

Proven safe filtration of fine dust

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Headquartered in Schwandorf/Germany, Nabaltec AG is a leading manufacturer of highly specialised ceramic raw materials, environmentally friendly, flame-retardant fillers and additives. Applications in the field of ceramic raw materials are primarily in the refractory industry and technical ceramics. For more than 20 years, Nabaltec has relied on the safe, efficient and sustainable filtration technology from Herding GmbH Filtertechnik for the effective protection of people, machines and the environment in its production processes. The requirements for the safety and separation performance of industrial filtration technologies have steadily increased as a result of ever stricter limit values and adapted regulations. In this respect, this has noticeably increased awareness of fine dusts in the mineral processing industry. Filter systems from Herding® combine first-class separation performance with unrivalled wear resistance in a unique way.

Dr Alfred Reimer, Head of Plant and Process Development at Nabaltec AG in Schwandorf, shares his experiences with the Sinter-Plate Filter: "Nabaltec AG has been using filters from Herding for more than two decades. The filters are used as silo top filters or as 'product filters' for product recovery downstream of mills or dryers. There are currently around 50 Herding filters in operation at Nabaltec AG's Schwandorf plant.

Key reasons for their use in the plant are the high efficiency of dust separation and the resulting low dust emissions as well as the fact that Herding filters are nearly maintenance-free. The two companies have also agreed a maintenance contract to ensure trouble-free operation and operational readiness of the filters. As the newest addition to Nabaltec, a first Herding BETA filter for a high-temperature application is set to be commissioned soon."

Especially the fineness of the generated mineral dusts as well as their abrasive properties place high demands on traditional filter systems with depth filtration media such as cartridges, bags and hoses. These conventional systems can prove inefficient as fine particles irreversibly penetrate into the depths of flexible, woven or needle felt filter media and clog them. This typically leads to unstable operating conditions and insufficient air flows. In addition, such media wear out quickly due to the abrasive nature of mineral particles. This can result in



Fig. 1 Highly efficient and reliable dust filtration systems are becoming increasingly important, especially in the wake of the fine dust debate (source: Herding Filtertechnik)

accidents with dust breakthroughs, and in turn lead to production downtime. A thorough evaluation of existing filter systems and an objective comparison with systems based on surface filtration is therefore essential.

In general, the emission of particle loads containing fine dusts can hardly be avoided in the process steps of the ceramics industry. Ideally, such process-related dust emissions should be separated from workplaces. However, implementing this in industrial production practice is problematic and is also hardly economically feasible.

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Fig. 2 For more than 20 years, Nabaltec has relied on safe, efficient and sustainable filtration technology from Herding

It is therefore necessary to use filter systems adapted to the individual application including efficient capture of emissions directly at the point where they are generated. The capturing devices should be designed according to the latest findings in flow mechanics.

Furthermore, minimising the open cross-sections at machines or transfer points in conveying systems helps to avoid the generation of large quantities of dust.

Classic pure surface filtration

Pure surface filtration with the patented Herding® Sinter-Plate Filters has proven effective for many years for the efficient and

reliable separation of abrasive and very fine mineral dusts. The sintered and inherently rigid PE filter media are characterised by their extraordinary resistance to mechanical stresses such as pressure forces or alternating loads, which occur in filter systems due to suction operation and jet-pulse cleaning acting in the opposite direction.

In contrast to conventional filter systems based on depth filtration, the patented Herding® filter elements enable pure surface filtration. This property, and therefore the absence of any affinity to irreversible deposition of fine particles, is achieved by a coating homogeneously embedded in the surface of the PE rigid body as a filter-active

layer. This combination of an absolutely robust sintered structure and the uniformly embedded coating is what makes the Sinter-Plate Filter so effective. Abrasive mineral substances such as ceramic and quartz-containing dusts are therefore reliably separated without damaging the filter-active layer. The resistant filter medium is also not subject to permanent flexing like other filter media, which occurs particularly under high mechanical stress such as alternating pressure loads.

This reduces filtration-related wear to a minimum and the filter-active layer remains intact over the entire lifecycle and, as experience shows, undamaged.

The described properties of pure surface filtration in combination with energy-optimised Jet-Pulse cleaning lead to almost constant differential pressure behaviour of the filter and thus constant operating conditions over the entire lifecycle of the filter systems. The extraction performance therefore remains stable and safe with a confirmed service life of up to >15 years.

Suitability for air recirculation independently proven

The standardisation committees at national and international level have harmonised the limit values for fine dust and silica dust emissions. The aim is to sustainably minimise potential personal exposure to respirable fine dust and crystalline silica in the workplace.

This is another advantage of the inherently rigid Sinter-Plate Filters. Independent measuring institutes have verified the A dust content of Herding filter systems in accordance with DIN EN 481. Accordingly, the manufacturer's filter systems with the Sinter-Plate Filter have clean gas concentrations for fine quartz dust of less than 0,005 mg/m³.

This confirms that Herding filter systems with the integrated Herding® Sinter-Plate Filter can be used for air recirculation even in applications with fine quartz dust exposure.

The possibility to recirculate the air and recover heat by recirculating the filtered air makes an important contribution to increasing efficiency and saving energy.

In addition, retrofit solutions from Herding offer the attractive option of upgrading existing systems to the state of the art and thus optimising work and process safety.



Fig. 3 The high efficiency of dust separation and the associated low dust emissions, as well as the fact that they are to a large extent maintenance-free are the reasons why Nabaltec uses over 50 Herding filter systems

The manufacturer

Herding GmbH Filtrertechnik is a leading, owner-managed manufacturer and system supplier of industrial filtration technology. The market introduction of the patented Herding® Sinter-Plate Filter formed the basis for the successful development of the company.

Continuous expansion of expertise and an above-average reinvestment rate in research and development will continue to stand for highly economical filtration solutions through innovation leadership in the future.

Founded in 1977, today more than 500 highly qualified employees worldwide with subsidiaries in Europe, Asia and the USA as well as an international network of cooperation partners ensure successful growth.

A high proportion of in-house production "Made in Germany", solid quality thinking and the courage to innovate remain the essential cornerstones of the company.

The dedusting specialists from Amberg have been successfully represented in various sectors of the ceramics industry for many years.

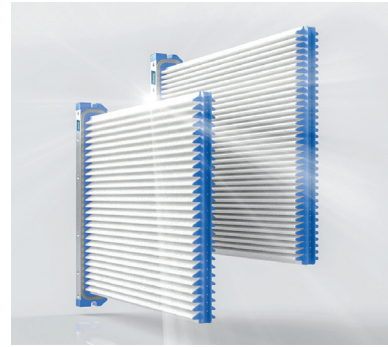


Fig. 4 Herding® Sinter-Plate Filter with constant characteristics over the entire life cycle (source: Herding Filtrertechnik)