AERZEN
Safety standards

For pneumatic applications: 100% process safety by discharge silencers free of absorption material, certification according to ISO 22000, ATEX compliant machines and oil free class 0.

AERZEN
EXPECT PERFORMANCE

Oil-free class 0
Play it safe with **AERZEN**

The purity of compressed air is decisive in many industries, as it can significantly influence process quality when producing premium products. This applies in the food industry, the pharmaceutical and cosmetics industry, parts of the automotive industry, the paper and textiles industry, with medical technology, and with sensitive chemical or petrochemical processes, to name only a few. According to ISO 8573-1, class 0, when compressed air comes into contact with the product, as is the case with pneumatic conveyance, for example, it is crucial that the compressed air is free of oil. Oil contamination can lead to disastrous consequences, as for example the destruction of complete production batches.

Oil-free operation as a constructive requirement

It is important to consider in advance any previously installed, oil-lubricated, compressed-air machines (bearing lubrication, oil cooling circuits etc.), whose compressed air may come into contact with the bulk good during the pneumatic process in direct or indirect form. Not only does the bulk good's contamination by oil pose a potential hazard here, the damage to the installed compressed-air system, potentially resulting in total failure, may also inflict considerable cost.

AERZEN. No compromises

As a leading manufacturer of positive displacement blowers (Delta Blower), rotary lobe compressors or screw blower (Delta Hybrid) and screw compressors (Delta Screw) used as compressed-air packages for countless pneumatic processes in various industries (e.g. the food industry), Aerzener Maschinenfabrik GmbH has set a new standard for safety. In cooperation with Tüv Rheinland LGA Products GmbH, this safety standard has been defined according to the following guidelines and standards:

- ISO 8573-1: 2010 Part 1:
  Contaminants and purity class
- ISO 8573-2: 2007 Part 2:
  Test methods for aerosol oil content
- ISO 8573-5: 2001 Part 5:
  Test methods for oil vapor and organic solvent content

With this certification for all worldwide installed machines (DeltaBlower, Delta Hybrid, Delta Screw), Aerzener Maschinenfabrik GmbH takes an important step towards the quality assurance of oil-free operating air as used for the generation of compressed air within various processes and applications in the aforementioned industries.

Figure 1: Deposits in bulk material, which collect in silencers with absorption material

Figure 2: Bulk goods contaminated with oil during the pneumatic conveying process

Image 3: Burnt compressor system after sparking occured in the blower

100% process safety and compliance with required sound pressure levels

AERZEN assemblies benefit from increased energy efficiency and a lifetime extension of your compressed-air system thanks to a silencer free of absorption material.

Stable, safe and efficient processes, thanks to AERZEN silencer technology

The durability, consistency and efficiency of compressor stations – with pneumatic conveyance, for example – represent crucial criteria for today's silencer technology. Discharge silencers lined with absorption material are subject to natural wear caused primarily by the high intake temperature of the air (up to 280°C) and the abrasive wear by pulsation in the silencer. The absorption material washes out of the silencer in fine particles and is taken up in the conveying air. This results in pneumatically conveyed bulk good coming into contact with fine absorption material and subsequent contamination, making it impossible to guarantee the purity of the conveying air.

New AERZEN solutions

AERZEN recently developed and successfully patented groundbreaking new silencer technology at its research and development centre (European Patent No. 1857682). In the future, AERZEN will use so-called reactive silencers to reduce pipe noise for its Delta Blower (positive displacement blower), Delta Hybrid (rotary lobe compressor) and Delta Screw (screw compressor) series. Experience has shown that process safety and – above all – efficiency improved significantly, the more so as pressure losses resulting from this kind of sound insulation were considerably lower than common designs employing absorption material.
Aerzener Maschinenfabrik GmbH further guarantees that its compressed air ventilation systems will conform to required sound pressure levels for the duration of their service life. The new reactive AERZEN silencers operate without the use of any absorption materials whatsoever – by cancellation of sound waves (destructive interference method). Maintaining the sound pressure level (blue curve) is therefore guaranteed over the entire life cycle of the machine, as there are no absorption materials to loosen during active use and increase the pipe sound value. Therefore, there can be no change at all (yellow curve) in the noise value! With its patented technology, AERZEN takes an important step towards fulfilling VDI directive 2058 and TA Lärm (German Technical Guidelines for noise reduction); not only upon delivery, but also for a machine's entire life cycle. Our machines also contribute to work safety (occupational safety ordinance on noise and vibration protection), ensuring that employees are not exposed to any gradual increase in noise level.

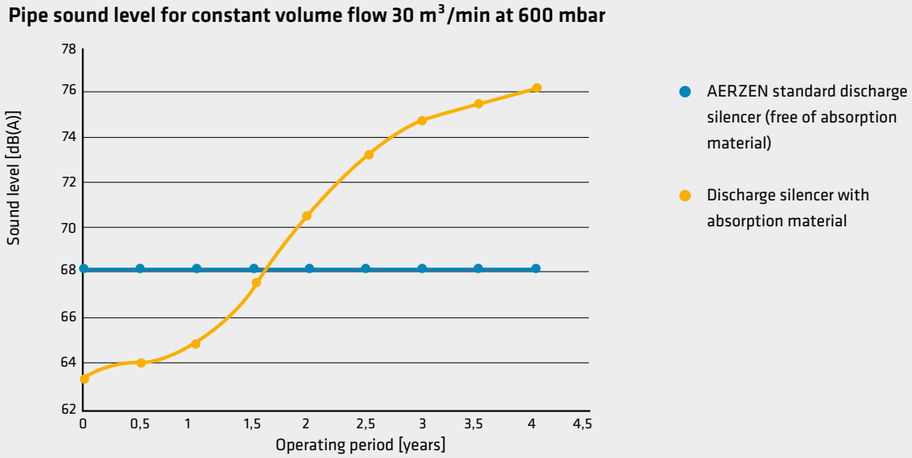

Figure 8: Noise development due to wear of the absorption material in the discharge silencer

100% safety with ATEX applications

Compressor and blower packages made by AERZEN have been used for a long time in highly critical sectors. The know-how and experience AERZEN has built up over decades in almost every field of application comes to the fore in processes covered by ATEX guidelines, as well as in the unique breadth and range of performance of our customer-solutions portfolio, which covers nearly every ATEX sector. We provide a good basis for customers to meet increasing demands in a safe and inexpensive way. The AERZEN Delta Blower and Delta Hybrid and Delta Screw are designed specifically to meet requirements for categories 2 and 3 for dust and gas zones, in accordance with European Product Directive 2014/34/EU. Explosion protection for systems in accordance with ATEX directive 153 "saftey guideline" 99/92/EG (also know as ATEX 137) has also been taken into account.

Absorption material-free pulsation discharge silencers as spark arresters

One potential problem seldom considered in pneumatics is the risk of the blower producing sparks which then are blown into the delivery pipe (pressure conveying), which can in turn lead to an ignition of a dust-air-mixture. Here, the AERZEN ATEX concept provides a TÜV certified solution. In case of emergency a spark arrester integrated into the base support or the discharge side of the silencer avoids sparking over into the hazardous zone. The installation of spark arresters on site can be omitted completely – a decisive advantage for the customer.

Explosion protection during the pneumatic conveyance of bulk goods

Ignitable mixtures can arise during the pneumatic conveyance of flammable or explosive bulk goods. AERZEN offers all system components in appropriate ATEX design, thus guaranteeing comprehensive explosion protection. According to ATEX guidelines, explosion protection must also be guaranteed in zone 21 in the event of possible disturbances. This is why AERZEN's safety concept is designed to include even extraordinary malfunctions. Depending on the product and system configuration, bulk goods are transported at overpressure operation, or by means of pneumatic suction. Should a malfunction in the separation filter (e.g. filter fracture) occur during suction, it is critical that no flammable dust-air-mixture be sucked into the blower. To this end, AERZEN developed a TÜV certified filter element (police filter or zone separation filter) to be integrated in the inlet silencer. The filter is monitored by a differential pressure measurement. A decisive advantage for our customers: an additional police or zone separation filter on site is not required.

Further AERZEN solutions to ensure your safety

A) Filter technology. AERZEN offers a series of options for its intake filters right-sized such as intake filters for increased dust requirements with identical filter cartridges.
B) Special oils suitable for food (FDA-compliant). 72% of all damages to roller bearing is caused by inadequate, contaminated or rapidly ageing lubricants. A common problem that could be avoided in a simple way: high performance FDA-compliant oils, specially developed for the food industry and optimised for your high performance AERZEN machine. Suitable for any application. Ensuring a long and reliable system service life.

ISO 22000 - Safety for the food industry

AERZEN is ISO 22000 certified. With the framework of the new standard, risks in the direct and indirect environment of the food production chain can be identified with uniform certainty at international level. Especially in the food industry it is crucial to be able to rely on the process air. It must be guaranteed free of impurities such as oil, abrasion or insulating material. The ISO 22000 certification ensures that AERZEN machines document and fulfil the high requirements for food safety. This means that the operator can fully rely on the assemblies. Because a management system for food safety in the sense of ISO 22000 is an important contribution to the risk management of the company. For AERZEN this international certification according to ISO 22000 represents a further component for product safety.

At AERZEN, your safety and products are our utmost concern. That's why continuous development is a top priority

Every step along the way increases your system and process safety. AERZEN machines can be used without any concern for almost all critical processes requiring absolute oil-free operation. Filters, silencers, special oils and proven solutions for application in explosive zones lend particular efficacy to the AERZEN safety package.

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