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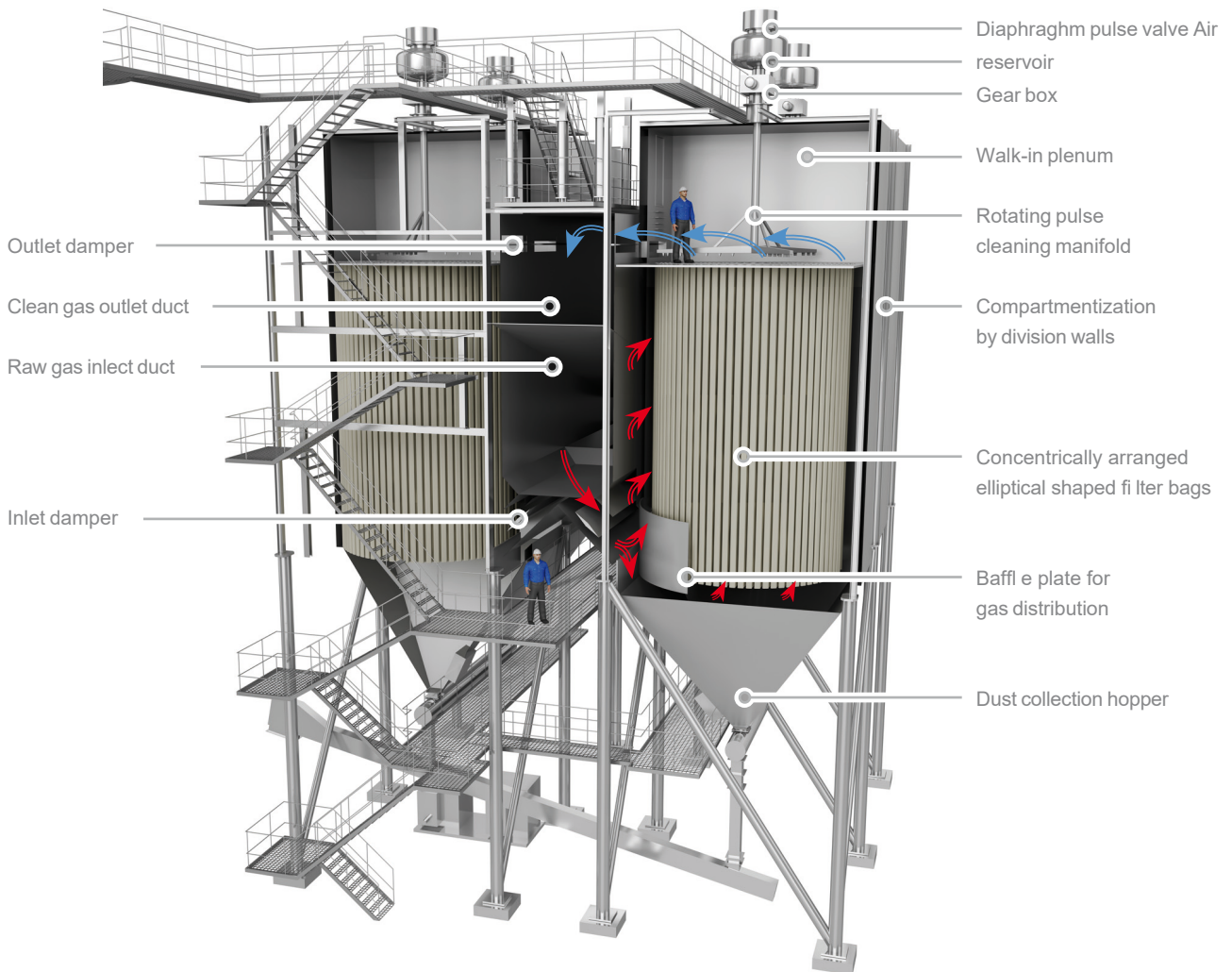
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СИСТЕМЫ КОНТРОЛЯ ВЫБРОСОВ ЕСOPULS

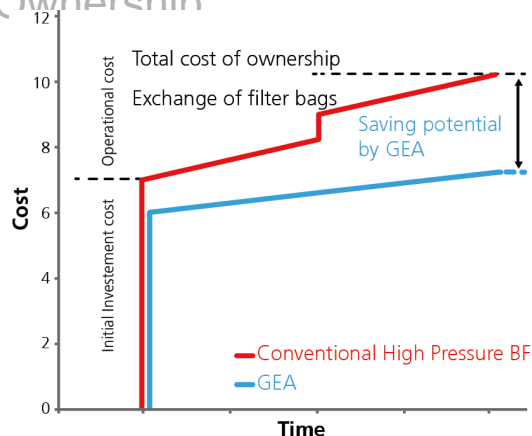
Технические характеристики



GEA ECOpuls filter



Total Cost of Ownership

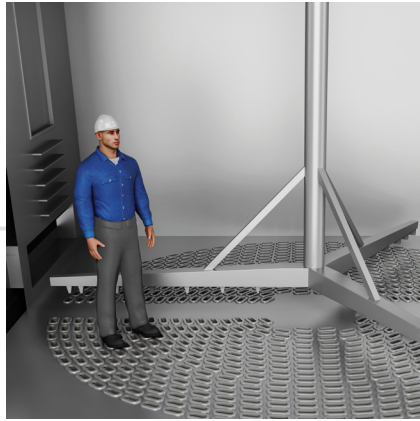


The reduced amount of individual parts, the high gas cleaning efficiency and the small plant footprint allow for minimum invest cost of the GEA ECO-puls filter solution. However, also the operational costs need to be considered when comparing different solutions. Due to the GEA low pressure technology, the air used for bag cleaning needs to be compressed to only 0,8 bar (g). This compression is achieved by use of reliable and energy efficient roots blowers. No additional compressor station or air dryers are required.

In contrast, the compressor station of a conventional high/medium pressure system will have a substantially higher energy consumption. The low overall pressure drop of the GEA ECOpuls filter and the extended filter bag lifetime help to reduce further operational cost. As a result, the GEA ECOpuls filter not only is technologically superior, it also offers lowest cost of ownership.

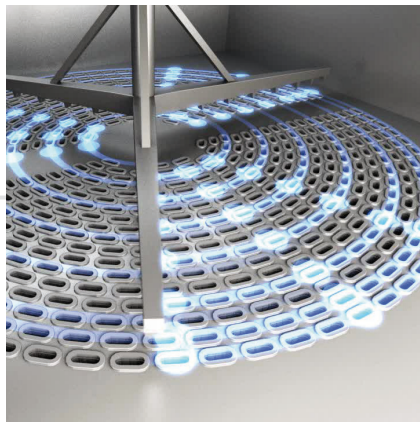
WALK-IN PLENUM

The walk-in plenum is gas tight welded and affords an easy access to the filter bags during maintenance, the GEA ECOpuls filter is equipped with a walk-in plenum. Individual filter bags can be pulled or exchanged on the spot. Alternatively, as an intermediate solution broken bags can also be sealed easily. No dis-mantling or additional cranes are required for bag exchange work.



ROTATING CLEANING MANIFOLDS

Each clean gas chamber is equipped with a low speed rotating manifold with cleaning air nozzles at its bottom side. The rotating movement ensures that all filter bags are provided with cleaning air at reduced pressure losses. It is not required to have individual valves or nozzles for each filter bag to having as few moving and wear parts as possible. Hot cleaning air prevents condensation effects during pulsing.



SEGMENTED CAGES

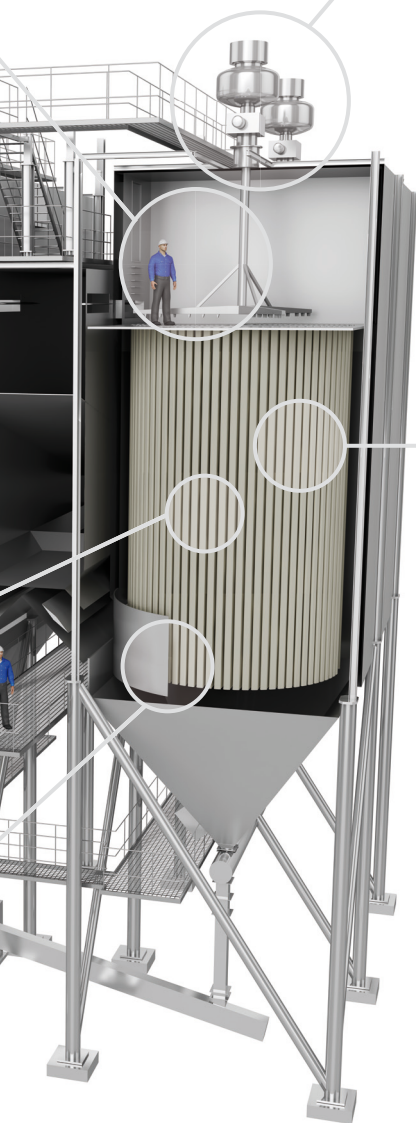
GEA ECOpuls filter bags are held in position by special segmented cages. The cages feature a smart designed and convenient snap in connection for quick mounting. The wear and high temperature resistant coating of the cage wires contributed to the long lasting quality of GEA ECOpuls filter bag cages.



BAFFLE PLATE FOR OPTIMIZED GAS FLOW

To prevent the direct impact of dust laden raw gas on the filter bags immediately after entering, each GEA ECOpuls filter chamber is equipped with a baffle plate. This results not only in an optimized gas distribution within the filter chamber but also helps to reduce bag wear, which is an important precondition for long lifetime.





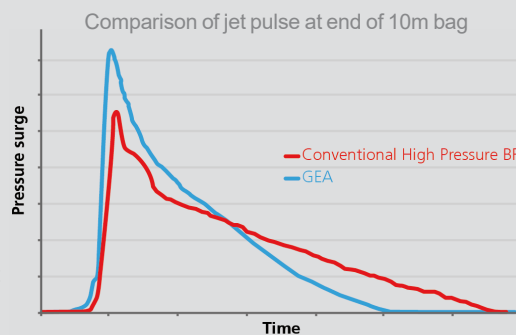
LOW PRESSURE - HIGH EFFICIENCY

To perform bag cleaning the GEA ECOpuls filter utilizes air with 0.8 barg (at reservoir) supplied by standard roots blowers.

Bag cleaning requires three phases:

- (1) Inflation with fast acceleration
- (2) Buildup of sufficient cleaning pressure
- (3) Purging of the filter bag

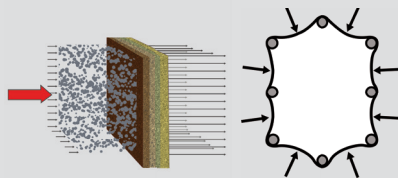
While pressure is low, the actual cleaning efficiency is higher than with conventional systems. Jet pulses with up to 3 times higher volume of cleaning air expand directly into the bag rows, without the need of a venturi system. Tests have shown that GEA low pressure technology results in highest utilization of cleaning energy along the complete length of the filter bag. This technology allows for ON-LINE cleaning even of longer bags and results in less wear and extended filter bag lifetime at reduced energy consumption.



UNIQUE ELLIPTICAL SHAPED FILTER BAGS

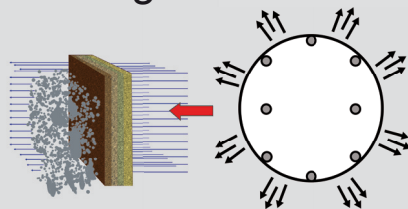
Key feature of each GEA ECOpuls filter is the elliptical shape of the filter bags. The bags are arranged in concentric circles – thus forming circular shaped bundles. The circular geometry allows for the use of only one single rotating cleaning manifold per filter chamber.

Filtration



During normal filtration the filter bags are held in place by the wires of the bag cages, preventing collapsing by differential pressure. During bag cleaning phases, low pressure pulses of cleaning air are injected into the filter bags.

Cleaning



The resulting overpressure inside the filter bags lead to the acceleration of the bag fabric towards the outside. The lateral movement of bag material comes to an end when the full extent of bag circumference is reached. In consequence, precipitated dust on the outer surface of the bags is separated from the filter fabric by mass inertia. As the dust already has been agglomerated into a solid filter cake – falling down into the hopper - reentrainment of dust is

ONLINE CLEANING

The GEA ECOpuls filter concept allows for online pulse cleaning. It is not required to isolate the individual filter chambers from gas flow for bag cleaning. As a result, the GEA ECOpuls filter is always working with the full efficiency, without the need to operate at n-1 condition and therefore allowing for a minimized plant footprint. Still, individual chambers can be separated by dampers in case required. The GEA ECOpuls filter uses sufficiently sized, long lasting 12" diaphragm valves, excelling in reliability.

The system is optimized for up to 10 m bag length. The design is ready for even longer bags.

GEA ECOpuls filter - a reliable solution for our customers

Cement

For decades GEA has been serving the cement industry with reliable and highly efficient gas cleaning solutions. The GEA ECOpuls filter is suitable for a wide field of gas cleaning applications related to cement production.

GEA ECOpuls filter- applications for cement include:

- Kiln
- Clinker cooler
- Raw, mill and coal
- Bypass extraction and dedusting

Our bag filters are compliant with latest U.S. NESHAP requirements, allowing for clean gas dust emissions less than 1 mg/m³.



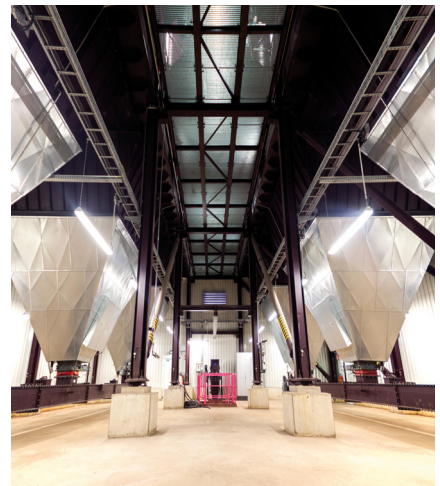
Iron & Steel

Latest regulations affecting iron&steel making plants in most parts of the world are demanding for extremely low dust outlet concentrations. This especially applies for sinterplants, where in addition to dedusting the reduction of SOx and dioxins/furans is an important issue.

Providing the GEA ECOpuls filter technology as a proven solution, GEA is the ideal partner for customers requiring a significant reduction in emission levels.

GEA ECOpuls filter- applications for iron & steel include:

- Blast furnace cast- and stock house
- Sinter process gas
- Sinter waste gas
- Secondary dedusting



Non-Ferrous

Production facilities of non-ferrous industry, e.g. copper and zinc smelter, require secure and reliable dedusting equipment. GEA ECOpuls filter is mainly used for:

- Secondary dedusting

Like in other industries the GEA ECOpuls filter allows the recycling the separated dust to the production.



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