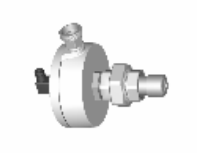
WELCOME to ALBRECHT Ingenieurbüro GmbH

We are developer, manufacturer, application consultants and service/distribution partner of the patented **ALBRECHT Pulsors**.
Pulsors are **pneumatic discharge aids** to prevent blockages, caking, arching (bridging) and ratholing in silos and dust bunkers.
The Pulsors generate a **fast sequence of short compressed air pulses**, which are blown into the bulk material at high pressure via metal-sealing and non-return flow nozzles

FIELDS OF APPLICATION:

By using **Pulsors**, many discharge problems can easily be solved afterwards. Pulsors are ideally suited for all hard-flowing cohesive bulk solids and



are used in all areas of the bulk material industry, on storage silos, intermediate containers, dosing containers, filter containers, cyclone hoppers, ash bunkers, electrostatic precipitators, fabric filters etc. of all sizes

- in the **building materials industry**
(lime, gypsum, cement products)
- in the **chemical industry**
(polymers, pigments, basic chemicals)
- in the **food industry**
(milk, cocoa, coffee powder)
- in **power plants and waste incineration plants**
(filter dust, fly ash))

OUR SERVICES:

Our strength is the **individual complete solution** , from consultation and planning to installation and commissioning of the Pulsors. This also includes the conception, production and installation of the electrical control and the compressed air supply, as well as the maintenance and servicing of the Pulsors. We are at your disposal for a personal consultation.

- **Technical planning and consulting**
- **Development, production and distribution**
- **Installation and commissioning**
- **Maintenance and repair**

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ALBRECHT INGENIEURBÜRO GMBH

About us...

1976:

ALBRECHT Ingenieurbüro was founded by the inventor of the Pulsors, Dipl.-Ing. Otto Albrecht, as a sole proprietorship. He was granted a patent for the development of the Pulsor principle in 1978. The first users of the new and successful principle of pulsed air injection were quickly found in the building materials and chemicals industries. Over the years, applications in the food industry and at dust filters in waste incinerators have been added. Exports to other European countries and Asia also expanded the business.


BUNDESREPUBLIK DEUTSCHLAND
DEUTSCHES PATENTAMT

Patentschrift
DE 2627387 C2

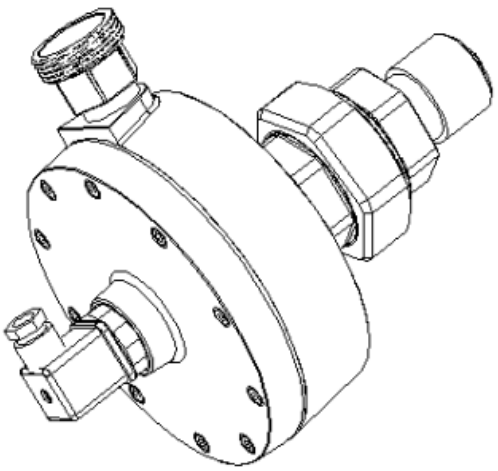
Int. Cl.⁴: B65D 88/72

DE 2627387 C2

After more than 20 years of successful work, the devices had proven themselves on the market and were known under the name **"PNEUSONANCE Pulsors"**.

1999:

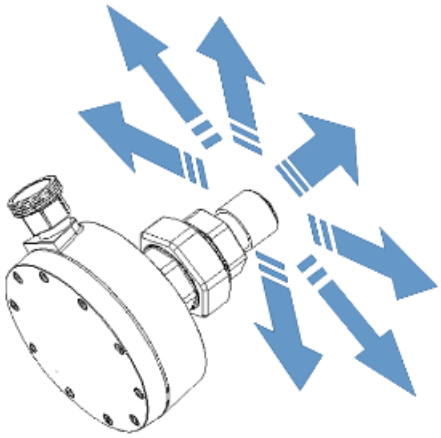
As part of the company's change of name to a GmbH, the son of the company founder, Dipl.-Phys. Jens Albrecht, became co-owner and managing director and took over the business a few years later after his father's retirement. The production was further professionalized and the devices were further developed and improved while retaining the original principle. Added to this were industrial controls and control boxes based on mini-PLCs and the development of an own Jenike shear tester to study the flow characteristics of bulk solids. In addition, marketing was further expanded via the Internet and regular trade fair appearances. Today, the **ALBRECHT Pulsors** are firmly established on the market and are used by companies from the entire spectrum of the chemical and bulk solids industry.



PULSORS

Functional Principle

A self-controlling chopping mechanism in the Pulsor generates compressed air pulses in rapid succession.
These are blown into the bulk material through special impulse nozzles and flow in a star-shaped flow and parallel to the inner wall of the silos.
This distributes the air homogeneously in the vicinity of the nozzle and reduces the wall friction as with an air cushion. A metal-sealing non-return valve in the nozzle head prevents product from the silo from getting back into the nozzle.
The fast switching on and off of the air flow, which takes place about five times per second, is the reason for the special effect of the Pulsors: The pulsating air flow achieves a considerably higher degree of efficiency than with continuously injected compressed air.



ALBRECHT INGENIEURBÜRO GMBH

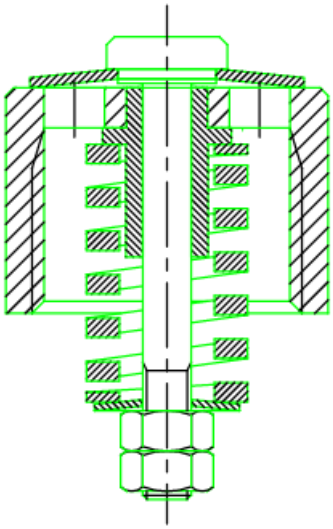
Contact

We are at your disposal for a personal consultation:

Your contact: Jens Albrecht (MD)
Phone: +49 (0)212 - 16393
Fax: +49 (0)212 - 201644
Email: albrecht@pulsoren.de
Address: ALBRECHT Ingenieurbüro GmbH, Mangenberger Str. 33, D-42651 Solingen

Please make an appointment for a demonstration and testing of the Pulsors.

By means of the pulsors consolidations in the bulk material and caking on the walls are effectively eliminated, and thus bridging and ratholing prevented. By reducing the wall friction, and the homogeneous air distribution, the bulk material also flows along the walls of the silo. This can reduce funnel flow and product segregation.

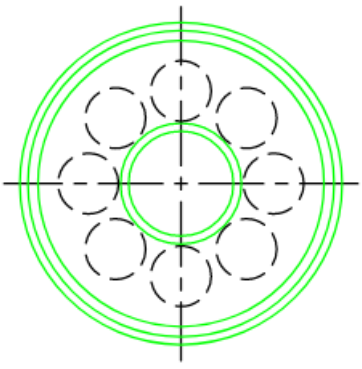


Advantages

- **Reliable and steady discharge**
- **Easy customisable intensity of flow stimulation**
- **No cracking on walls and welds**
- **Easy to retrofit from the outside**
- **Robust and low maintenance**

Conclusion: 1 device - 3 effects

- **Fluidisation of the bulk solid**
- **Shock effect on caking and blockages**
- **Loosening vibration of the bulk material**

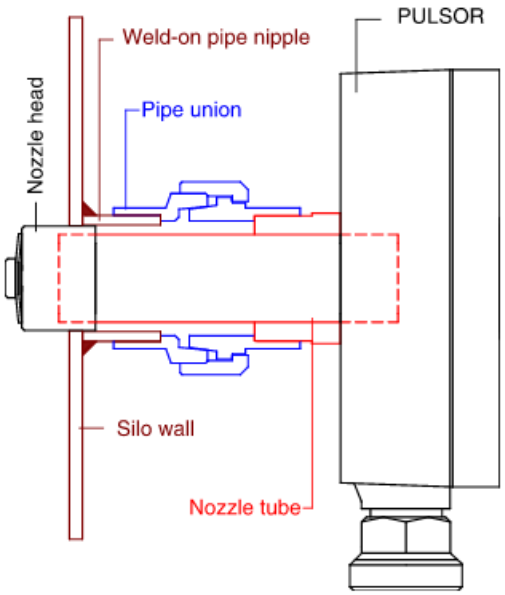


The resulting continuous mass flow from the silo ensures economical, reliable and trouble-free operation.

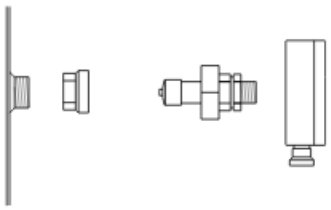
PULSORS

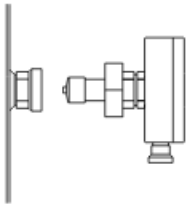
Installation

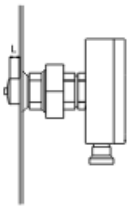
The Pulsors can easily be retrofitted to any existing silo, as they are completely installed from the outside. The nozzle tube is screwed into the cylindrical housing of the Pulsor and carries at its opposite end the nozzle head with check valve.
The Pulsor with its impulse nozzle is mounted to the silo via a weld-on pipe nipple and a taper seat pipe union. The nozzle protrudes through the welding nipple and the concentrically drilled through wall about 15 mm into the silo or bin. For insulated containers, longer weld-on nipples and nozzle tubes are available to allow the Pulsor housing to sit outside of the insulation.
The pipe union makes it easy to remove and reinstall the Pulsor and impulse nozzle for maintenance purposes. After loosening the union nut of the nozzle, the Pulsor with the impulse nozzle can simply be pulled out of the weld-on nipple.



Three different Pulsor types are available, which differ in air consumption and effective range. Number, type and arrangement of the Pulsors on the silo, as well as the optimum activation cycle, depend on the flow characteristics of the bulk solid, the silo shape and the procedural requirements.
At larger silos, and especially for products that tend to consolidation over the time or adhere to the walls, the Pulsors are usually arrangend in several levels at the silo cone.
At smaller silos or if only bridging or clogging near the outlet is to be prevented, often one or two Pulsors are sufficient.
Benefit from our experience and enclose a sketch of the container together with some information on bulk solid and process in your inquiry.



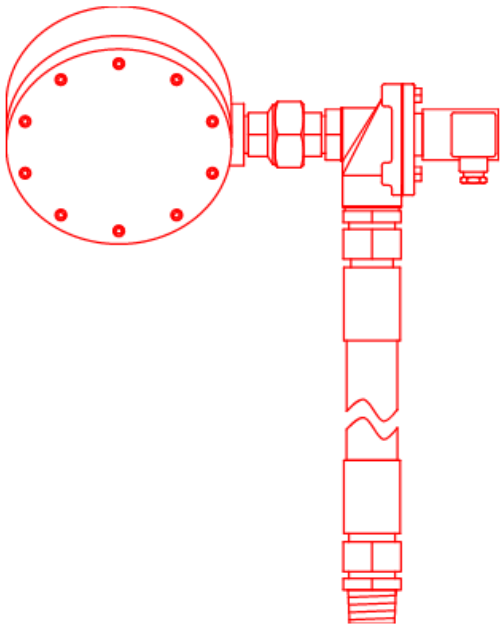




PULSORS

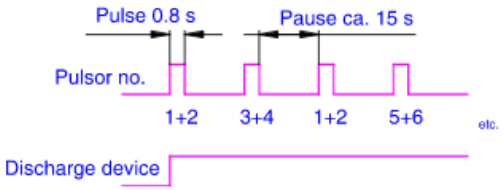
Operation

To operate the Pulsors, compressed air of 4 - 8 bar is required, whereby the supply line must have a sufficient nominal diameter. The guide value is NW 40 (1½") for the main supply line and NW 25 (1") for the branch lines to the individual Pulsors. The compressed air connection of the Pulsors to the supply line is made via a hose and a solenoid valve, which is used to switch the Pulsor on and off. Immediately after compressed air release, the pressure pulses are automatically generated in the Pulsor.



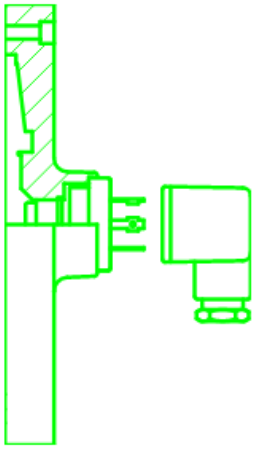
In general, the pulsors should be activated for only approx. 0.8 s each time. The pause time until the next activation is between a few seconds and a few minutes,

Control scheme:



depending on the requirements. The solenoid valve must be activated via a clock generator. The clock generator must be started at the same time as switching on the respective discharge device. The Pulsor control can either be installed in an external control box, or implemented in an existing PLC.

The Pulsors can optionally be equipped with electronic function monitoring. For this purpose, an inductive proximity switch is installed in the housing cover, which registers the movement of the valve disc in the Pulsor and signals the absence of pulse generation in the event of a fault. Function monitoring is recommended for continuously running systems, such as dust filters in waste incineration plants, where a device failure may not be detected immediately. Conversely, function monitoring can also be used to detect unintentional operation of the Pulsors.



PULSORS

Technical Data

Materials:

Pulsor casing: Aluminium
Nozzle tube: Stainless Steel: 1.4571
Nozzle head: Stainless Steel: 1.4112, hardened
Pipe unions: Malleable cast iron, galvanised or stainless steel
Shut-off valves: Diaphragm valve from Aluminium (dust filter valves), magnetically or pneumatically actuated
Air connection hoses: Hydraulic hose type 1SC

	type 100	type 150	type 300
Pulsor diameter	110 mm	160 mm	310 mm
Nozzle tube diameter	1/2 "	1 "	1 1/2 "
Weld-on nipple diameter	3/4 "	1 1/2 "	2 "
Weight (Pulsor, nozzle, valve)	3,5 kg	5,5 kg	21 kg
Compressed air supply hose	3/4 "	1 "	1 "
Air consumption at 6 bar operating pressure and 0.8 s pulse time in standard litres (atmospheric pressure)	30 l	75 l	150 l

Installation dimension drawings for the most common versions can be found in the download area.

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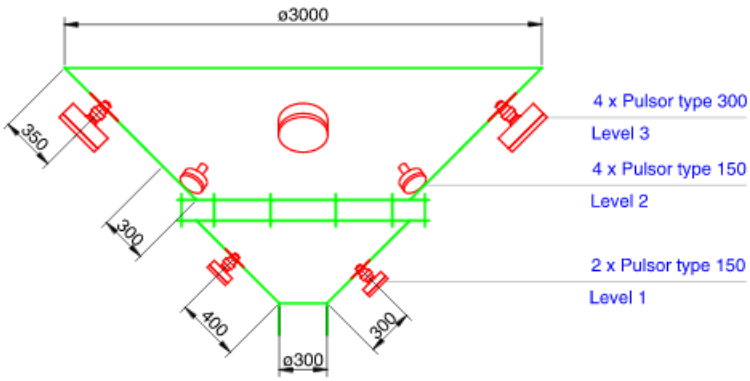
PULSORS

Application Examples

By using **Pulsors** many discharge problems, which occur again and again in silos, can be easily solved afterwards. Typical problems are bridging (arching), ratholing (funnel flow), segregation and time consolidation.

EXAMPLE 1 - SILO WITH VIBRATORY BIN ACTIVATOR

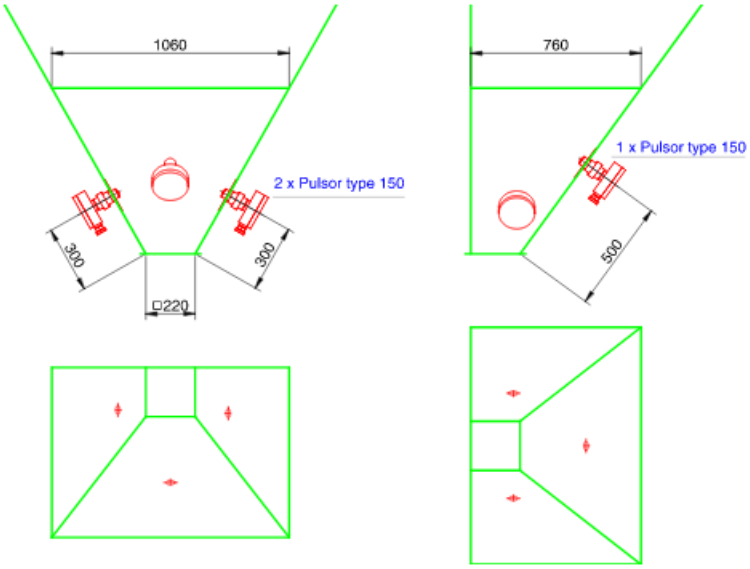
Vibratory bin activators do not always ensure that bulk materials can be discharged without problems. Often, as in the present case, bridging occurs over the outlet and over the annular gap, as well as caking of product on the walls. By retrofitting Pulsors all problems could be solved completely and the conveying capacity could be improved decisively....



... here, too, one no longer has to knock with a hammer. The bulk material is fluidized by the injected air and flows out...

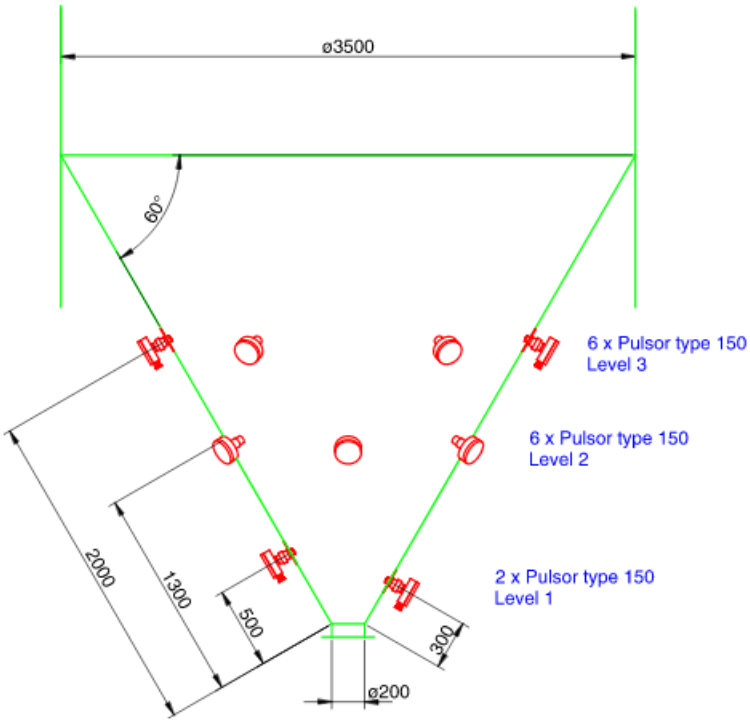
EXAMPLE 2 - INTERMEDIATE CONTAINER

In containers with a rectangular cross section, caking and dead zones form preferably in the area of the edges. The two lower Pulsors prevent bridging and ratholing. In addition, the flow of material on the flatter wall is supported by the upper Pulsor. By retrofitting Pulsors, a continuous material flow could be achieved and the container could be completely emptied.



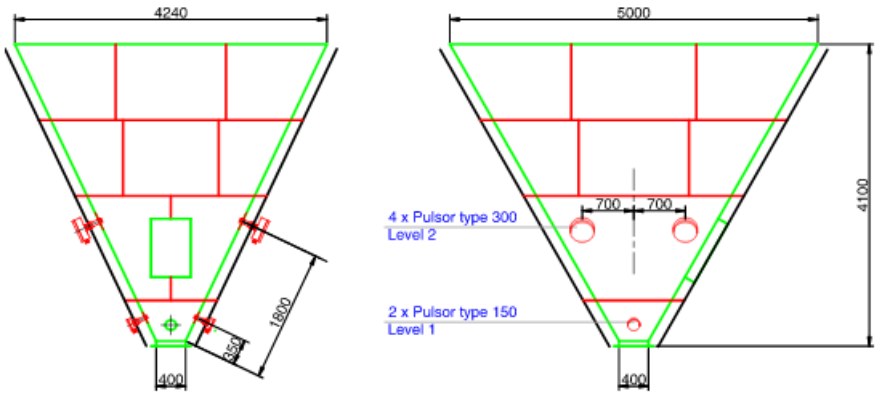
EXAMPLE 3 - STORAGE SILO

In the case of a storage silo for adipic acid, bridging over the outlet should be prevented on the one hand and funnel flow, which would occur without discharge aids, reduced on the other. The installation of Pulsors in three levels enabled the bulk material to flow also in the outer area of the hopper, and caking of product on the walls could be avoided.



EXAMPLE 4 - DUST FILTER

ALBRECHT Pulsors are used on many electrostatic precipitators and fabric filters to regularly clean dust deposits on the walls and to keep the outlet free from blockages. This prevents clogging of the outlet by avalanches of dust build-up and ensures trouble-free operation of the dust filters.



The correct positioning of the Pulsors on the hopper walls is often decisive. We have many years of experience in this field.

Pulsors can also be retrofitted to electrostatic precipitators without any problems, or, as in this case, can be planned right from the start. In order for the Pulsors to sit outside the insulation, correspondingly long welding nipples and nozzle pipes are used. For continuously and automatically operated systems it is recommended to provide the Pulsors with a function monitoring system. A sensor integrated in the Pulsor cover monitors the pulse generation and reports a fault to the control room.