HERZOG

HN-FF
Automatic
milling machine

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Fully-automatic milling machine for non-ferrous samples

Tailor-made sample preparation for the OES and XRF analysis

The HN-FF is the milling machine for fully automatic sample preparation of non-ferrous samples.
The HN-FF enables the reproducible production of sample surfaces ideally suited for optical emission spectroscopy or X-ray fluorescence spectroscopy.

The HN-FF offers a compact design, a highly developed safety concept and ergonomic usability. This makes the machine a perfect choice for standalone operation as well as for integration into linear or robotic automation systems.

Automatic sample preparation for more precise analyses

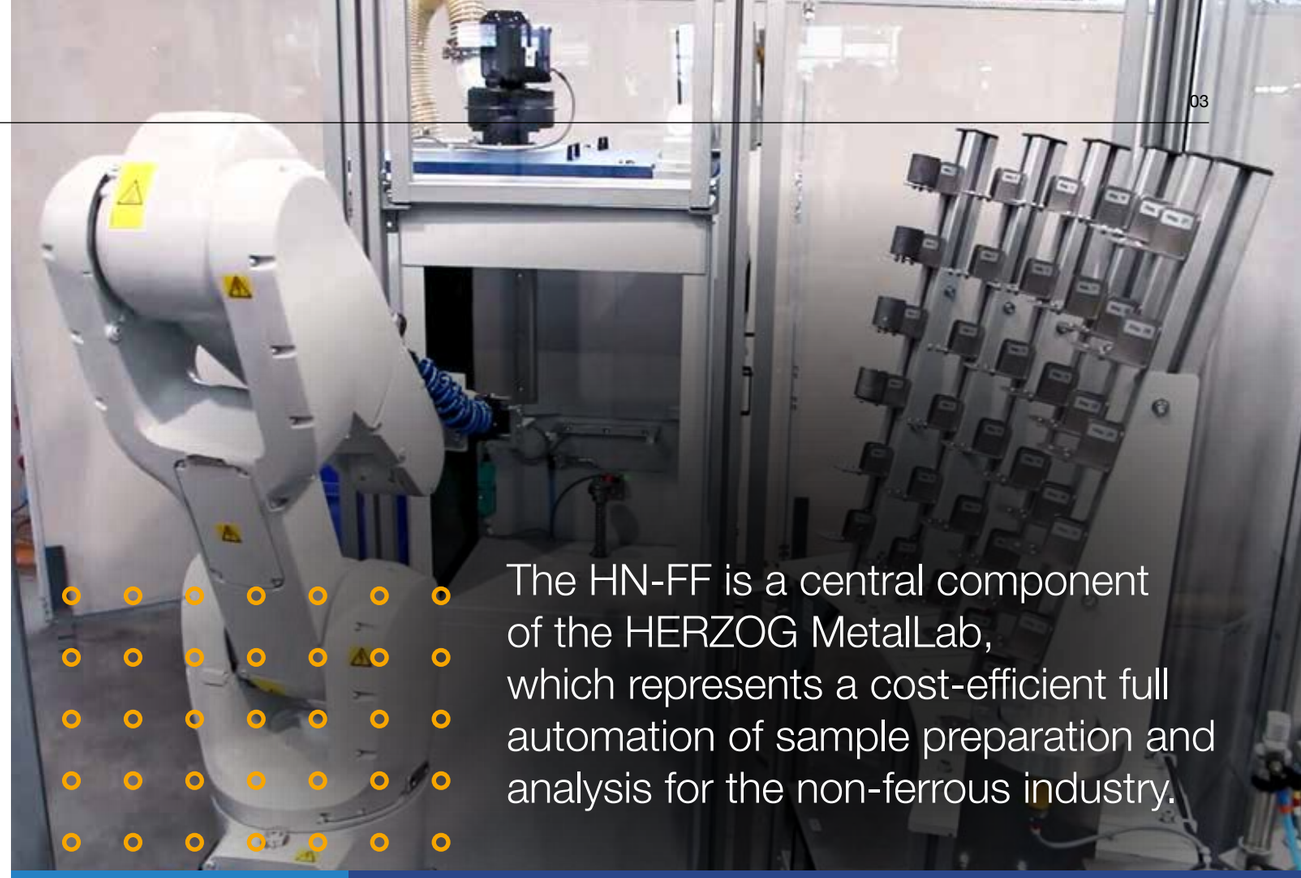
All parameters important for the milling process such as feed speed, milling depth and rotational speed can be easily adjusted and are reproducibly controlled via the PLC. This prevents improper handling and processing of samples and increases the reliability of the analytical process.

The automation of the HN-FF by means of batch magazines and/or robots leads to a significant increase in sample throughput while reducing time and costs.

Compact and modular design

The footprint of the machine is only 800 x 800 mm. This allows for easy installation, operation and maintenance even in tight spaces. Due to the modular design, the machine can be easily adapted to almost any customer requirement. Standard modules such as the robot input, magazines or conveyor connections facilitate integration into automatic systems and lead to significant cost savings for the customer.

Spiral magazine



The HN-FF is a central component of the HERZOG MetalLab, which represents a cost-efficient full automation of sample preparation and analysis for the non-ferrous industry.

The following modules can be combined with the HN-FF:

- Turntable magazine for 8 samples
- Chain magazine for 20 samples
- Spiral magazine for approx. 100 samples
- Double conveyor belt magazine
- Transport belts
- Pneumatic airtube station

Maximum flexibility in sample size and shape

The HN-FF offers maximum flexibility when processing different sample shapes. The three-jaw chuck has a stroke of 25 mm with a clamping range of 34 mm. Samples with a minimum diameter of 10 mm to a maximum of 100 mm can be clamped. Different sample shapes including mushroom samples and sample heights can be processed by using the HN-FF.

Tool condition monitoring

The use of modern sensor technology enables, for example, to monitor the machine bearings and the condition of the cutting inserts. Automatic data evaluation is performed with the help of our PrepMaster Analytics software, which provides the operator with a comprehensive overview of the machine‘s condition.

Perfect combination of safety and ergonomics

The HN-FF sets standards for safety. The fully automated processes and the use of safety switches on the manual sample input and the milling chamber door ensure the health and safety of the operating personnel.

For the sample preparation of magnesium samples a special version of the HN-FF is available, which allows an immediate and residue-free transport of the chips from the milling chamber of the machine.

Great importance was attached to reducing noise emissions and further improving ergonomic operation, e.g. by making the machine easier to access and clean.

Advantages

- Manual sample input, proteced by safety switch
- Eight-position turntable magazine for batch processing
- Easy to remove collection container for chips
- Easy to adjust support arm system of the control panel
- Spiral magazine for approximately 100 samples
- Sample input to the machine by the robot

Optimally tuned sample preparation steps

Easily extendable according to customers‘ needs

All sample preparation steps in the HN-FF have been perfectly matched to allow optimal processing of non-ferrous samples.

Numerous configuration options for milling tools, cutting inserts and cooling media offer full process control for optimum analytical surfaces, minimum burr formation, and the longest possible service life.

Specially developed face-milling cutter as well as cutting tips with special coating and cut (hard metal and PKD) enable the processing of even difficult and particularly soft samples.

The two milling spindles available in the HN-FF can be configured in different ways. Often the first spindle is equipped with a milling head, delivering a high material removal rate during so-called “coarse milling” and thus enables the exposure of the representative sample layer. The second milling head then performs the so-called “fine milling,” which ensures a perfect surface for the subsequent analysis.

Alternatively, the first spindle can be equipped with special circular saw blade for rapid cutting through the sample. After the cutting process, the sample surface is finished by the fine milling head.

Technical Data

Model HN-FF

Color	RAL 5007 / 7035
Accessories	1 set of wrenches

Dimensions L x W x H

Machine	800 x 800 x 1500 mm
Machine incl. support arm system	800 x 800 x 1970 mm
Machine incl. packing	1500 x 1500 x 2150 mm

Weight

Machine	805 kg (Approximate)
Machine incl. packaging	1015 kg (Approximate)

Power Supply & Power Consumption

Voltage	400 V, 50 Hz, 3 Phases, or as required
Neutral conductor	Not required
Power consumption	6.0 kVA

Electrical Control Cabinet (Integrated)

PLC

- Siemens
- Allen Bradley (Option)

Control voltage	24 V
Protection	IP 44
Insulation class	B

Compressed Air Supply & Consumption

Pressure	Min. 5 bar, Max. 10 bar
Consumption	300 dm^3N/sample (Approximate)

Cooling & Cutting Agent

Store tank	5 l
Consumption	20 cm^3/sample (Approximate)
Number for spray nozzles (adjustable)	2

Clamping Device

Type	Three-jaw chuck
Clamping stroke	25 mm
Clamping range	34 mm
Minimum sample diameter	10 mm (according to sample type)
Maximum sample diameter	100 mm (according to sample type)

Discharge Connections

Position of gas extraction stud	On top of the machine
Outer diameter of gas extraction stud	80 mm
Gas extraction capacity	6 . . . 10m^3/min at 2.100Pa

The machine complies with the European CE-directives.

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