SHOCK-BLOWER®

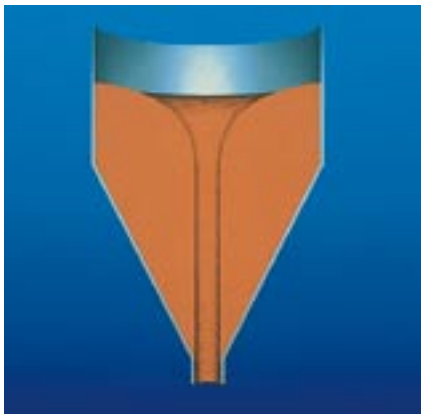
Systematic Material Discharge.

The problem
in the bulk handling industry

Wherever bulk materials are produced, processed or stored, hoppers and silos are starting points for automated operation processes.

Flow problems caused by bridge formations and chimney formations greatly affect the efficiency of plants.

Bridge formation

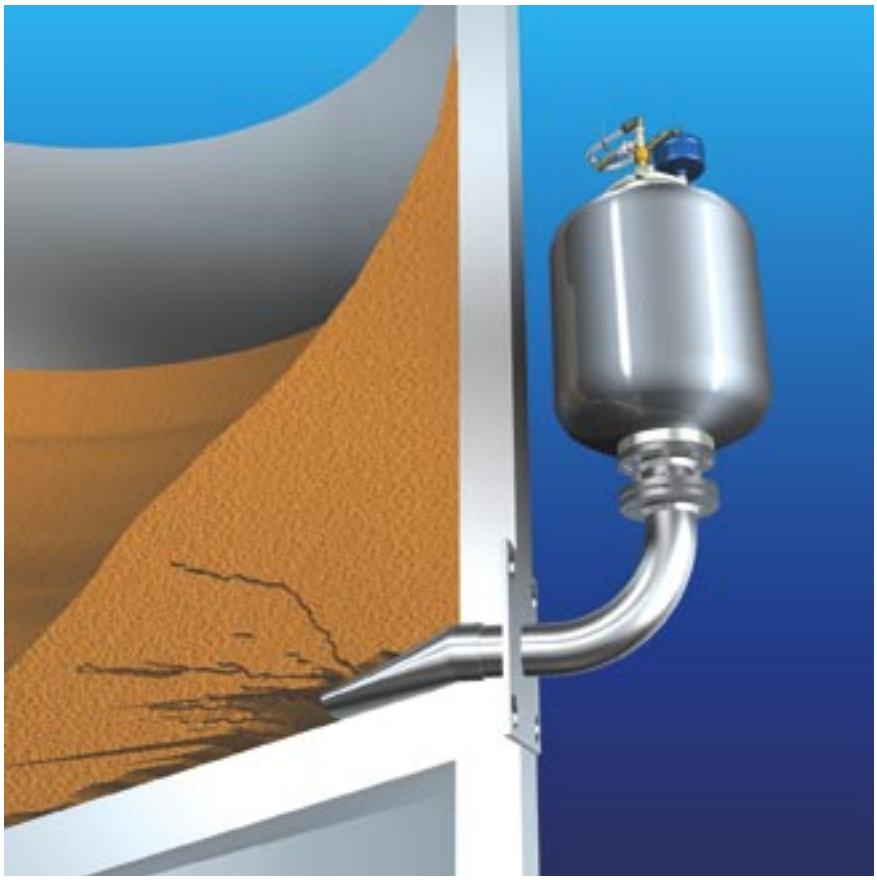


Chimney formation

The solution

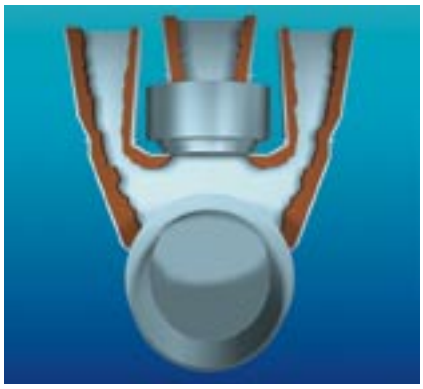
SHOCK-BLOWER® air-blast units from AGRICHEMA store highly compressed air (or inert gases) up to 10 bar and expel this within milliseconds as required.

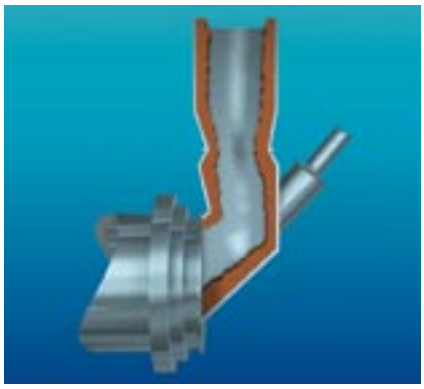
By aiming the explosion-like air-blasts into the dividing plane between the bulk material and wall via special expansion guide nozzles the bulk material is literally ”peeled“ from the wall and moved towards the outlet.



The problem
in the high-temperature range

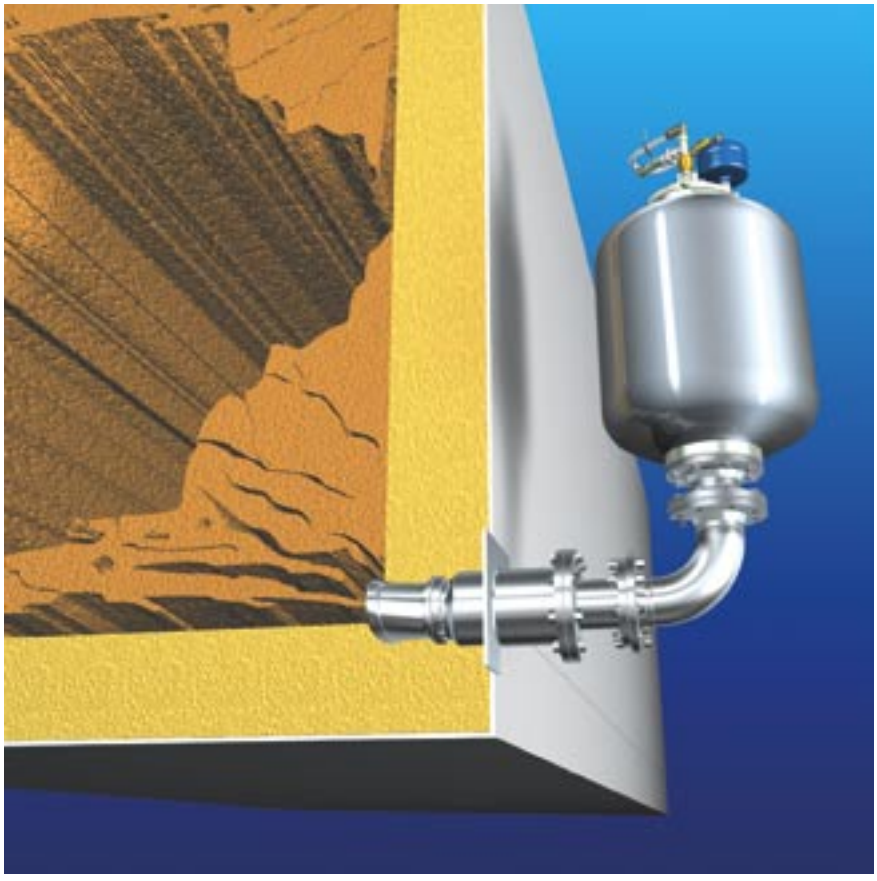
Cakings and material build-ups in gas risers, cyclones and ducts, travelling grates and inlet chutes to rotary kilns interfere with the process and reduce the productivity of the plants.





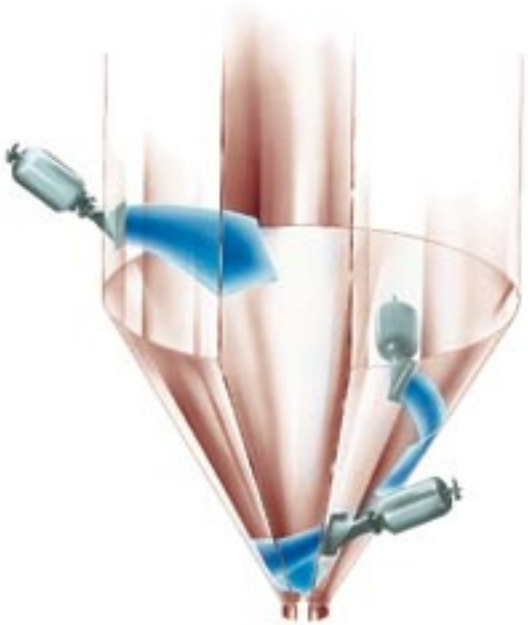
The solution

SHOCK-BLOWER® air-blast units from AGRICHEMA are used with special heat-resistant nozzles in the high-temperature range to remove cakings and material build-ups.

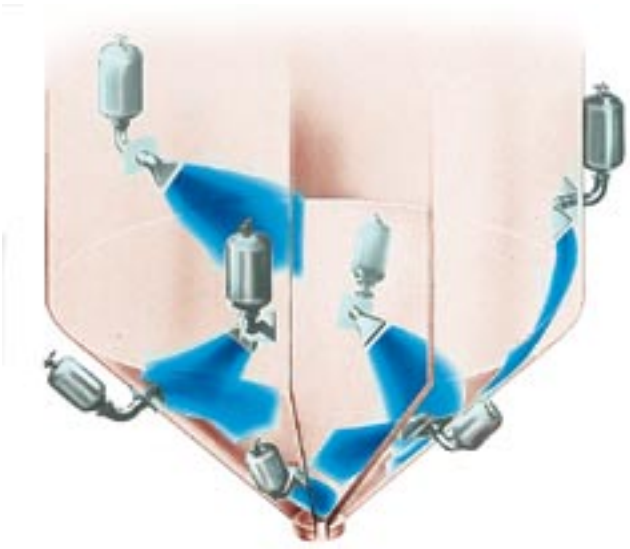


The concept
in the bulk handling industry

SHOCK-BLOWER® air-blast units are used in "critical areas" where materials tend to clog and form bridges.



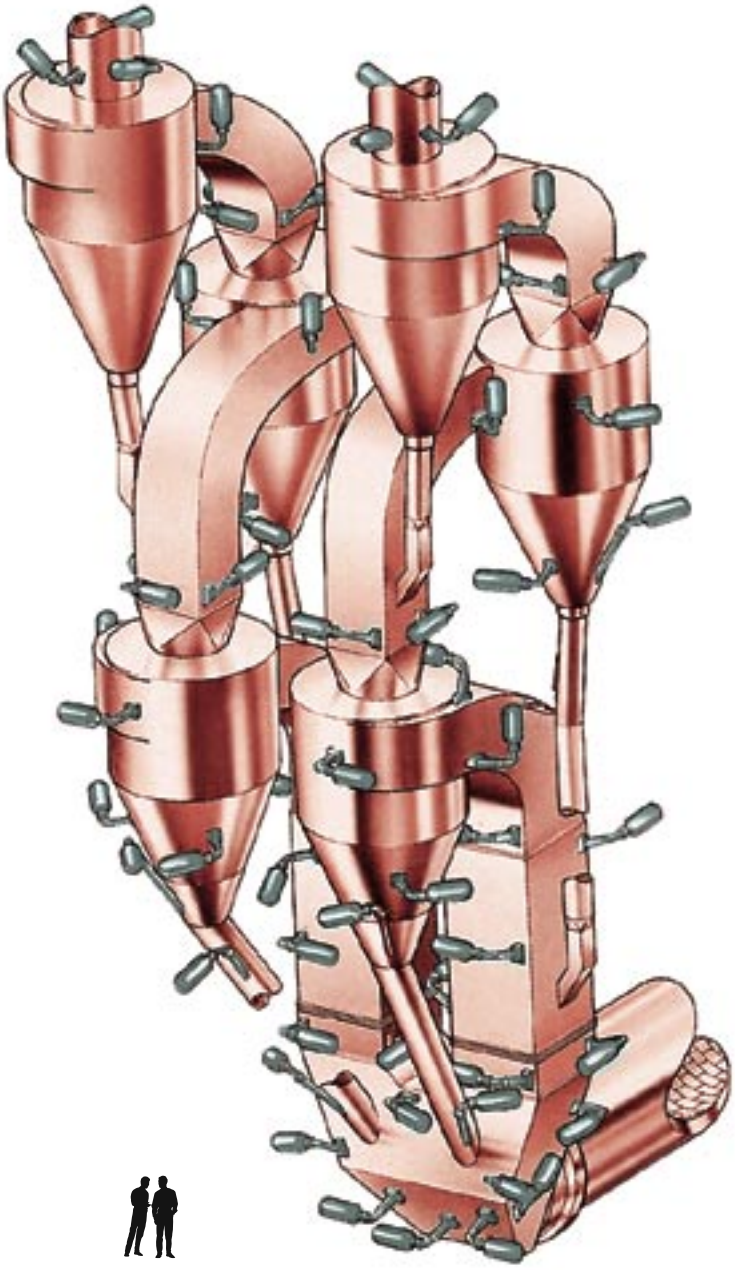
Active flow zones are produced by emitting air-blasts in a time-programmed sequence as required, so that even very adhesive bulk materials can be made to flow.



The concept
in the high-temperature range

The size and number of the SHOCK-BLOWER® , nozzles and accessories to be used are determined by:

- **the bulk material's characteristics**
- **local factors**
- **the type and location of material clogging**



This diagrammatic view shows possible places of use for the SHOCK-BLOWER® from AGRICHEMA for the automatic removal of unwanted material build-ups in a preheater system for rotary kilns used to produce cement.

The design

The most important components of the SHOCK-BLOWER® from AGRICHEMA are:

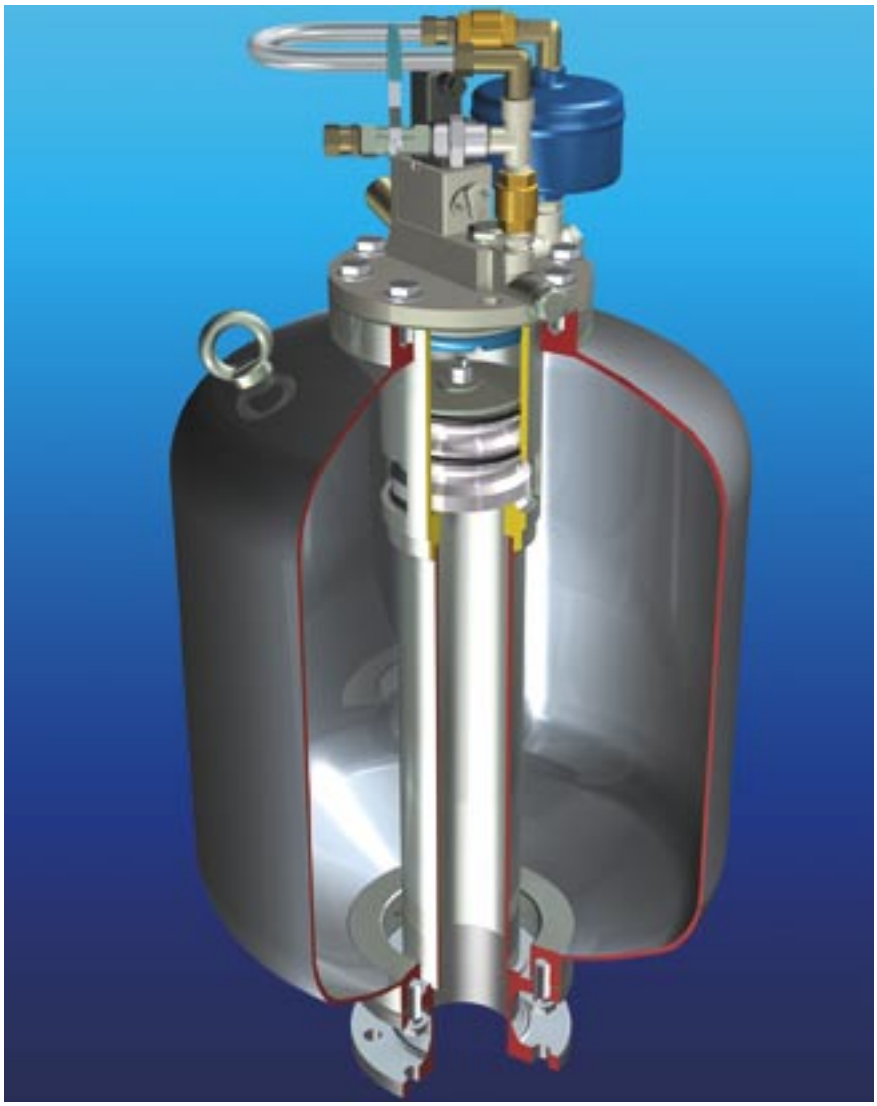
- **storage tank**
- **valve outlet unit**
- **SIKOBETIC® control unit**

The storage tanks are made to EURO standards and are hot galvanised on the inside and outside.

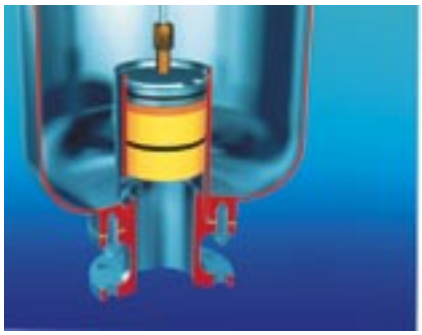
**The pistons in sandwich-design are made from aluminium alloy or polyurethane and are equipped with a packing ring which preferably consists of PTFE.
This ensures an optimum sealing of the valve seat and a leakage of pressurized air involving expensive losses is avoided.**

The piston is equipped with high quality teflon-glydrings, so the elevating motion of the piston is effected in milliseconds and the air impacts obtains explosively their optimal effect.

The control unit "SIKOBETIC" from AGRICHEMA offers a simple handling and guarantees maximum security for the operation of air blast units and for the plant operators (even during fluctuations in the compressed air network).



Design valve unit DN 100 and DN 150 with aluminium alloy piston for high temperature range.



Design valve unit DN 40 and DN 65 with polyurethane piston for normal temperature range.

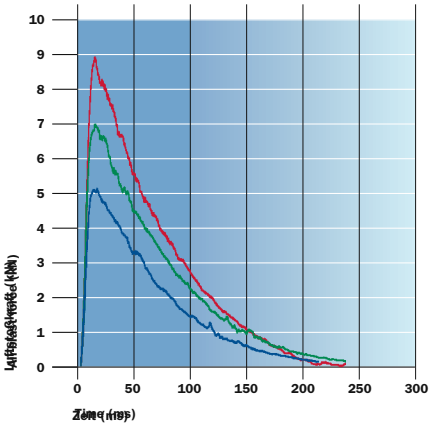
The air blast forces are tested with the latest methods at the Chair of Mechanical Process Engineering of Kaiserslautern University. The corresponding study can be obtained as an offprint from AGRICHEMA (English version) or on the internet (german version).

(www.uni-kl.de/LS-Ebert/drdau/ztg/dau.htm)

SHOCK-BLOWER® reach their maximum air-blast force within 10-15 milliseconds after the valve is opened.

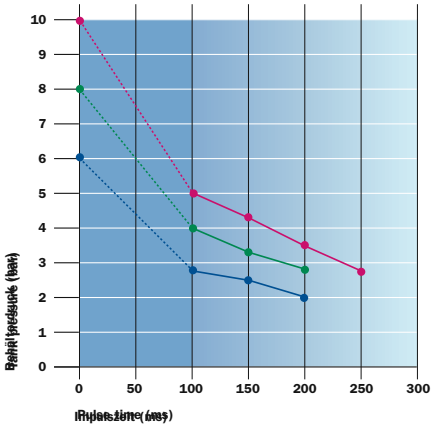
THE ADVANTAGES:

- **Maximum air-blast forces**
- **pneumatic piston closing (without push-back spring or other mechanical device)**
- **energy/compressed air savings (up to 50 %)**
- **reliable function (no lubrication required)**
- **highest safety standards**
- **versatile range of accessories**



Tank pressure (bar):

Force curves SHOCK-BLOWER® with a tank volume of 100 litres and an outlet valve DN 100 at various working pressures.



The unique valve units of the SHOCK-BLOWER® can be automatically re-closed within 100 milli-seconds. This means around 50 % energy savings.

The accessories

The SIWARTIC® from AGRICHEMA with filter controller and triple lockable 3/2-way ball valve is used as a safety maintenance unit for a reliable forced ventilation of SHOCK-BLOWER® installations.

The automatic cycle control (ATS) for SHOCK-BLOWER® is freely programmable.

All bulk material problems can thus be solved by an individual control of the SHOCK-BLOWER® .

The accessories in the bulk handling industry

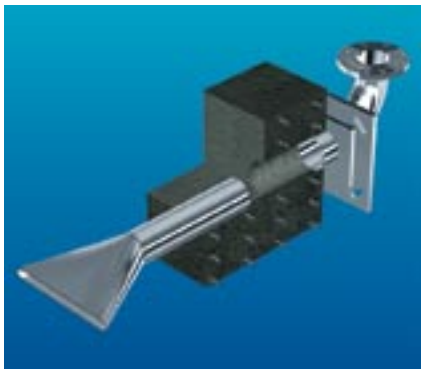
EXPANSION GUIDE NOZZLES

The versatile expansion guide nozzles from AGRICHEMA guarantee individual solutions for trouble-free operating sequences of bulk material plants systems.

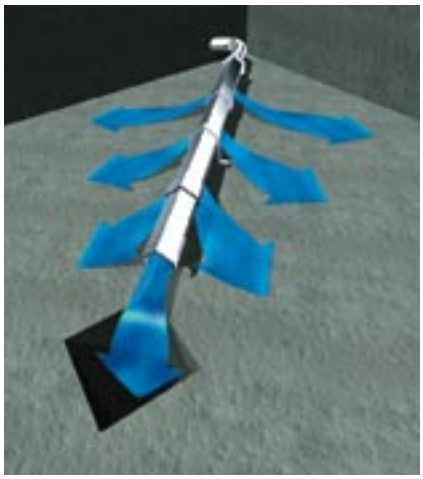
Expansion guide nozzle ”Tangential“ for round silos.

Expansion guide nozzle ”Straight“ for angular silos.

Expansion guide nozzle 90° ”Plug-in type“ with outlet unit for concrete silos.



Expansion guide nozzle 180° ”Plug-in type“ with outlet unit for concrete silos.



Air-cushion vibration pipe for storage hoppers and flat bottom silos.

Application examples in the bulk handling industry

KEEPING BULK MATERIALS FLOWING...

- **Hoppers, silos and tanks of concrete, steel, aluminium or plastic**
- **Round and angular type**
- **Flat bottom silos**
- **Star and in-line hoppers**
- **Transfer hoppers and chutes**
- **Filter systems and piping**
- **Spray towers**
- **Cyclones**

The accessories in the high-temperature range

HEAT-RESISTANT NOZZLES

The versatile heat-resistant nozzles from AGRICHEMA guarantee individual solutions.

Heat-resistant nozzles in refractory brick lining

0°, 20° and 90° discharge angle.

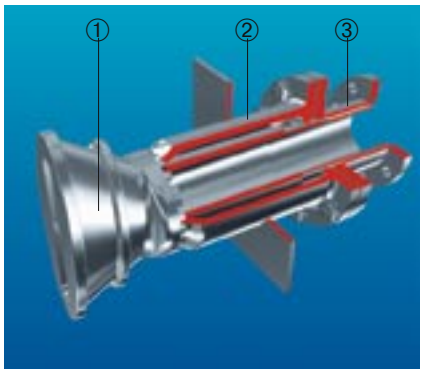
Type 0° discharge angle

Type 20° discharge angle

Heat-resistant nozzles in changing tube

0°, 20° and 90° discharge angle

- longer service lives of the heat-resistant nozzles ① through passive and active air cooling in changing tubes ②.
- easy replacement without flame-cutting and welding.
- changing tube ② and fastening device ③ not subject to wear.



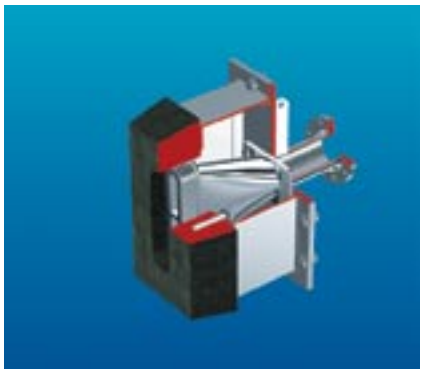
Type 0° discharge angle

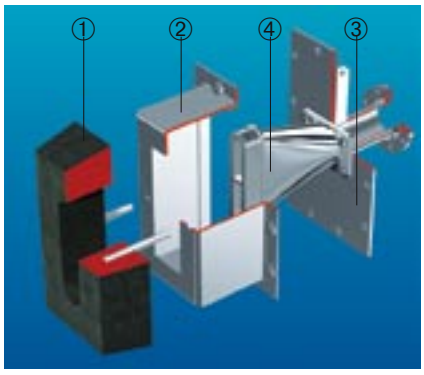
Type 90° discharge angle

Heat-resistant nozzle with refractory nozzle brick

0° discharge angle

- longer service lives under extreme working conditions through refractory nozzle brick ① with support box ②.
- quick inspections from outside by simply dismantling the front plate ③ with heat-resistant nozzle ④.





Application examples in the high-temperature range

REMOVING MATERIAL BUILD-UPS...

- Cyclone preheaters
- Travelling grate preheaters
- Clinker cooler inlets
- Clinker chutes
- Cyclones and ducts

Our comprehensive range of products offers individual solutions for all sectors in the bulk material industry:

- **SHOCK-BLOWER® air-blast units remove material build-ups and keep bulk materials flowing.**
- **VIBOSTAR® vibrating cones for continuous delivery of bulk materials in the delivery area of silos.**
- **ROTOSTAR® travelling screws to empty silos with flat bottoms.**
- **FLOWTEC® devices to shut off, distribute, convey and dose bulk materials.**
- **TELESCOPER® loading units are used for environment-friendly and dust-free loading of bulk materials.**

Our individual advice, high quality products and services go far beyond simple assembly of the installation and are essential factors for your success.

A sophisticated product range and the recognised know-how of AGRICHEMA give you the confidence that goes with making the right decision.

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