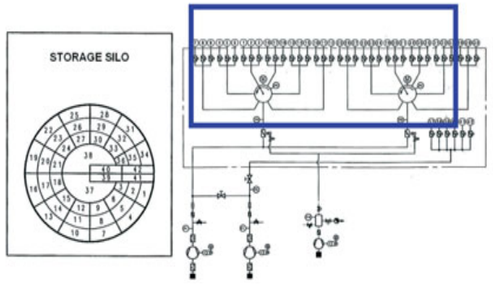
Modern Claudius Peters Silo Aeration bottoms are equipped with air distribution systems controlled by electro-pneumatically actuated intermediate flaps with position indication.



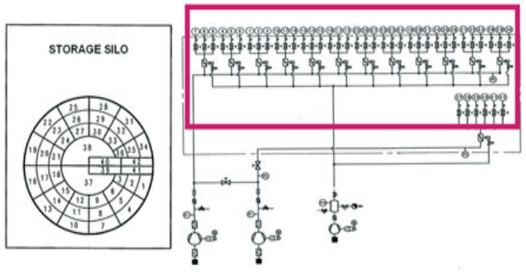
Former air distribution with mechanical distributor



New installation of air distribution system for silo aeration including electro pneumatic flaps



Chamber segments *Outer ring segments*



Chamber segments *Outer ring segments*

Negative characteristic

- Leakage air during the switching-over procedure
- Only fixed aeration cycles possible
- No individual and separate operation possible
- Mechanical distribution system leads to wear due to rotating parts

Positive characteristic

- No leakage air during the switching-over procedure.
- Easy replacement of flaps
- Aeration sequences can be adapted to the operating conditions by a PLC System
- Process control is completely mounted and programmed in the switchboard.
- Separate program for the residual discharge

Customer Benefits

- High operation flexibility
- High plant reliability
- Less wear parts

Conversion SET for Claudius Peters Silos with porous plates for Silo aeration

Claudius Peters Silos of former construction types have bee equipped with porous plates for material fluidization.

All modern Claudius Peters Silos are quipped with aeration bottoms completely covered with open airslides, which are radially arranged and aerated in sections. Economic operation is ensured by a control system.

Claudius Peters has realized a lot of modifications of these existing “OLD STYLED” silo types.

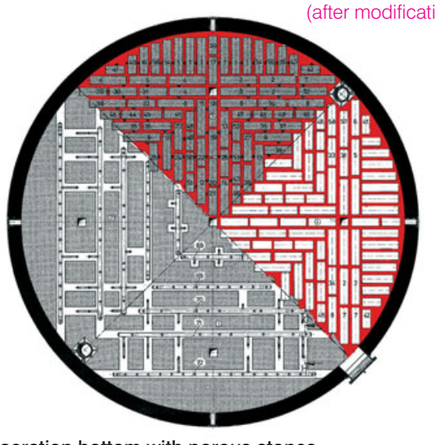
Silos of older construction types can easily and efficiently be modernized by means of pneumatic air distribution and a flap control.

Claudius Peters Aeroslide type 2 (open)

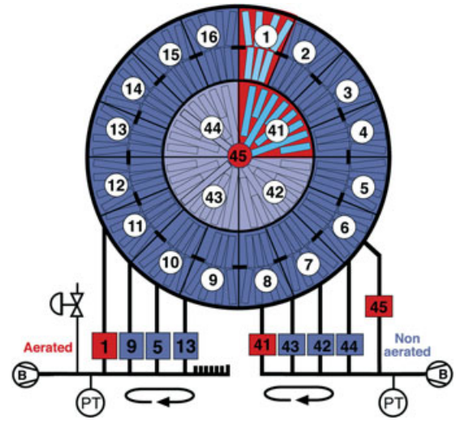
Advantages

- Reduction of maintenance time due to simple replacement of aeration fabric
- High operation reliability
- Reduction of maintenance costs
- Aeration sequences can be adapted to the operating conditions by a PLC system
- Process control is completely mounted and programmed in the switchboard
- Separate program for the residual discharge

Silo aeration bottom with aeroslides
(after modification)



Silo aeration bottom with porous stones
(before modification)



Silo aeration bottom and sequence

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CLAUDIUS PETERS

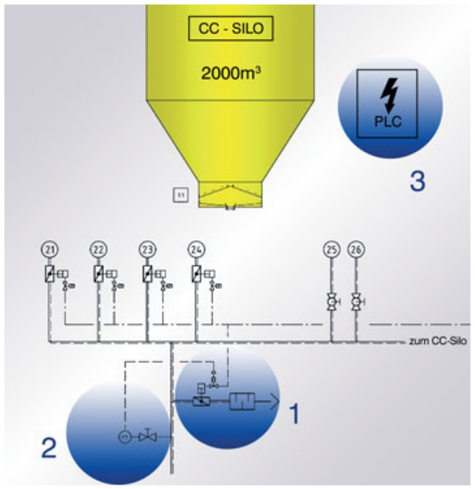
Silo Air flow controller - AFC

Silo Air Flow Controller AFC – Reduction of pulsating material discharge

For all silos, which do not have an expansion chamber technology, it comes with high filling conditions to the problem that aeration air cannot escape by the material column. The consequence is a too high fluidization of the material and fluctuating pressure conditions at the outlet. This leads frequently to a pulsating material discharge.

The Claudius Peters Air Flow Controller - AFC represents for this the suitable system, in order to reduce the material fluctuations. In combination with a flow control gate with controlled function this system can be integrated optimally into existing plants. The Claudius Peters AFC consists of 3 main components:

- **Adjustable blow-off flap**
- **Electronic push button switch**
- **Controller**



① *Control flap*

② *Pressure transmitter*

③ *Local control panel*

Positive characteristics

- Reduction of fluctuating material discharge due to constant aeration conditions
- Less wear at discharge components due to minimized velocity of air/material flow
- Optimization of process conditions in case of changed material or discharge rates
- Usable for all silo types also for other brands

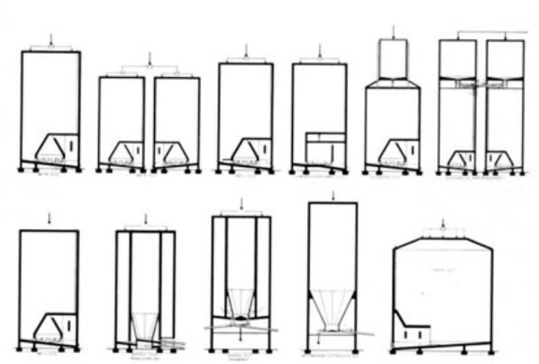
Function mode

A blower compresses the required aeration air into the silo bottom. The bulk material begins to come into a fluidizing phase. Supported by the gravity force of the bulk material column the material flows to the outlet at the center of the silo-bottom by means of gravitation.

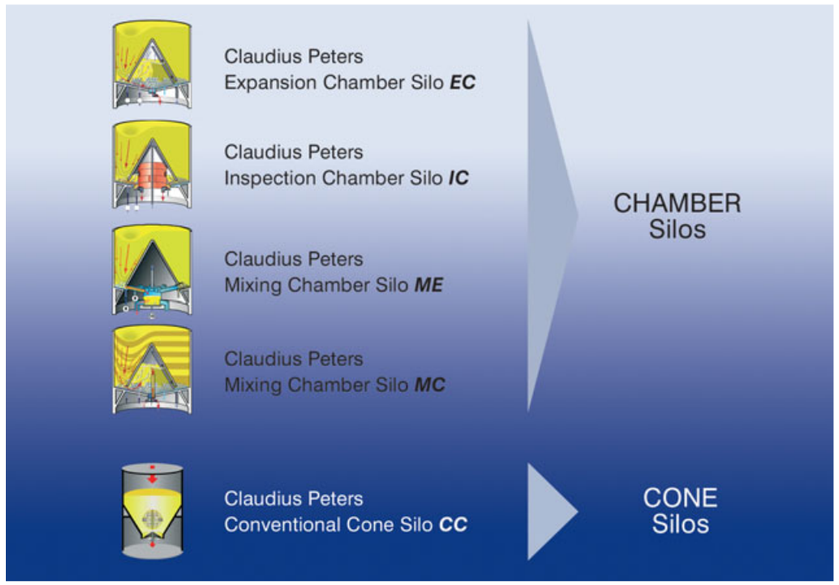
For an even material discharge the aeration pressure represents the main parameter. The desired pressure set point is adjustable at the control unit and can be optimized during process operation. This parameter is kept constant during the entire material discharge time.

A rise of the aeration pressure due to too high fluidization of the material in the silo leads to controlled blow out of aeration air by a control flap across a dedusting piping into an exhaust air system. The pressure reduces to the set point.

Beside an integration in silos without expansion chamber also existing chamber silos can be equipped with the AFC system afterwards. In that case also an optimized regulation of the chamber level is possible.



This system allows an integration in all existing silos especially for those without chamber dedusting.



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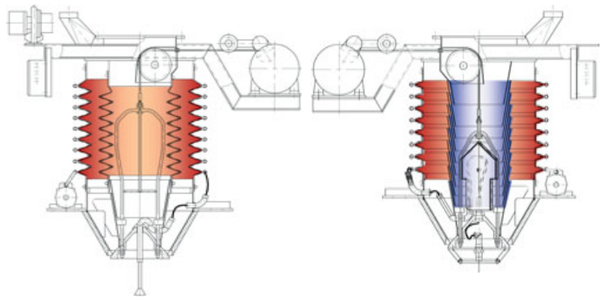
CLAUDIUS PETERS

Stationary Loading Device

The Claudius Peters Stationary Loading Device is available as single aggregate fit for all dustfree loading purposes. The chute is equipped either with double bellows or - for highly abrasive materials - with steel cones and connects the silo discharge system and the vehicle in such a way as to preserve a totally closed conveying system.

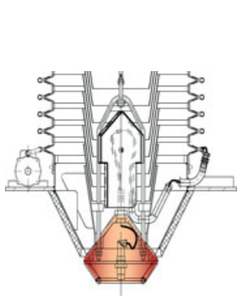
The bellows-type loading spout accommodates for the different heights of the vehicles and for the varying diameters of the inlet sockets on the vehicles.

All of the necessary controls and operation panels are included in the loading equipment. As option a vibrator can be installed at the loading cone.

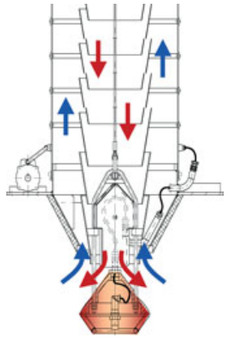


Double bellows chute for standard materials (e.g. cement)

Steel cone chute for abrasive materials (e.g. fly ash)



Lifted position - cone closed



In operation - cone open

Compact base frame including winch, dedusting socket and supporting structure

Advantages of Claudius Peters Stationary Loading Device

- For simple loading procedures without travelling ranges
- Short loading time
- Absolute dust-free loading
- Minimum maintenance
- Low construction height
- Low weight
- Stationary material inlet with integrated dedusting socket
- Compact loading chute with integrated winch, filling level sensor and shut-off cone
- Electrical filling sensor and vibrator for additional spout cleaning as option available

Typical loading process of a stationary loading device

Mobile loader with traveling ranges between 1 and 15 m

Stationary Loading Device - Type BPF (with integrated filter)

Advantages of Claudius Peters Stationary Loading Device

- Dedusting directly at source
- No external filters needed
- Capacity up to 150 t/h
- To be used for stationary loading
- Loading spout as double bellows type or steel cone type

Sensor types	Pneumatic sensor	Capacitive sensor	Rotation sensor	Vibration sensor
Max. material temperature	150	80	80	150
Ambient temperatures	-40°C up to +60°C	-40°C up to +60°C	-40°C up to +60°C	-40°C up to +70°C
Main features	• Robust design • Electric parts outside material stream	• Economic price	• For sticky materials	• For fine materials • Electric parts outside material stream

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CLAUDIUS PETERS

Storage Silo CC

The Storage Silo CC is a silo type for fluidizable mineral bulk materials. CC stands for “conventional cone" silo which is, in general, designed for silo diameters of 6 – 14 m. Standard aeration bottoms 3 m, 3,5 m, 5,5 m and 7,5 m are available.

Silo storage volumes of up to 5000m³ can be realized.

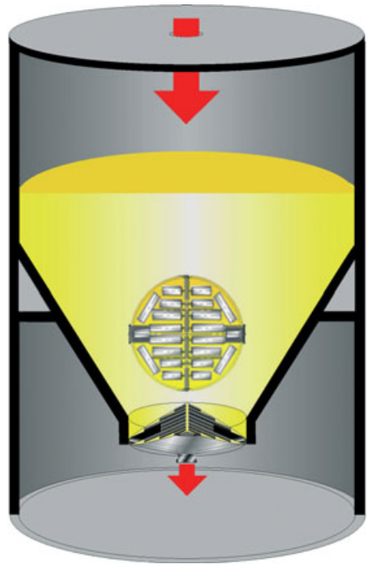
The standard design is suitable for the storage of

- **Easy flowing bulk materials, like cement or raw meal**
- **Hardly flowing bulk materials like fly ash**

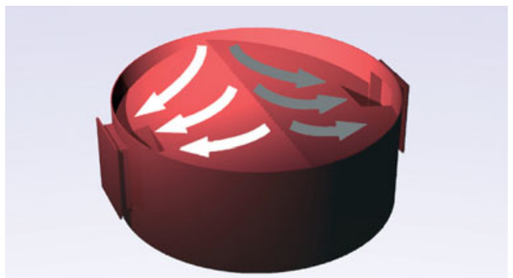
Other bulk materials, like gypsum, quick lime, lime hydrate and others, can also be stored in the Storage Silo CC.

Advantages of Claudius Peters CC Silo

- **Silo principle first in / first out**
- **No dead material inside silo**
- **Excellent reclaim rate**
- **Application for small silo units**
- **Application for materials whose fluidization is limited**
- Silo aeration system can be used for concrete or steel silos



Flow principle of Claudius Peters CC Silo



Sectionwise aeration to silo outlets

Discharge tunnel to center outlet

Effective Aeration Concept

The aeration sectors are aerated alternately for a certain time during the discharge procedure. This aeration/discharge sequence is independent from the filling procedure. The main target of the aeration technique is a controlled discharge with highest silo reclaim rate.

A blower compresses the required aeration air into the silo bottom. An integrated aeration air system controlled by shut-off flaps, aerates the two bottom sectors. The bulk material begins to come into a fluidizing phase. Supported by the gravitational force of the bulk material column the material flows along the inclined aeroslide to the outlet at the center of the CC-bottom by means of gravity.

Claudius Peters discharge equipment under the silo like flat shut off gates, feed boxes and flow control gates guarantee a controlled discharge flow.

Storage Silo CC under construction

Discharge tunnel under silo cone leads to continuous discharge conditions at outlet

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CLAUDIUS PETERS

Two-Way Gate

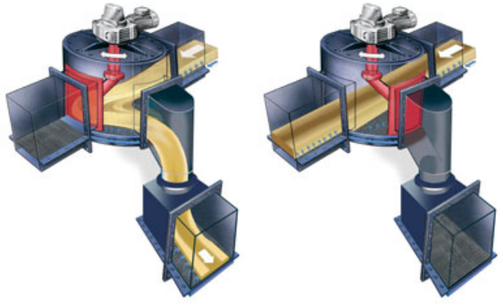
The Claudius Peters Two-Way Gate is installed in aeroslide systems to guide and control the mass flow.

The Claudius Peters Two-Way Gate consists of a cylindrical housing. Sealing of one outlet each is carried out by an adjustable gate. By turning the drive shaft, the gate shifts from one material outlet to the other. A flexible sealing ensures that the outlet is sealed dust-tight.

The drives can be pneumatic, motoric or manual and are designed with sufficient reserves so that even under aggravated conditions a safe operation is ensured.

For cleaning of the Two-Way Gate and for inspection of the gate sealing, the housing is equipped with a large inspection cover. Replacement of the wear parts (aeration fabric and gate sealing) can take place while the Two-Way Gate remains installed by disassembling the top cover or the bottom.

Lubrication of the bearings or the drive is not necessary. The end positions can be precisely adjusted and can be indicated by limit switches integrated in the drive.

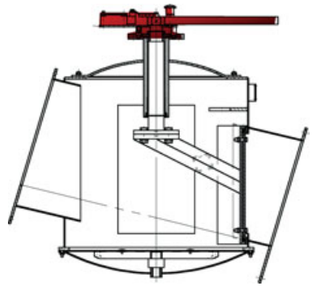


Operation principle of Claudius Peters Two-Way Gate, used as bottom discharger

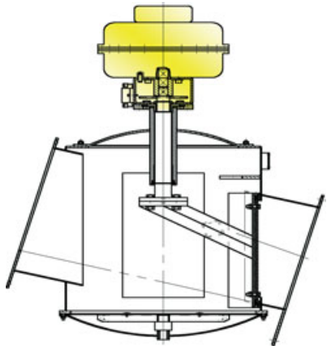
Advantages of Claudius Peters Two-Way Gate

- **Alternative feeding or distribution to two conveying routes of one aeroslide system**
- **Dust-tight sealing of the closed outlet**
- **Low flow resistance**
- **Flexible arrangement of the horizontal and/or vertical outlets**
- **Simple replacement of wear parts**
- **Long service life**
- **High flexibility due to the modular design**

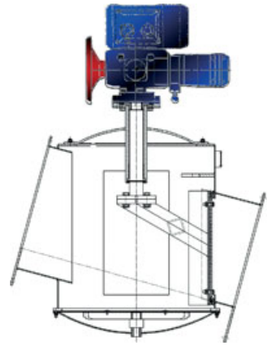
Type MANUAL
Manually by lever



Type PNEU
Pneumatically by electro-pneumatic rotary vane drive



Type MOT
Motor-driven by actuator drive (incl. manual handwheel)



Process Technology

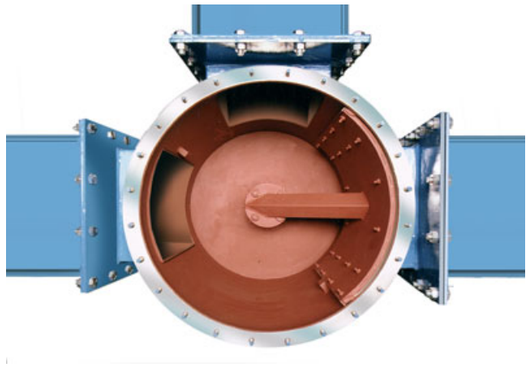
The design of the gate allows an unrestricted flow to the main conveying line, thus avoiding an increase of the flow resistance when conveying via this line. In front of the closed gate, the bulk material is directed along the round wall to the free outlet. The sealing of the gate is covered by the gate on all sides so that the sealing is protected optimally against the wear caused by the bulk material flow.

The aeration bottom ensures a continuous fluidization of the bulk material.

Summary

Due to its modular and low-flow-loss design, Claudius Peters Two-Way Gate is excellently suited for use as a branching and distributing device in pneumatic conveyor systems. The gate is characterized by high availability, long service life of the wear parts and easy maintenance.

Suited for all types of regular drives, the Claudius Peters Two-Way Gate can be easily integrated in all plants. The possibility to position the electric drive control with local control panel directly at the actuating drive allows for a simple and low-cost integration in the plant master control.



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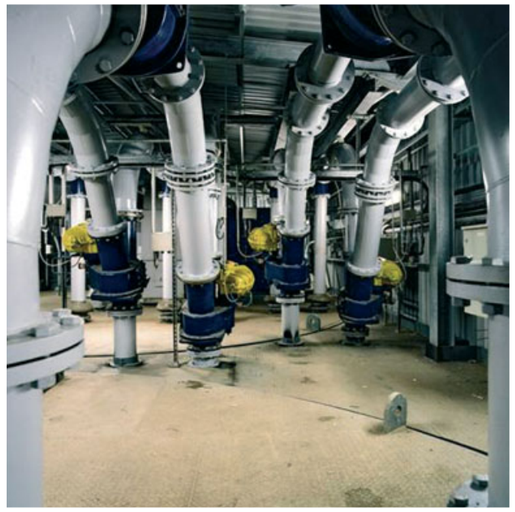
CLAUDIUS PETERS

Two-Way Valve

The Claudius Peters Two-Way Valve is installed in pneumatic conveying pipelines for alternative feeding of two material conveying routes. The most striking feature of the two-way valve is its compact design. The drive is flanged directly to the shaft which allows for a most precise positioning of the valve disk. The Claudius Peters Two-Way Valve is designed for non-explosive and explosive bulk materials.

One basic device can be supplied with different drive variants such as:

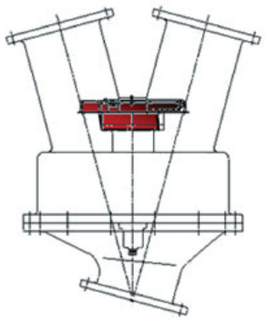
- **H (manual),**
- **P (pneumatic drive)**
- **M (motor actuator drive)**



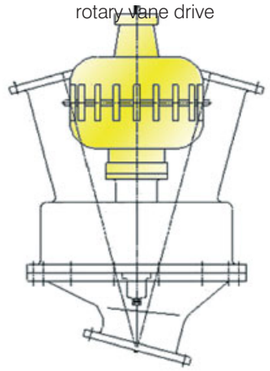
Advantages of Claudius Peters Two-Way Valve

- Feeding to two different conveying routes
- Low pressure loss
- Symmetric form
- Simple exchange of wear parts
- Long service life
- Compact design
- High positioning accuracy
- Simple installation
- Precise movement to the sealing position
- End positions of the valve disk are defined by the limit switches integrated in the drive

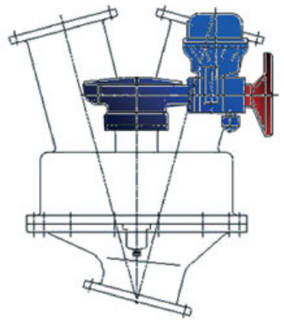
Type MANUAL
Manually by lever



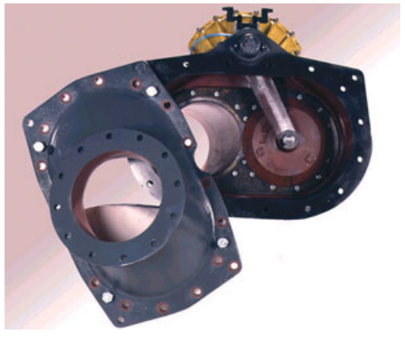
Type PNEU
Pneumatically by
electro-pneumatic
rotary vane drive



Type MOT
Motor-driven by
actuator drive
(incl. manual handwheel)



Design	Non-explosive solids STANDARD TYPE	Explosive bulk solids PRESSURE SHOCK RESISTANT TYPE
Conveying pressure [bar(g)]	≤ 1,5	≤ 1,2
Atmospheric explosion overpressure of the bulk material [bar(g)]	-	≤ to 10
Temperature range of the bulk material [°C]	- 40 ... + 150	- 10...+ 100



Intelligent maintenance concept

- For dismantling of the wear plate and the valve disk, the housing can be opened and swung to the side
- Automatic lubrication of the rotary shaft
- For cleaning of the valve as well as for checking of the wear plate and the valve disk, the housing is equipped with a handhole cover

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CLAUDIUS PETERS

X-Pump

The Claudius Peters X-Pump is a high-speed screw feeder which is installed as feeding unit in front of a pneumatic conveying pipeline. This pneumatic conveying system can be designed as conventional pneumatic pipeline system or as Claudius Peters FLUIDCON pipeline system.

The task of the X-Pump is to feed a defined solids mass flow into the conveying gas flow against the overpressure in the conveyor pipe, while at the same time sealing the system overpressure against the surrounding or the upstream sections of the plant to keep the gas leakage through the feeder as low as possible.

This sealing is realized by forming a plug of bulk solids of defined length at the end of the screw.

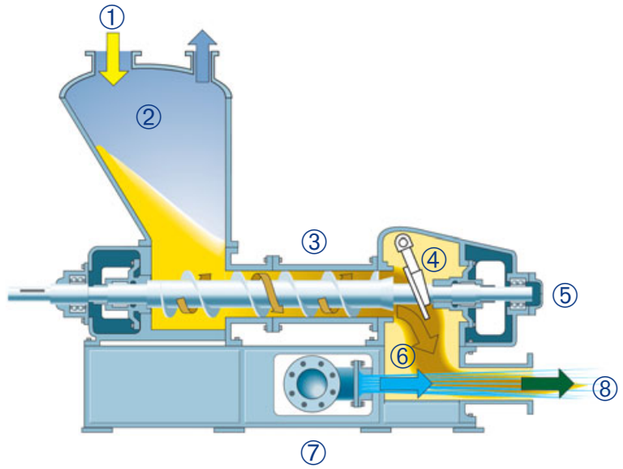
Conveying pressures up to approx. 2.5 bar overpressure, in special cases even higher, as well as conveying distances of up to approx. 1000 m and throughput capacities of up to approx. 400 t/h are achieved. It is possible to convey pulverized bulk solids as well as coarser materials with grain sizes up to approx. 10 mm. The X-Pump can be used as a feeder for dense-phase as well as for lean-phase conveyance.

Variable design and power transmission

Feeding of X-Pump by Claudius Peters discharge equipment

Advantages of Claudius Peters X-Pump

- Non-contact between screw / housing leads to less wear and high operation reliability
- Only end wing has to be exchanged not complete screw
- Flexible partial load operation due to sided bearing system
- No balancing of screw needed
- High sealing effect due to small gap between screw and wear bushing
- Non-contact labyrinth sealing ideal for higher screw speed
- Low maintenance costs and time
- X-pump designed for non explosive or explosive bulk materials like coal dust
- 100% ATEX conformity for feeding / transport of explosive bulk materials



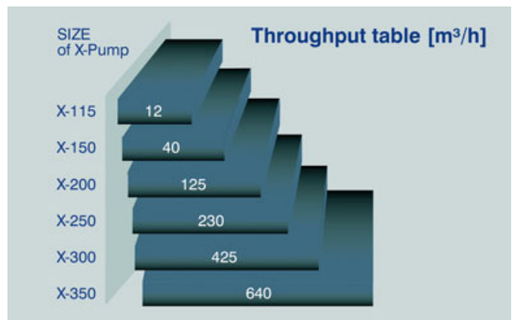
Main Components of X-Pump

1. Material inlet
2. Surge bin with dedusting socket
3. Conveying and compressing screw
4. Material discharge area
5. Double sided sealing and bearing system
6. Material / Gas mixing chamber
7. Conveying gas inlet
8. Conveying pipe connection

Summary

The Claudius Peters solid X-Pump is a very compact unit due to the two-sided bearing. The machinery runs extremely quiet and is characterized by very low power consumption and reduced pulsation during operation. The wear parts can be easily replaced, and the pump is suitable for a very wide range of applications and materials.

To sum it up it can be said that the Claudius Peters X-Pump is an excellent bulk feeding system for safety operation processes with highest plant reliability.



Highest flexibility in design of outlet points (example: left hand outlet)

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CLAUDIUS PETERS

CALCINING | COOLING | DISPATCH
DOSING | DRY BLENDING | DRYING
GRINDING | PACKING
PNEUMATIC CONVEYING
PULVERIZED FUEL SUPPLY
SILO SYSTEMS
STOCKYARD SYSTEMS
ALUMINA HANDLING SYSTEMS
MARINE POWDER HANDLING
TURNKEY PROJECTS

We know how

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