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Gentle grinding for high product quality: Hosokawa Alpine AG shines with modern solutions for spice processing

The comminution of products with natural origin such as spices and herbs is a complex process and places specific requirements on mills and systems, such as gentle grinding, to ensure high product quality. From cleaning to grinding, Hosokawa Alpine has developed a range of solutions that are optimally adapted to the demanding conditions of spices, herbs, teas or roots.

Augsburg/Nuremberg, 27 September 2022 – Whether spices, medicinal herbs, dried vegetables or roots: the processing of natural products is individual and depends on the customer's requirements and the diverse properties of the product. In addition to hardness, size, colour, oil content and viscosity, quality fluctuations due to the natural origin also play an important role. Hosokawa Alpine, one of the leading suppliers in the field of powder and particle processing, has also taken into account wear, temperature changes as well as fire and explosion risks to ensure a smooth process.

Cleaning of raw material

The raw material comes directly from the field and often contains impurities that have to be removed to obtain a high-quality product. These impurities can be light, such as hair or foil, or heavy impurities, such as stones, stems or metal parts, and can be removed with the Hosokawa Alpine MZM Multi-Plex zigzag classifier. The classifying takes place at every change in direction of the zigzag tube. Depending on the performance requirements, a throughput of a few kilograms to several tonnes per hour can be achieved. The MZM classifier also impresses with its simple operation and low-maintenance, low-wear design. It is used, for example, in the processing of tea, coriander or hibiscus.

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Cutting and pre-crushing

If crushing or cutting is necessary, Hosokawa Alpine has developed the Rotoplex granulator. For example, spices such as ginger, chilli or herbs such as oregano are ground into a uniformly fine cut with a minimum of dust. The Rotoplex is particularly suitable for cutting tea. Depending on the size of the machine, throughputs ranging from a few kilograms to several tonnes can be realised with customized fineness requirements.

Fine grinding solutions from Hosokawa Alpine: Flexible and powerful

The Ultraplex UPZ fine impact mill is a universal spice mill with various grinding tools (e.g. pin discs or plate beater, combined with sieve or grinding tracks) and adjustable rotor speeds. It is the first choice for root spices, seeds, fruit skins and hard seed pods. Grinding behaviour, throughput and product quality depend on parameters such as moisture content or purity. Different sizes, explosion protection and easy cleaning make the Ultraplex fine impact mill a flexible solution for grinding a wide variety of spices.

For oily seed spices, the energy-efficient Contraplex CW II fine impact mill is a reliable solution. Together with the special drop shape of the wide-chamber housing, two counter-driven pin discs ensure a high relative speed and few deposits, even with greasy or moist products.

Cryogenic fine grinding for oily products

The heat generated during ultra-fine grinding can cause essential oils to evaporate or heat-sensitive fats to melt, which can lead to agglomerates or blockages in the mill. However, as essential oils are responsible for the market value and flavour of the spices, spices containing oil must be processed very gently, for example by cryogenic grinding with liquid nitrogen or conditioned air. Hosokawa Alpine has configured its systems with vacuum-insulated nitrogen tanks, stainless steel design, an insulated circuit and cryogenic control valve unit for nitrogen dosing specifically for operation under cryogenic conditions.

Turnkey solutions with partners from the entire Hosokawa Group



Together with various partners from the Hosokawa Group, Hosokawa Alpine can offer complete solutions for spice production. Technologies for mixing and steam sterilisation are supplied by Hosokawa Micron B.V. from the Netherlands. Hosokawa Solids in Landsberg is responsible for systems for conveying, storage, weighing and dosing. "Our customers thus get a system that is directly tailored to their individual needs and in which the individual machines harmonise perfectly," says Joerg Krahen, Operations Director Food Division, at Hosokawa Alpine.

Figure 1: Hosokawa Alpine's UPZ fine impact mill in the Application Center Food in Augsburg

Hosokawa Alpine

Hosokawa Alpine AG is a worldwide leading and innovative machine and system manufacturer with headquarters in Augsburg and a branch in Leingarten. The company also has several subsidiaries in Germany and abroad. The core competence of Hosokawa Alpine lies in the business field of mechanical process engineering with the production of machines and systems for the preparation of powders, granulates and bulk materials as well as in the business field of film extrusion with systems for the production and finishing of blown films. The company employs around 820 people and generated annual sales of around 220 million euros in the 2020/2021 financial year. The company's export quota is around 80 percent. Since 1987, the company has been a 100% subsidiary of the Japanese Hosokawa Micron Corporation.

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