

HP-MP - Combined Mill and press



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Compact and easy to use

The HP-MP is the most advanced solution for grinding powder samples and preparing pressed pellets for XRF and diffractometry.

The HP-MP stands out for its compact dimensions, extensive functions and ease of use. These features make the HP-MP the perfect choice for laboratories that prepare and analyze powder samples. The HP-MP can be operated extremely flexibly as a stand-alone machine with optional magazine function, in a linear automation or robot cell. Thanks to the sophisticated modular design, most customer-specific requirements can be realized without great effort and additional costs.

All maintenance-relevant components are easily accessible, which significantly reduces service costs. The latest improvements in the handling functions of the HP-MP minimize dust generation more efficiently and further reduce the effort required for machine maintenance.

The HP-MP offers a comprehensive range of functions that meet the high demands of quality control and quality assurance. Measures such as careful cleaning of all contact surfaces and blind dosing effectively prevent cross-contamination between samples and ensure a high level of reliability in sample preparation. The powerful, infinitely variable hydraulic module with pressing forces of up to 200 kN is designed for demanding analytical procedures.

The HP-MP offers the option of automatically retaining a portion of the sample for further analysis. The possibility to run the grinding and pelletizing process independently provides greater flexibility in sample preparation. This makes the HP-MP an excellent choice for the preparation of samples from the cement manufacturing process and a variety of other materials from different applications in industry and research.





23-position-cup magazine for batch processing of samples - the operator inserts the cups into the magazine.

Standalone configuration

Great effort was put into developing a machine that is versatile and can be used in numerous different configurations. As a standalone machine, the HP-MP is operated with an input and output unit, where the operator inserts a single cup of sample material and removes the ready pressed pellets.

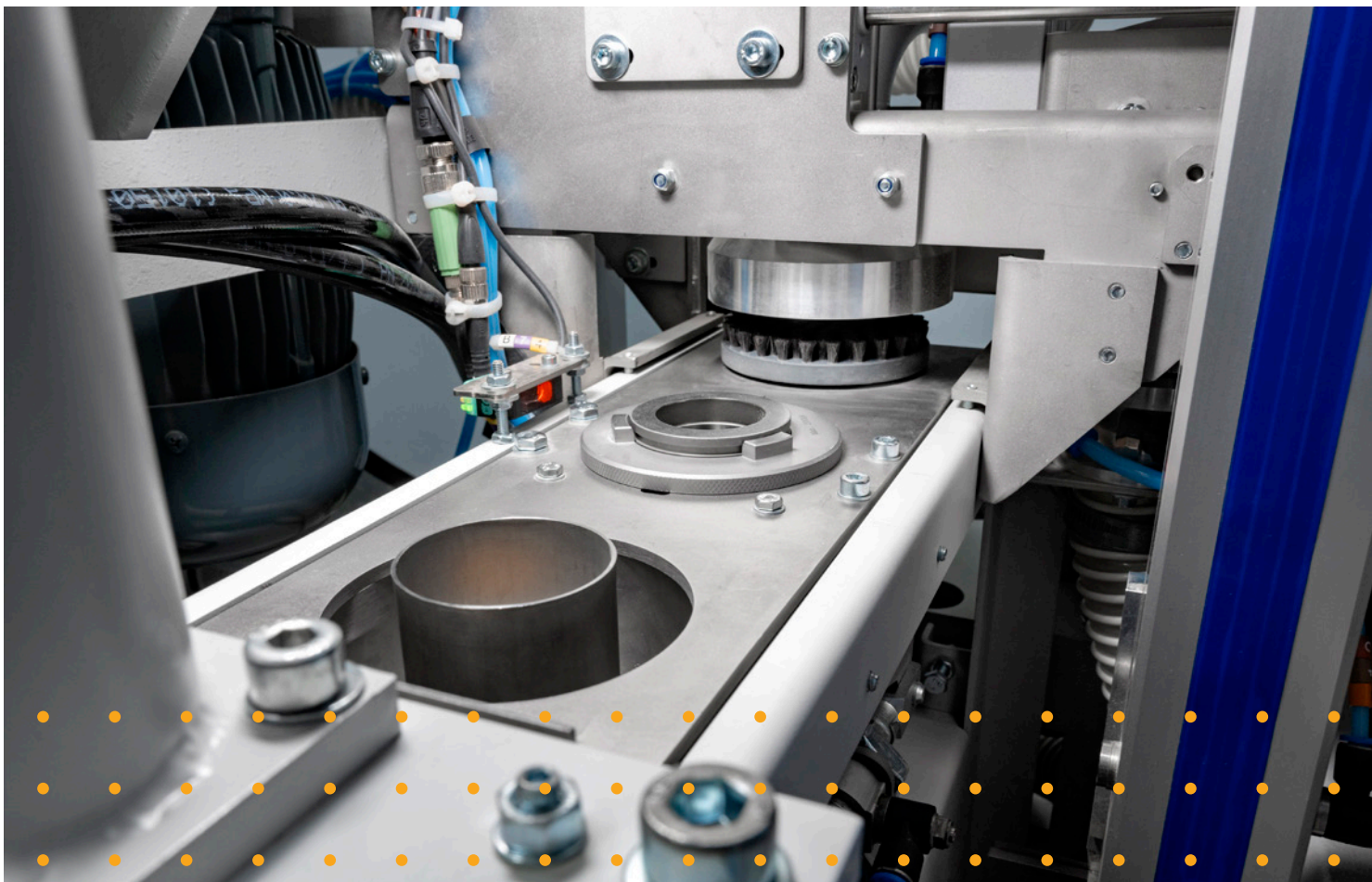
A 23-position-magazine is available as an option, which enables automatic batch processing of samples. The finished pressed pellets are delivered into a magazine attached to the side of the machine. Depending on the operator's choice, the cup can be returned empty to the magazine or filled with retained material, which can be used for further sample processing or analysis.

Designed for easy automation

The HP-MP can be seamlessly integrated into linear automation systems and receive samples from an input magazine, a pneumatic tube station (type HR-LA), a crusher (HP-CA) or a gravimetric dosing unit (HR-WA). After the pressing process, the finished pellets are automatically forwarded to an XRF instrument, a diffractometer, or other analyzers such as colorimeters. Several HP-MPs can be linked together via a conveyor belt and combined with other system components.

Due to its small footprint, the HP-MP is ideally suited as an at-line-unit within the production area. The HERZOG Atline Lab, which is connected directly to a sampler, enables almost continuous and rapid analysis of important material streams in the production process.

For use in robotic systems, the side wall of the HP-MP is aligned towards the robot. Short input and output belts ensure effective transportation of sample cups and rings between the machine and the robot circuit. The machine remains accessible from the front and can be conveniently used for manual operation. For example, external samples can be inserted via the input unit or the 23-position-magazine in parallel to automatic robot operation.



Condition Monitoring Tool

The HP-MP has been specially developed for use in smart industry applications. It supports tool condition monitoring and predictive maintenance concepts. By using advanced sensor technology, it is possible to continuously monitor every grinding process as well as the condition and wear of swing aggregate and grinding set. In combination with the PrepMaster Analytics software, the HP-MP ensures reproducible sample preparation and highly accurate analyses.

A special feature of the HP-MP is its option to automatically measure the specific grinding energy of samples. This function enables quality control laboratories to determine the grindability of materials in an uncomplicated manner. This analysis method, which is usually only carried out in specialized institutions, is now available to every laboratory.



Dashboard in PrepMaster Analytics for the Tool Condition Monitoring Module for vibratory disk mills

HP-MP at a glance

- Compact machine for combined grinding and pelletizing of various powder samples
- Developed for a wide range of applications, as a standalone machine, in linear automation or robot automation
- Further improved for even less dust generation and easier maintenance
- Can be used for smart industry solutions, including tool condition monitoring, monitoring of grinding performance and determination of material grindability



Excellent results in grinding and pelletizing

Grinding

The HP-MP allows the operator to precisely control the grinding process by adjusting all relevant machine parameters and process steps. The speed of the grinding vessel can be infinitely adjusted between 600 and 1500 rpm. The temperature is constantly monitored and kept at the target temperature. The sample feeding and emptying intervals, the time for adding the grinding aid, the cleaning cycle and much more can be adjusted to achieve optimum results for different materials.

The grinding vessel of the HP-MP with a volume of 100 cubic centimeters ensures a high degree of flexibility in processing a wide variety of samples. The grinding vessel is available in chrome steel as well as tungsten carbide and can be exchanged with little effort. After the grinding process, part of the sample can be automatically retained to press a second pellet or carry out other analyses. The grinding vessel can be rinsed with a blank sample to avoid cross-contamination between subsequent samples.

Pelletizing

The hydraulic unit of the HP-MP enables a controlled and fully reproducible pelletizing process. The user-friendly operation ensures that all parameters can be easily adjusted to achieve an exact set-up to the specific material requirements and analytical needs. The operator can directly change the maximum pressing force (50-200 kN), the settings for the pressing force increase and the press holding time. Each press cycle can be monitored via the HP-MP's intuitive HMI panel or the PrepMaster screen.

With the dosing device of the HP-MP, the operator can choose between two different sample volumes to produce pressed pellets. The HP-MP can process either 40 mm or 51.5 mm rings by default. The thickness of the pressed layer within the ring is automatically monitored so that a warning is issued if there is a lack of material. The pressing tool is easy to change.



Numerous options

- Ring cleaning unit, integrated in the machine
- 23-position-magazine for clean and filled rings on the outside of the machine (filled rings can only be inserted in combination with the ring cleaning unit)
- 23-position-magazine for cups
- Chute or carrying handle magazine for pressed rings
- Dosing of grinding aid in tablet form
- Grinding vessel cooling
- Conveyor belts for cup and ring transport on both sides of the HP-MP
- PrepMaster Analytics Module for Tool Condition
- Monitoring, grinding performance, determination of grindability

Technical description

Model	HP-SKM
Color	RAL 5007/7035

Dimensions

Machine	1,200 x 750 x 1,500 mm (L x W x H)
Machine incl. packaging	1,400 x 1000 x 1,600 mm (L x W x H)

Weights

Machine	740 kg
Machine incl. crate packaging	1,000 kg

Power supply and consumption

Voltage	400 V, 50 Hz, 3 phases
Center conductor	Not required
Power consumption	5.0 kVA

Electrical control cabinet (integrated)

PLC control	Siemens PLC SIMATEC S7
Control voltage	24 V
Protection class	IP 44
Insulation class	B

Compressed air supply and consumption

Pressure	Min. 5 bar, max. 10 bar
Consumption	1,500 L/sample

Connection for disposal

Compressed air supply and consumption	At the rear of the machine, height approx. 100 mm
Diameter of the dust extraction bolt	80 mm (external)
Required dedusting capacity	6-10 m ³ /minute at 2100 Pa

Process parameters

Grinding time	0 – 999 s
Adjustable pressing force	50 – 200 kN
Pressure holding time	0 – 99 s
Number of programs	16

Processable samples

Materials	Minerals, raw materials for cement production, clinker, cement, slag and others
Grain size	max. 5 mm
Hardness	max. 5 Mohs
Temperature	max. 90° C

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