

**HONE RIGHT PRECISION MACHINERY CO., LTD.**

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[www.hr-grinding.com](http://www.hr-grinding.com)

## Multi-Task Machining Center

### Energy-13



*High Performance  
High Precision  
Customized*

# Multi-Task Machining Center

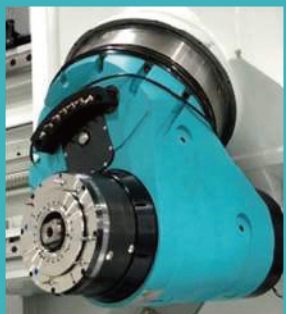
5-sided and/or 5-axis simultaneous machining, including turning, in one set-up.



- The vertical milling can span the  $\varnothing 1320$  machining area.
- It has the Z-axis measuring tool stroke under the exclusive worktable, which does not affect the processing area.
- The moving beam Z-axis structure has the smallest overhang and the highest rigidity.



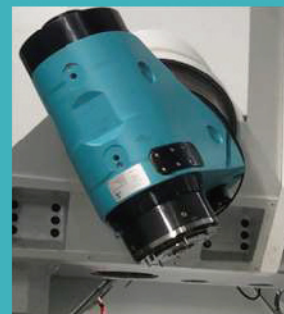
Vertical



Horizontal



Turning



5-Axis  
Simultaneous



Large Processing  
Range

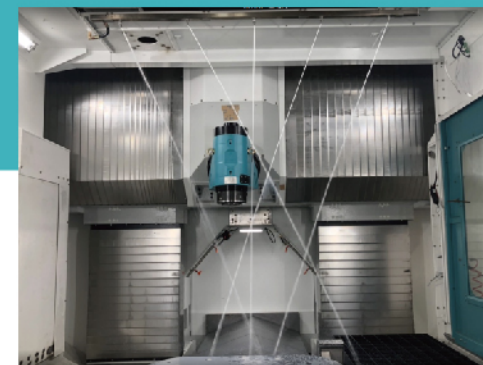
## ENERGY-13 SINUMERIK 840D sI SPEC

<b>Spindle Spc.</b>		CYTEC M21-45°x10,000 rpm HSK-T100 53 KW
	X	2000
<b>Working Area</b>	Y	2000
	Z	1300
<b>Workpiece Maximum Rotation Diameter</b>	mm	2000
<b>Table Size</b>	mm	D1320, D1500 (op.)
<b>C Axis Speed</b>	rpm	300
<b>Maximum Table Load</b>	Kg	3000
<b>Chip Disposal</b>		Drag link/slat band conveyor
<b>CTS</b>	Bar	20/40 (op.)
<b>Tool Magazine</b>	PCS	60/119T (op.)
<b>Tool Size (Diameter x Length)</b>	mm	250*500
<b>Tool Weight Max.</b>	Kg	25
<b>Rapid Traverse X / Y / Z</b>	m/min	30/30/24, 40/40/30 (OP.)

\*Specifications of the machine and its accessories are subject to change without prior notice. Purchase contract and shipping documents shall prevail.

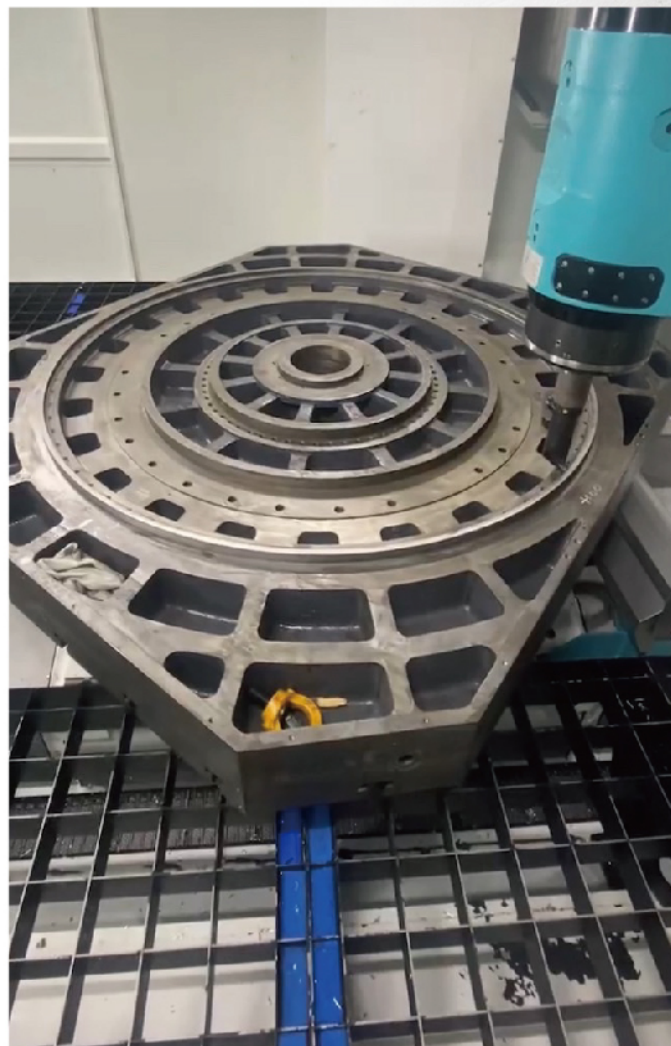
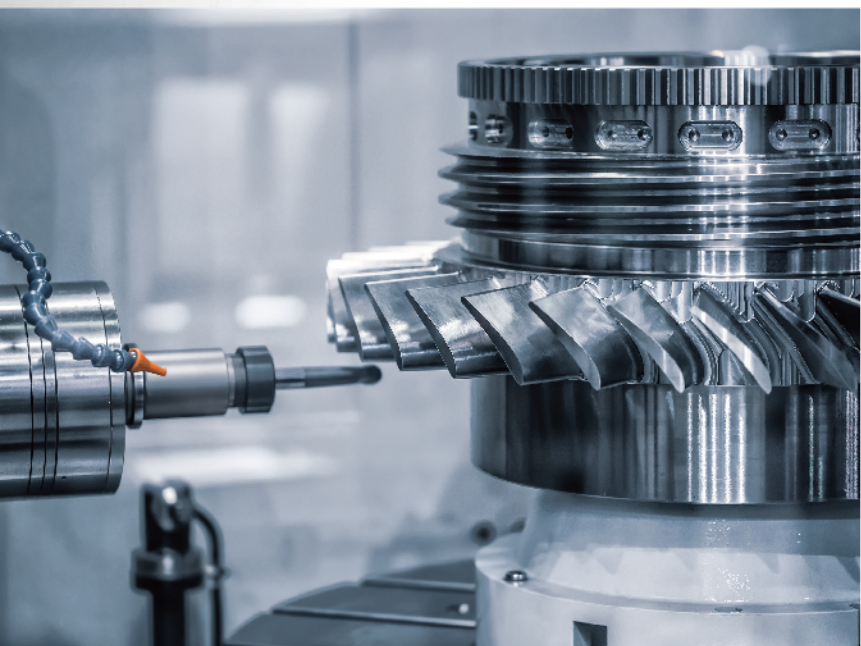
## HR Powerful Workpiece Shower System

- Bowl-shaped workpiece chip buildup problem.
- M Code can be used for chip removal during machining.
- High-pressure nozzle can achieve strong chip flushing effect.
- The spray angle can be pre-adjusted



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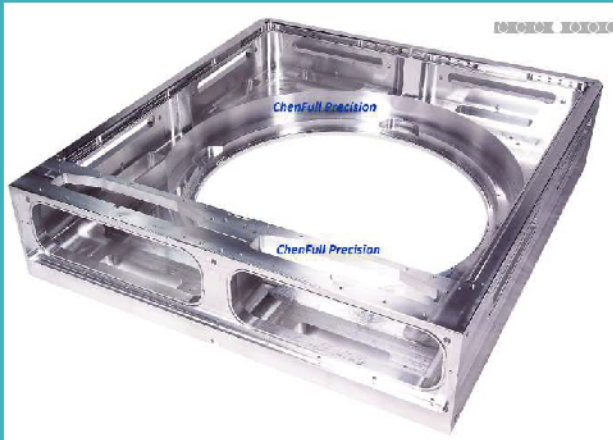
Product processing applications include: gears, aerospace, turbine blades, bevel gears, mechanical/precision components.



## Features of the vacuum chamber

1. ORING grooves with high tolerance requirements, requiring single-pass machining.
2. High surface texture requirements, challenging the machine's structural low-frequency vibration issues.
3. High geometric accuracy requirements, challenging geometric variations under different strokes.
4. Minimal leftover material for some feature structures (such as thin parts), insufficient workpiece rigidity leading to easy deformation during processing.
5. Solid part material removal; efficient material removal is crucial for overall processing time.
6. Diverse processes (vertical-horizontal five-axis milling), difficulty maintaining geometric accuracy with different machines and reworking parts.

Vacuum Chamber	Process	Number of Machines
Traditional Processing Methods	More	Gantry, Vertical lathe, Horizontal, Gantry five-axis
Energy-13	Less	Vertical/Horizontal milling/Turning five-axis machining center All in One=>Energy



The above photo is taken from CHENFULL PRECISION CO., LTD  
[www.cfprec.com.tw/product](http://www.cfprec.com.tw/product)

# Multi-Task Machining Center

## Two-sided belt-type chip conveyor

The crawler-type chip conveyor is installed inside the bed, located on both sides of the worktable, conveying the chips to the third chip conveyor behind the machine tool, and unloading its chips into the collection box.

## Oil mist recovery system

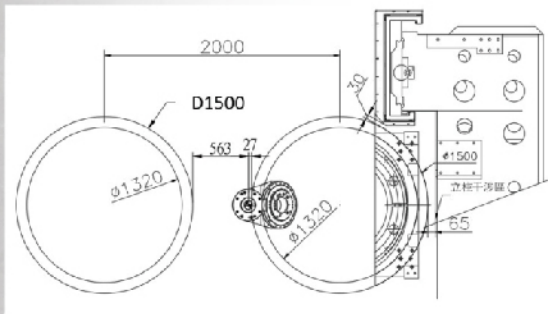
The machine includes an absorption and filtration system that absorbs and filters all oil mist and coolant generated during the machining process.

## Nut cooling system + Heidenhain optical scale

To ensure transmission accuracy, all three axes (4 sets of transmission) are equipped with nut cooling and optical scales to achieve the highest positioning accuracy.

## At $\Phi 1500$ below, with the spindle center protruding:

The maximum workpiece without interference between the X-axis stroke and the column, and the Z-axis cover.

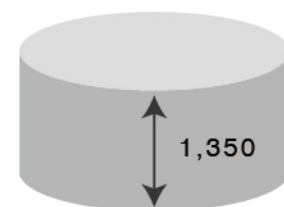


## C-Axis and maximum workpiece

### ENERGY-13 SPEC

	Specifications	D1320, 40.6 Kw, 4540N-m
C-axis	RPM	300
	KG	3,000

Workpiece max  $\Phi 2,000$



Worktable 1,320/1500

## Optional Specifications

HR_O-001	Non-contact tool setter + contact tool setter (for milling-turning composite use) <ul style="list-style-type: none"> <li>Laser BLUM NTH-3D</li> <li>Automatic lid lifting included</li> </ul>
HR_O-002	Parts probe communicates via wireless radio signals. <ul style="list-style-type: none"> <li>Blum TC60</li> </ul>
HR_O-003	Two CCD cameras inside the machine <ul style="list-style-type: none"> <li>Includes industrial computer IPC 427E Win10 with standard performance</li> </ul>

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## Power

- Removal Rate : 1496 c.c/min
- Depth : 5mm
- Feed Rate : 4675 mm/min
- Maximum Spindle Speed : 10000 RPM
- Spindle Power (S1/S6) : 42/50 kW
- Spindle Torque(S1/S6) : 202/256 N-m



## 3D-Precision

- Tolerance of Contouring : 0.08 mm



## 2D-Precision

