

HP-MA / HP-PA

Pulverizing Mill and Pellet Press
in Modular Design



HERZOG



Automatic emptying and cleaning of the grinding vessel allow different sample materials to be prepared consecutively.



HP-MA and HP-PA can be equipped with magazines (30 or 60 positions).

Sample preparation for precise and accurate analysis

At a glance

- The Herzog pulverizing mill HP- MA and pellet press HP-PA guarantee the optimal sample preparation of powder material for X-ray fluorescence analysis. The automatic pulverizing and pressing leads to improved reproducibility, accuracy, and precision.
- Automatic sample preparation reduces time and costs and increases sample throughput.
- The modular design allows an individual machine set-up according to the requirements of each customer.
- Automatic grinding and pelletizing leads to significant less workplace pollution due to dust and noise. Workload is reduced because it is no longer necessary to handle heavy grinding vessels.
- Machines are completely enclosed, noise-insulated and have all safety features for protection of the operating personnel.

PULVERIZING MILL HP-MA

Short grinding time – Long service life

The HP-MA is suitable for grinding a wide variety of minerals such as cement raw meal, clinker, cement, slag, ores, oxides and ferro-alloys. The high RPM of the drive motor guarantees a short grinding time even for hard materials. The robust construction with, e.g., dual bearing support for the eccentric shaft ensure long service lives.

Effective avoidance of cross contamination

After pulverizing the grinding vessel is automatically emptied and the ground material is made available at the discharge point. Three automatic cleaning features namely compressed air, sand cleaning (option) and wet cleaning (option) allow a sufficient material removal. Using the different cleaning functions, cross contamination can be reduced to a low ppm-level. Furthermore, spoon sampling (option) during the material input provides the possibility to pre-contaminate the grinding with the subsequent sample.

Flexible Configuration

The HP-MA can be used as a stand-alone machine, with 30 or 60 position magazines, and in combination with the pellet press HP-PA or other components. Due to the modular design of the machine different and completely flexible configuration set-ups are possible.



PELLET PRESS HP-PA

Perfect quality of the pressed pellet

The HP-PA produces high quality pressed pellets with a smooth surface necessary for an optimal XRF results. The HP-PA achieves the desired uniformity and density of each individual pressed pellet with a maximum of reproducibility.

Program-controlled pelletizing for high reproducibility and throughput

All parameters necessary for the pelletizing process such as total pressing force, incremental increase and decrease of pressing force and pressure holding time can be preset. They are clearly presented on the HMI control panel and can be easily adjusted. Due to the program-controlled automatic sequence every sample is processed identically and is not subject to human error. Furthermore, the automatic sample operation guarantees a high sample throughput whenever required.

Various options

In the standard version of the press, the counter-pressure plate is cleaned with a brush rotating in alternate directions. As an option a Mylar film device effectively prevents material particles from becoming fixed to the counter-pressure plate. The HP-PA can be fitted with magazines for sample cups, steel rings and pressed pellets.

Combination of crusher HP-CA, HP-MA and HP-PA with two spiral magazines



HERZOG pulverizing mill HP-MA
(with magnetic separator between
HP-MA and HP-PA)



MODULAR DESIGN

Due to their modular design, the HP-MA and HP-PA can be easily linked together or combined with other components. Fully automatic sample preparation systems can be put together in an individual way.

Easy integration

Most requirements of the customers can be fulfilled with the Herzog system. The modular design guarantees step-by-step retrofitting and numerous possible combinations with other machines. It is possible to combine, e.g., two individual machines with manual feed and

manual discharge, to add automatic connection with conveyor belts, or design a fully automatic operation with an airtube receiving station and direct connection to an XRF spectrometer. Furthermore, the HP-MA and HP-PA can be easily integrated into large-scale robot automations.

Easy control

The HP-MA and HP-PA as well all combined components can be controlled by the Herzog Prepmaster. The SCADA system Prepmaster with its easy-to-use surface enables the monitoring of the complete sample preparation process. All preparation parameters are adjusted by the Prepmaster according to the sample type. The Prepmaster covers all important automation functions like, e.g., sample registration, interfacing with the HOST computer or connection to the analyzer.



HERZOG pellet press HP-PA

Possible combinations:

The HP-MA and HP-PA series modules can be used in various combinations.

M = mill, P = press, R = receiving station for air tube system, XRF = X-ray spectrometer

M P

Mill and press as separate machines, manual feed, installation side by side

M P

Mill and press connected by conveyor easy access for maintenance work

M P

Space-saving installation directly next to each other

M P XRF XRD

Operation with infeed magazine and connection to an XRF spectrometer and/or XRD by means of a conveyor belt

M M P

Combination of two mills and one press connected by belt conveyors. Normally used to separate sample materials or to increase capacity

M M P

Same arrangement as above, but all machines installed next to each other

XRF
R M P

Automatic operation with an integrated pneumatic tube receiving station and connection to an XRF spectrometer by means of a conveyor at a right angle

Technical data HP-MA

Model Pulverizing mill HP-MA

- Color: blue/white, RAL 5009/9018
- Labeling text: English
- Operating manual: single, English

Dimensions L x W x H

Machine	850 mm x 900 mm x 1,558 mm
Machine, incl. crating	1,600 mm x 1,250 mm x 1,950 mm

Weight

- Machine: 610 kg
- Machine, incl. crating: 900 kg

Power supply and consumption

Voltage	400 V, 50 Hz, 3-phase
Neutral conductor	Not required
Power consumption	2.5 kVA (3.0 kVA special voltage)

Compressed air supply and consumption

Pressure	Min. 5 bar, max. 10 bar
Consumption	Approx. 1,800 dm ³ N/sample dry cleaning Approx. 3,000 dm ³ N/sample wet cleaning

Waste connections

dry cleaning:

Position dust collection connection	Back of machine, height 204 mm
Outside diameter of connection	50 mm
Dust collection capacity	6-10 m ³ /min at 2100 Pa

wet cleaning (option):

connections back of machine (on settling tank)	
Dust collection connection	Ø 80 mm
Waste water connection	Ø 50 mm
Steam drain connection	Ø 80 mm
Dust collection capacity	6-10 m ³ /min at 2100 PA

Electrical control cabinet (integrated)

PLC control	SIMATIC S 7-300
Control voltage	24 V DC
System of protection	IP 44
Insulation class	B

Processing parameters

Duration of grinding cycle 1	0-399 s
Duration of grinding cycle 2	0-399 s
Processing time	Approx. 2 min. + preset grinding cycle + options
Number of processing programs	16

Processable samples

Material	Various minerals, cement raw meal, clinker, cement, slag, ores, oxydes, ferro-alloys
Grain size	Max. 5 mm
Hardness	Max. 9 Mohs
Temperature	Max. 100 °C

Options

- Loading magazine with 30 or 60 cups
- Wet cleaning device
- Sand cleaning device
- Cooling device for grinding vessel
- Blank sample dosing device
- Grinding vessel tungsten carbide 100 ccm
- Grinding vessel chrome steel 100 ccm
- Cleaning device for transport cups
- Magnetic separator for extracting metallic particles from the sample

Technical data HP-PA

Model Pellet press HP-PA

- Color: blue/white, RAL 5009/9018
- Labeling text: English
- Operating manual: single, English

Dimensions L x W x H

Machine	1,050 mm x 900 mm x 1,558 mm
Machine, incl. crating	1,500 mm x 1,500 mm x 1,950 mm

Weight

- Machine: 760 kg
- Machine, incl. crating: 1000 kg

Power supply and consumption

Voltage	400 V, 50 Hz, 3-phase
Neutral conductor	Not required
Power consumption	5 kVA

Compressed air supply and consumption

Pressure	Min. 5 bar, max. 10 bar
Consumption	Approx. 1,700 dm ³ N/sample

Waste connections

Position dust collection connection	Back of machine, height 259 mm
Outside diameter of connection	80 mm
Dust collection capacity	6-10 m ³ /min at 2100 Pa

Electrical control cabinet (integrated)

PLC control	SIMATIC S 7-300
Control voltage	24 V DC
System of protection	IP 44
Insulation class	B

Processing parameters

Processing time	Approx. 60 s, depending on program and parameter selection
Pressing force	50–200 kN steel rings 40 x 35 x 14 50–300 kN steel rings 51.5 x 35 x 8.6
Pressing force up	0–99 s
Pressing force down	0–99 s
Force difference ramp down	0–300 kN
Press blank sample	no/yes
Pressure holding time	0–99 s
Material dosing steps	0–9
Dosing quantity per step	Adjustable
Number of processing programs	16

Processable samples

Material	Various minerals, cement raw meal, clinker, cement, slag, ores, oxydes, ferro-alloys
Form	Powder, dry
Grain size	Max. 100 µm
Hardness	Max. 9 Mohs

Standard dimensions of steel rings

Outside diameter	40 mm	or	Outside diameter	51.5 mm
Inside diameter	35 mm		Inside diameter	35 mm
Height	14 mm		Height	8.6 mm

Options

- Cleaning device for cups
- Loading magazine with 30 or 60 sample cups
- Chute output magazine for 30 or 60 empty cups
- Magazine for steel rings, 30 positions
- Magazine for steel rings, 2 x 30 positions
- Double dosing device
- Transport mechanism for Mylarfilm
- Magazine for pressed pellets, 30 positions
- Magazine for pressed pellets, 2 x 30 positions

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The design of the machine complies with the applicable accident prevention and VDE (German association of electronic engineers) regulations. We reserve the right to make technical changes.

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