

HS-F 1000

Automatic Milling Machine
The New Standard for
Sample Preparation



HERZOG

HS-F 1000 – The New Standard for Sample Preparation

The milling machine HS-F1000 combines innovative technology and full flexibility with compact and robust design. Key features are shortest preparation time, easy automation and top-level quality- at an unbeatable price. The HS-F1000 has been specially developed for requirements of QC laboratory with all the decade-long HERZOG expertise in engineering and sample preparation. Unlike “off the peg” standard CNC machines the HS-F 1000 makes no trade-offs in size, configurability, and accessibility.

Speed

The operator, the robot or a belt transport system drops the sample at the transfer position of the HS-F1000. As the HS-F1000 mills the bottom sample surface, the sample is already in a defined zero plane position. Time consuming measurement of sample height is therefore not needed. Subsequently, the mobile support -coming from above- clamps the sample and transfers it to the milling spindle where it is milled from below. This sequence -speed-optimized in all sub-steps- is saving valuable seconds which is especially important for time-sensitive production samples. Of course, the HS-F1000 comes with sensor-based safety measures to prevent crashing at the transfer position or milling of inappropriate samples.

Flexibility

The design of the HS-F1000 guarantees high flexibility to meet the particular needs of the customer. During manual operation, the operator inserts samples via the front door. The default input position is on the left machine side but might be easily changed to the right side. In automatic mode, samples can be inserted either via the lateral or the back-loading openings using a robot, conveyor belt or magazine. The different access possibilities open up many options to integrate the HS-F1000 in any kind of automation setup. Even individual configurations and layouts can be realized without constructive changes of the machine. This gives you both maximum planning freedom and significant time and cost savings for your project.



Up to 4 milling heads in the system



Custom made clamping jaws and milling heads



Chip collecting unit (CCU)



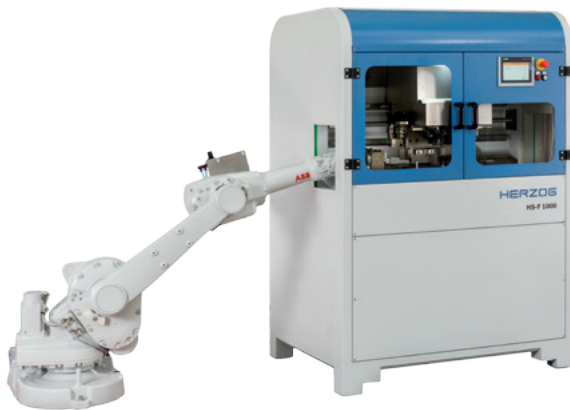
The HS-F1000 shows highest vibration damping due to mineral composite casting of the frame. HERZOG uses only perfectly matched high-quality-components for spindle, linear guideways and clamping unit. All these features combine to make the HS-F1000 to the optimum machine for sample preparation of even very hard and brittle material grades.



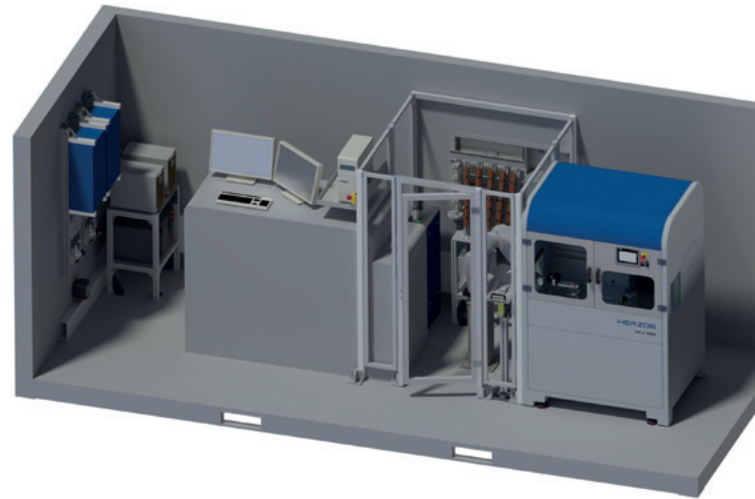
Tool changing system



Optional robot access from the site



Ready for automation by robot-system



Herzog SteelLab with HS-F1000

Compactness

The HS-F1000 is a very compact machine that allows an uncomplicated installation even in tight locations and compartments. The volume of the HS-F 1000 is at least two times smaller than standard CNC mills used for sample preparation.

During installation, machine dimensions permit an uncomplicated transport through regular industry doors. In container labs, the HS-F1000 easily fits into standard cabins and gives you more leg and elbow room. In larger robot cells, the small machine base provides space for more and bigger equipment to be integrated in the automation.

In spite of the small machine size, the HS-F1000 has an excellent serviceability and accessibility. The interior has been optimized to guide all waste chips fallen off into the front chip containers for manual or automatic removal. Comfortable access can be made to the main machine parts including spindle, motors and v-belt for maintenance, exchange and repair. Switch cabinet and majority of pneumatic components are located at the rear side and are easily reachable for operators and service engineers.

Configurability

The HS-F1000 can be extended with additional functions for special sample preparation requirements. Options include a tool changer for milling of different steel and iron grades or sample deburring. Chips for combustion analysis are collected by the Chip Capture Unit (CCU) which is automatically raised and lowered according to the selected preparation program. In case of manual chip handling, the CCU is connected to a collecting cup which is inserted and removed by the operator. Alternatively, chips can be pneumatically transported to a magazine for further operation. The HS-F1000 comes with a built-in option for a camera with pass/fail detection after milling and spark point determination for OES analysis. An insufficient milling result might result from, e.g., sample cavities. In this case immediate re-milling is possible without need for robot handling and sample re-entry into the milling machine. This procedure saves long transport distances and thus minimizes time.

Stability

Due to simulation-based design methods the HS-F1000 has been optimized for sample preparation purposes. The machine frame is characterized by FEM-optimized shape and perfect damping through mineral composite casting. This leads to significantly reduced vibration levels and brilliant milling results even for extremely brittle pig-iron samples. The HS-F1000 is an addition to the series of HERZOG milling machines that are based on highest component quality and best practice manufacturing standards for longest durability and lifetime.

At a glance

- **Compact Design:** The HS-F 1000 is at least two times smaller than standard CNC machine used for this purpose. The HS-F1000 has been especially designed for automatic and manual sample preparation. Space taking features unnecessary for sample preparation were omitted.
- **Robustness:** The HS-F1000 perfectly mills even very brittle samples due to the FEM optimized frame and the mineral composite casting. The machine has been optimized for long maintenance intervals and easy serviceability.
- **Fastest Speed:** The design of the HS-F1000 supersedes time-consuming measurement of the sample height. The sample is milled straightaway without any time delay by the milling spindle mounted from below.
- **Maximum Flexibility:** Two side openings and back-loading option allow access to the mill from all sides. Robots, conveyor belts and magazines can be easily integrated.
- **Excellent Configurability:** Many options are available like, e.g., integrated tool changer, automatic chip collection for combustion analysis, and camera system for inspection. These features make the HS-F1000 the perfect machine even for special QC requirements.

Technical data

Model HS-F 1000

- Colour: RAL 5007/7035
- Lettering: English
- Instruction manual: 1 Set English

Weights and dimensions

| | |
|---------------------------|-----------------------|
| Dimension machine (LxWxH) | 1300 x 1000 x 1900 mm |
| Weight machine | Approx. 2200 kg |

Power supply and consumption

| | |
|-------------------|------------------|
| Voltage | 3 x 400 V, 50 Hz |
| Neutral conductor | Not required |
| Power consumption | Approx. 20 kVA |

Cable connection at the machine

| | |
|----------|------------------------------|
| Location | At the bottom of the machine |
|----------|------------------------------|

Compressed air supply and consumption

| | |
|-------------------|--|
| Pressure | Min. 5 bar, max. 10 bar |
| Consumption | Approx. 750 dm ³ N per sample |
| Connection sleeve | Nominal diameter 19 mm |

Sample clamping device

| | |
|---------------------------|--|
| Type | 2 parallel clamping jaws, self-centering |
| Clamping region diameter | Min 30 mm, max. 55 mm, other on request |
| Clamping region thickness | 7-60 mm, other on request |

Processed Samples

| | |
|-----------------|--|
| Material | Steel, iron and non-ferrous |
| Form | Round, oval, double thickness after pin cutting, square samples with two parallel clamping faces |
| Sample hardness | Max. 65 HRC depending on the cutting tips |

Processing parameters

| | |
|---------------------------|--|
| Cutting depth | Max. 2mm programmable in steps of 0,05 mm |
| Processing cycle duration | Depending upon the program approximate 20 to 40 sec. |

Processing programs

| | |
|---------|---------------------|
| Numbers | 16, more on request |
|---------|---------------------|

Sample cooling

| | |
|---------------|-----------------------------|
| Cooling type | By means of cooling nozzles |
| Cooling media | compressed air |

Sample input and discharge

| | |
|------------------|---|
| Input method | Manual at the supporting point optional with a linear transport or robot system |
| Discharge method | Manual at the supporting point optional with a linear transport or robot system |

Options

| | |
|---|---|
| De-burring Automatic tool changer Automatic sample handling | Of round samples Up to 4 milling heads in the system Side loading: robotic or linear access from the side back loading: robotic or linear access from behind |
| CCU CCU incl. turntable magazine Camera | Chip collecting unit for CNS – Analysis As above but with 6 position magazine Installed inside the machine for the detection of failures on the surface |
| Waste chip transport | For automatic discharge of waste material |

Die Ausführung der Maschine entspricht den geltenden UUV- und VDE-Vorschriften. Technische Änderungen vorbehalten.

CC
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