MCV vertical colloidal mill

general features

MCV-4 mill with recirculation system and 50 L hopper equipped with an anchor-type agitator.

Grinding solid products dispersed in a liquid medium and preparing stable suspensions is an effective and non-polluting system. Wet grinding, due to its low energy consumption and absence of environmental dust, prevents the installation of filters, extractors, or complex dust collectors systems, which are required in dry milling of toxic or polluting products.

The vertical colloidal mill is used for grinding, dispersion, and emulsification of particles (solids or liquids) suspended in a liquid medium, achieving perfect homogenization, uniform particle size, and excellent percentage distribution in the final product.

MCV mills have a wide application in the industry. Thanks to their robust construction and easy-to-clean design, this equipment can be implemented in the pharmaceutical industry (for syrups in suspension, ointments, pectin, etc.), cosmetics (toothpaste production, cosmetic creams and nail polish among others), food (almond paste, sauces, fruit compotes, etc.), and chemicals (pesticides, ceramic glazes, adhesives, etc.).

OPERATION

The MCV colloidal mill works by hydraulic shearing effect on a thin film of the product to be processed. The basic operating elements include a body with a double chamber for cooling or heating that allows maintaining a constant grinding temperature, and two conical rotor/stator grindstones, with adjustable separation and made of stainless steel or ceramic. The rotor grindstone rotates at a high speed, while the stator grindstone remains fixed to the mill cover.

As the product passes between the two grindstones, it is subjected to shearing and rubbing forces that generate high turbulence, with ultrasonic vibrations that break down agglomerates, disperse solids, and emulsify liquids achieving high fineness and high throughput.

Equipment operation

GRINDSTONES

Depending on the application, type of product, and process, two types of grindstones are available:

» Tricone-grooved stainless steel grindstones with different profiles, for emulsion processes and wet grinding of particles from 2 to 3 mm in size, up to fine dispersions with particles of 95% < 40 µ, with an average of 40 / 50% < 10 µ.

» Corundum abrasive grindstones for milling with a high content of solids in dispersion. The roughness of the Corundum grain forms edges and cavities that micronise with great intensity, thus obtaining refined products which, in the best case, can reach particle sizes of 95% < 15 µ, with 50% < 5 µ. Corundum abrasive grindstone stand out for their low energy consumption, generating very little heat.

FEEDING

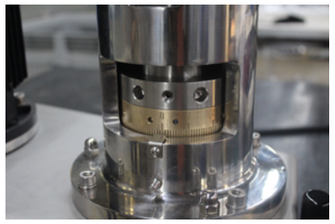
The feeding of the product in the MCV Mill is one of the key factors for optimizing the fineness and throughput.

Depending on the product characteristics, there are two options according to the viscosity of the product:

» Gravity feeding by means of a threaded hopper: In these cases, the rotor grindstone shaft incorporates one or two propellers to facilitate product suction. This system is applicable with medium or low viscosity products.

» Forced suction tubular inlet: This allows the equipment to be connected to a positive displacement pump (helicoidal or lobe type), with frequency converter to adjust the product flow rate to the mill conditions. For high viscosity products, this type of feeding is required.

GRINDSTONES ADJUSTMENT SYSTEM



The fineness required by the process is obtained by means of the mechanical system for adjusting and separating the grindstones. This system consists of a micrometer vernier equipped with a graduated scale that allows the separation of the grindstones and the locking of their position in order to obtain the desired fineness.

This system allows the mill to work with a minimum clearance, between grindstones, of 75 µ for Corundum grindstones.

With metallic grindstones, the equipment includes a mechanical stop that prevents physical contact between the two grindstones, and thus avoiding their destruction.

Technical data

Model	Power KW	Speed rpm	Grindstone diameter (mm)	Basis diameter (B) mm	Height (A) mm	Weight (kg)
MCV-1	1.1 / 1.5	3.000	50	502 x 284	794	57
MCV-2	2.2 / 4	3.000	85	360	1,250	95
MCV-3	4 / 5.5	3.000	95	450	1,350	135
MCV-4	7.5 / 11	3.000	120	640	1,630	312
MCV-5	11 / 15	3.000	150	568	1,730	403
MCV-6	15 / 18.5	3.000	200	720	2,245	536