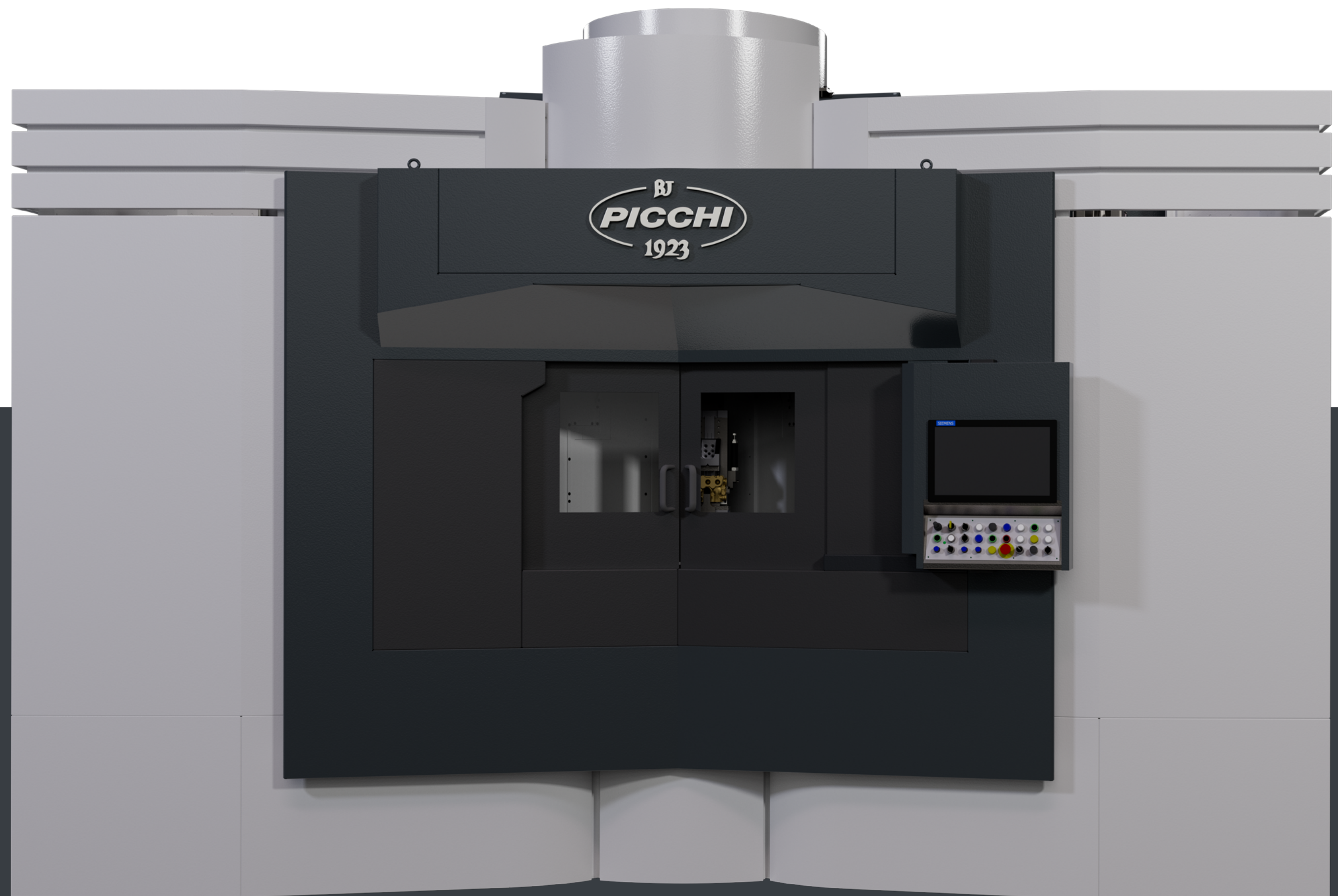


CHRONO

MULTI-SPINDLE MACHINING CENTER

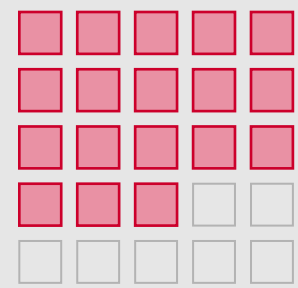


PICCHI S.r.l.
Since 1923 Italian technology for high volume production



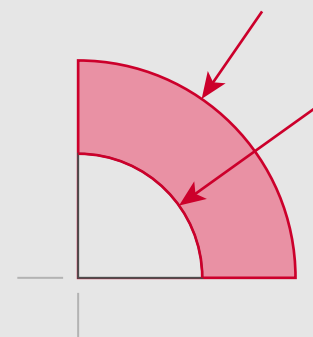
THE PRODUCTION CONTEXT HAS CHANGED

The challenges you face every day :



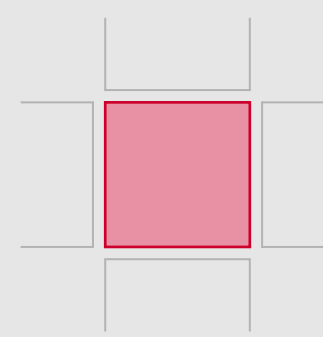
SMALLER BATCHES, FREQUENT SET-UPS

Inventories are decreasing, while set-up changes are increasing.



MORE AND MORE COMPLEX PARTS

Complex geometries, tight tolerances, and more operations to perform.



PRODUCTIVITY PRESSURE

Tight margins. Every square meter has to perform.

**WHAT WAS NEEDED
WAS A MACHINE
DESIGNED
FOR THIS SCENARIO**

WE BUILT IT.

3 MACHINING CENTERS, 1 SINGLE MACHINE

▶ **PLAY THE VIDEO**

Chrono Multi-Spindle Machining Center integrates 3 or 4 machining centers linked by 4 or 5 stations driven by torque motors. One station is always available for loading/unloading in masked time.

01. **From 3 to 4 integrated machining centers**
Simultaneous machining, reduced cycle time

02. **Loading and unloading in masked time**
Zero downtime

03. **4 o 5 axes configuration**
Complex parts in a single positioning

04. **Tool magazine up to 390 tools**
Fast batch changeovers

05. **High-pressure coolant up to 80 Bar**
Maximum tool life and machining quality

06. **Thermal regulation**
Dimensional stability and maximum precision

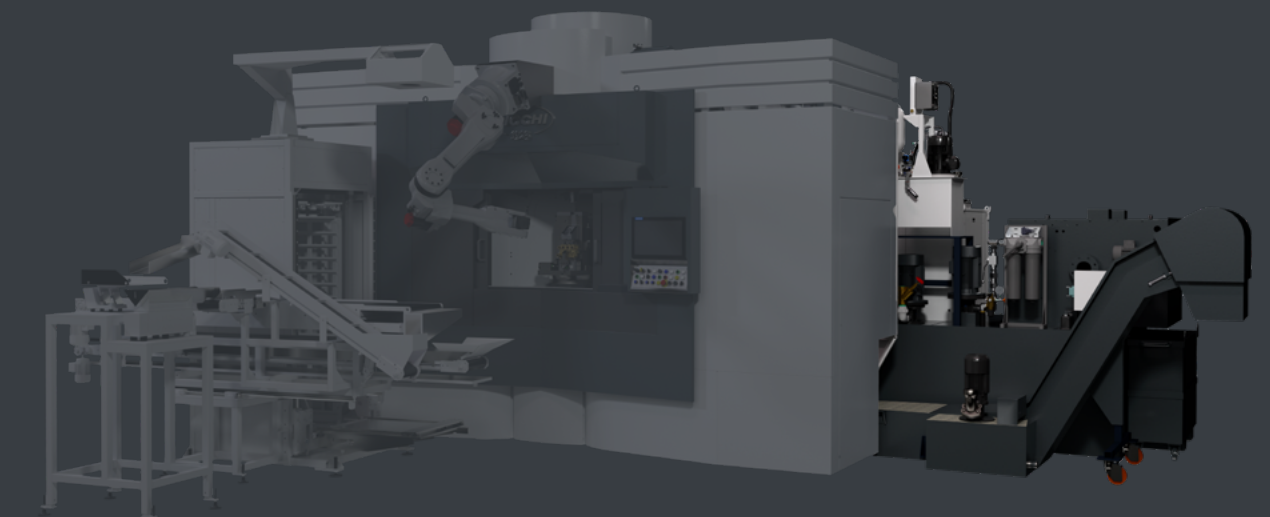
DISTINCT WORK AREAS



Machine Frame



Automation

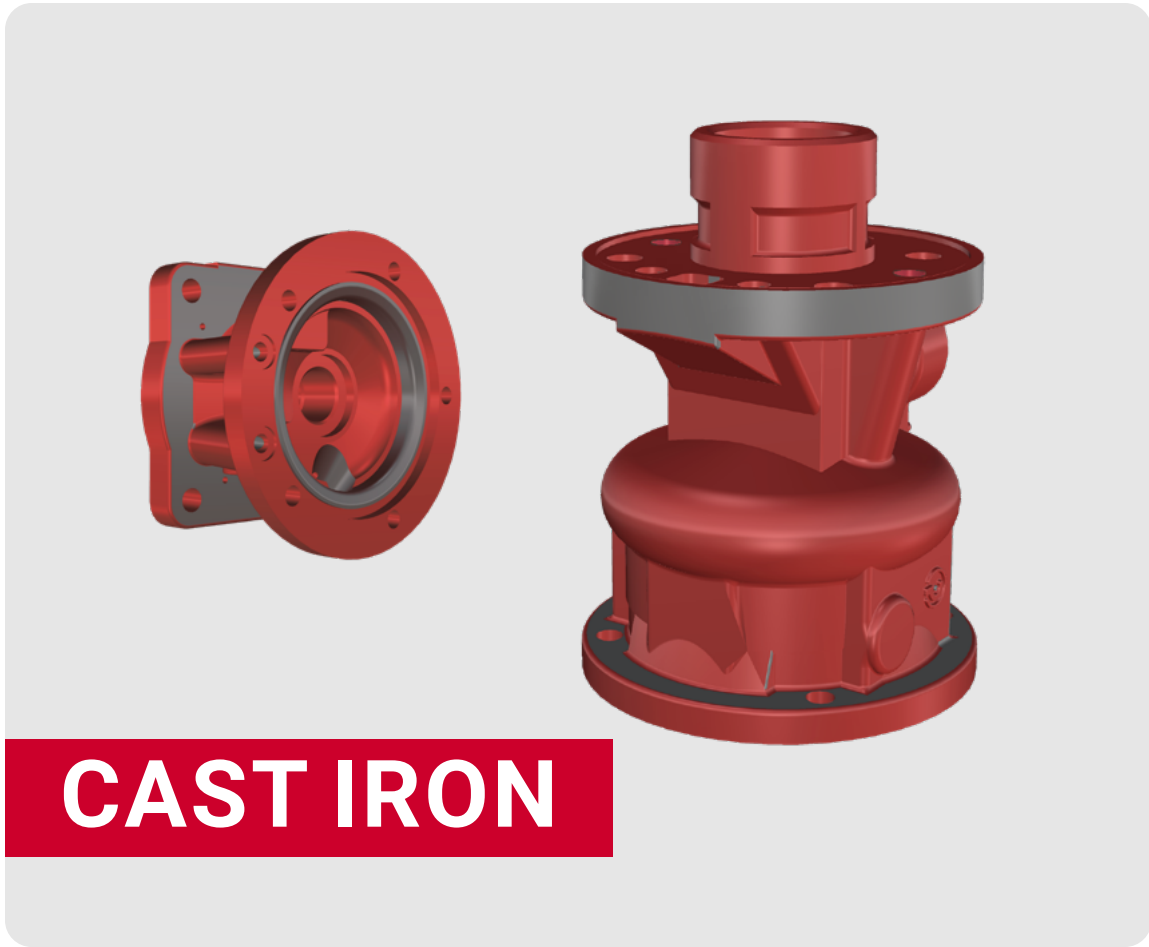


Thermal Regulation

PROVEN SOLUTIONS FOR HIGH-PRECISION SECTORS

- 01. **Automotive**
Brake system, transmission and engine components
- 02. **Hydraulic and pneumatic components**
Valve bodies, manifolds, and cylinders
- 03. **Industrial Fittings**
Tap bodies, mixers, and fittings

- 04. **HVAC**
Components for heating and sanitary systems
- 05. **Drivetrain components**
Gears, shafts, and supports
- 06. **Precision subcontracting**
High-quality third-party machining



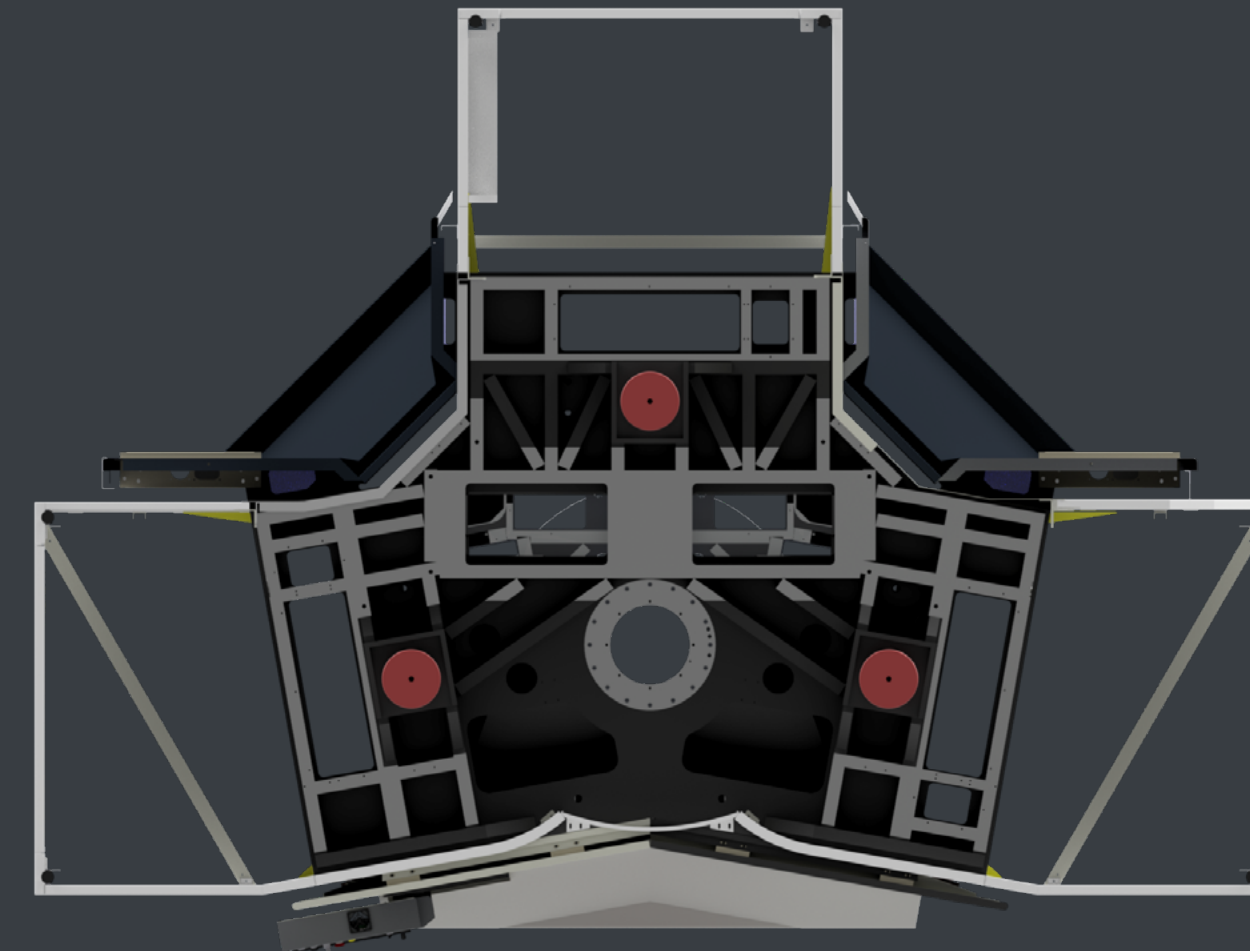
BUILT FOR DURABILITY, ENGINEERED FOR PERFORMANCE

THE FRAME: THE FOUNDATION OF PRECISION



01. **FEM Design**
Maximum rigidity, optimal vibration damping
02. **Three-point support system**
No foundation required, enabling rapid layout changes

P_V_DUMPER: INTEGRATED ANTI-VIBRATION SYSTEM



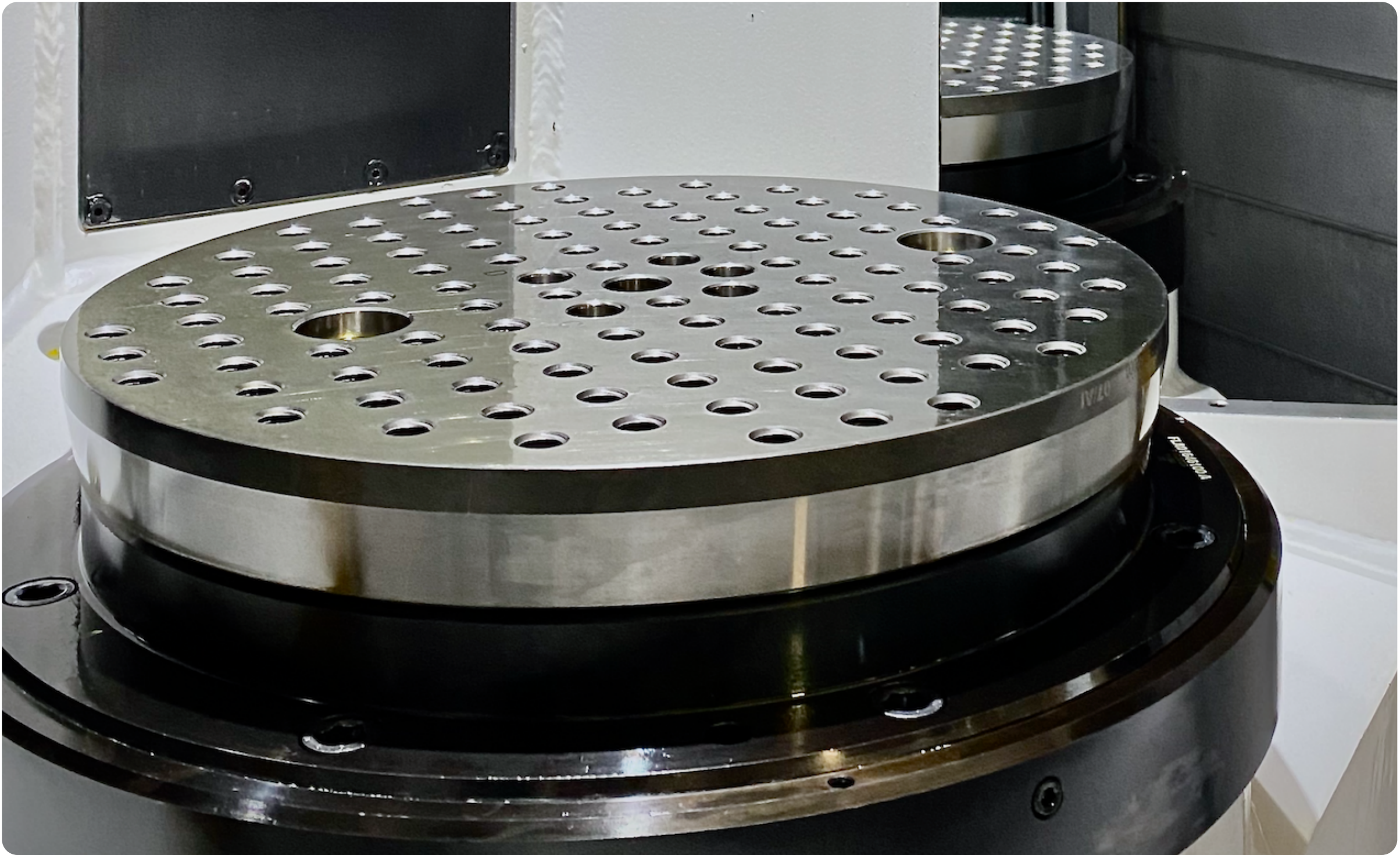
The frame is made of materials with different vibration behaviors, preventing resonance and promoting mutual damping. Furthermore, the 3-point support creates an isostatic system ensuring stability and uniform support.

More precise machining
Extended tool life
Superior process quality

CONSISTENT PRECISION, PART AFTER PART

THE SYSTEM IS CONDITIONED
AND PRESSURIZED: **PRECISION
AND LONG-TERM STABILITY.**

Parameter	Value
Actuation	Direct-drive Torque Motors
Position Control	Absolute Central Encoder
Locking System	Hydraulic Brake



THE RIGHT TOOLS, ALWAYS WITHIN SPINDLE'S REACH

- 01. **Up to 390 tools**
in the machine
- 02. **Direct spindle-to-magazine tool change**
without intermediate elements
- 03. **Optimization software**
automatic optimal tool sequencing
- 04. **Integrable external magazines**
extended capacity without stopping production

DIRECT TOOL-CHANGE		
Parameter	Unit	Value
Actuation	sec	1,5



MILLING AND TURNING IN THE SAME MACHINE

▶ **PLAY THE VIDEO**

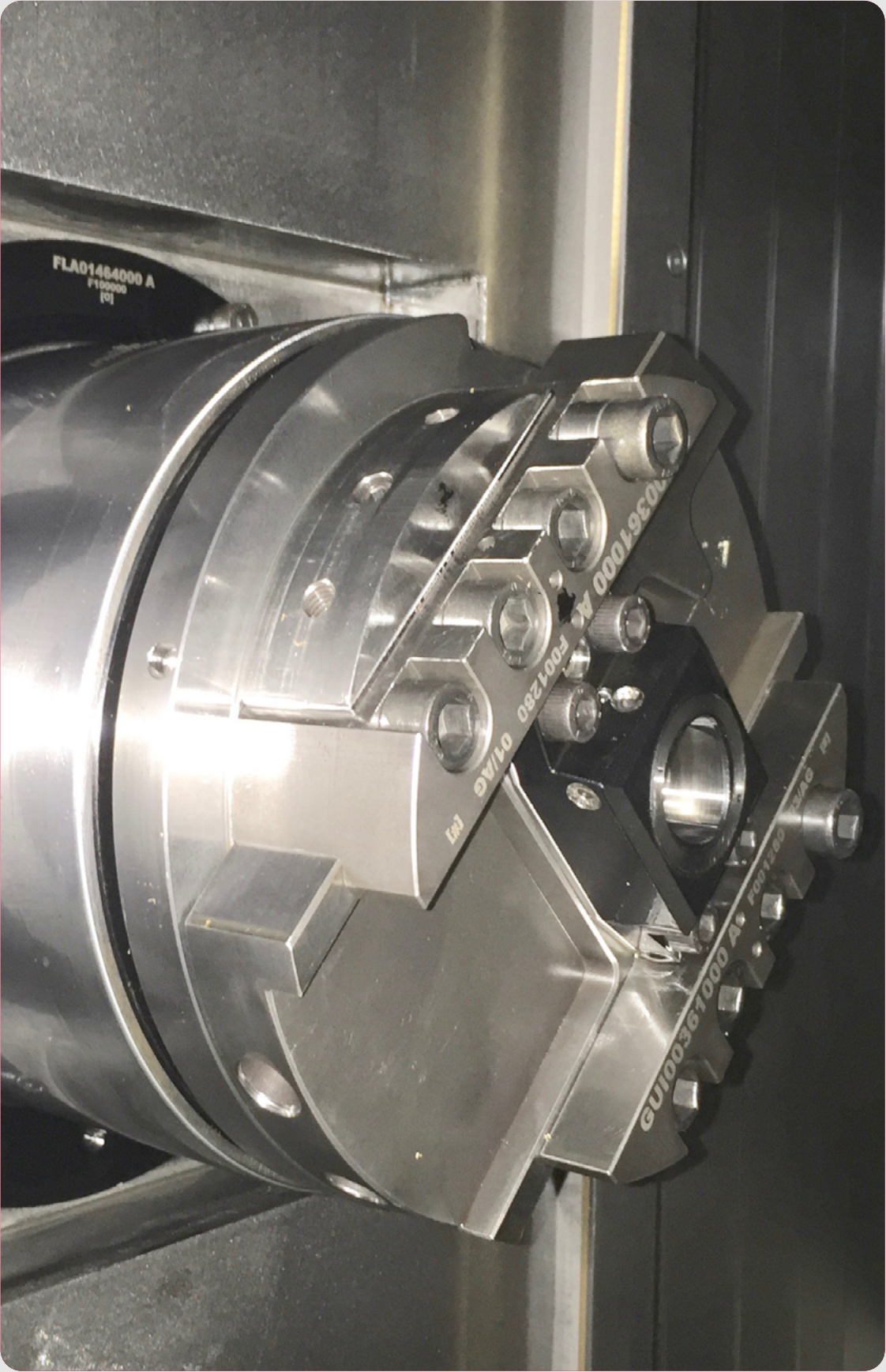
INTEGRATED RECESSING UNIT 6TH TURNING AXIS

One or more machining centers can be fitted with a recessing unit for turning operations.
Available operations:

- 01. **Internal and external profile turning**
- 02. **Single-point threading**
(also with PRFC chip-breaking technology)
- 03. **Drilling and boring** (axis in central position)

Parameter	Unit	Value
Tool holder	/	Capto C4
Maximum Speed	rpm	3.000
Pressurization	/	Yes
Hig-pressure Coolant	bar	80

CASE STUDY



▶ **PLAY THE VIDEO**

Ball valve body in CW511L, 2” bore
Internal profile and M83×1.5 threading
with single-point tool.

SMART AUTOMATION FOR UNINTERRUPTED PRODUCTION

LIFT/MAGAZINE SYSTEM + INTEGRATED ROBOT (OPTIONAL)

- 01. **Operational Safety**
Eliminating human error in changeover operations
- 02. **Riduced downtime**
Minimal manual operations

The system includes an elevator and/or external magazine (300 tools) with a dedicated robot. **Maximum tool contact time. Minimal machine downtime.**



FULL OPERATIONAL FREEDOM, ABSOLUTE PRECISION

4-AXIS CONFIGURATION

Parameter	Unit	Value
Rapid speed	m/min	60
Maximum equipment volume	mm	Ø 480 × 400

AS LOAD VARIES, THE SOFTWARE AUTOMATICALLY
ADJUSTS THE B-AXIS PARAMETERS FOR **OPTIMAL
DYNAMICS AND PRECISION.**



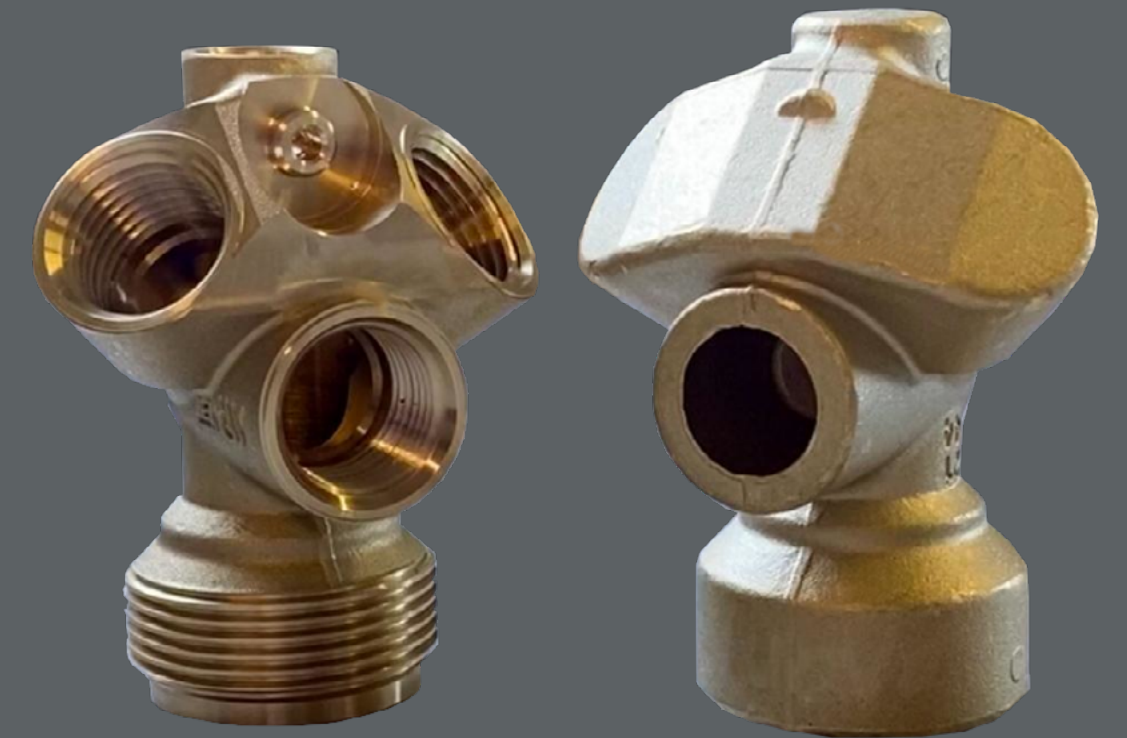
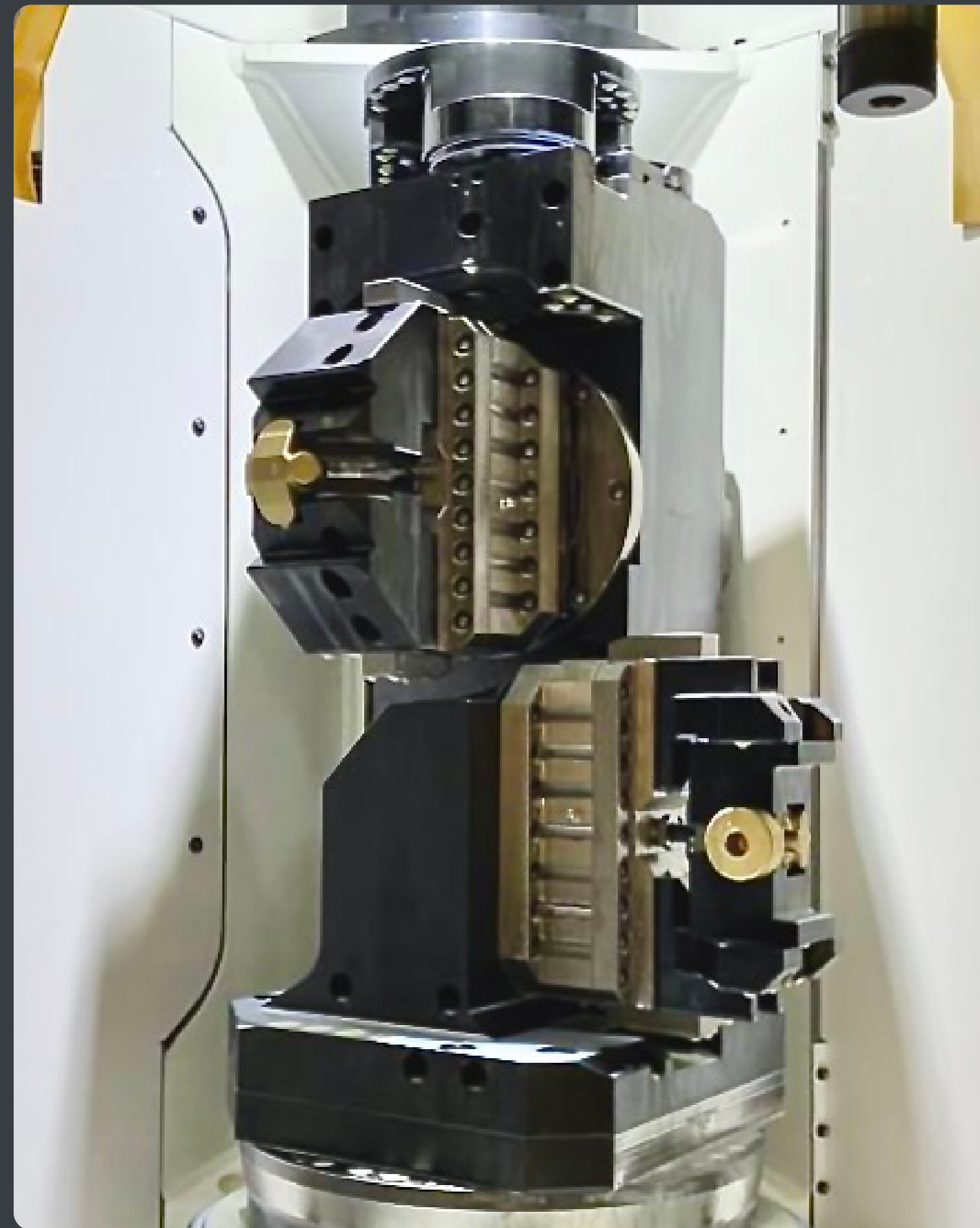
ONE FIXTURING, ENDLESS POSSIBILITIES

**DOUBLE CLAMPING FOR OP10 +
OP20 IN A SINGLE TABLE ROTATION**

▶ PLAY THE VIDEO

Support with bearing locked to the B-axis
Two rotary vises (0° – 90°)
6-sided machining without repositioning.
Complete part in one table rotation.

Option to load two different parts per cycle.



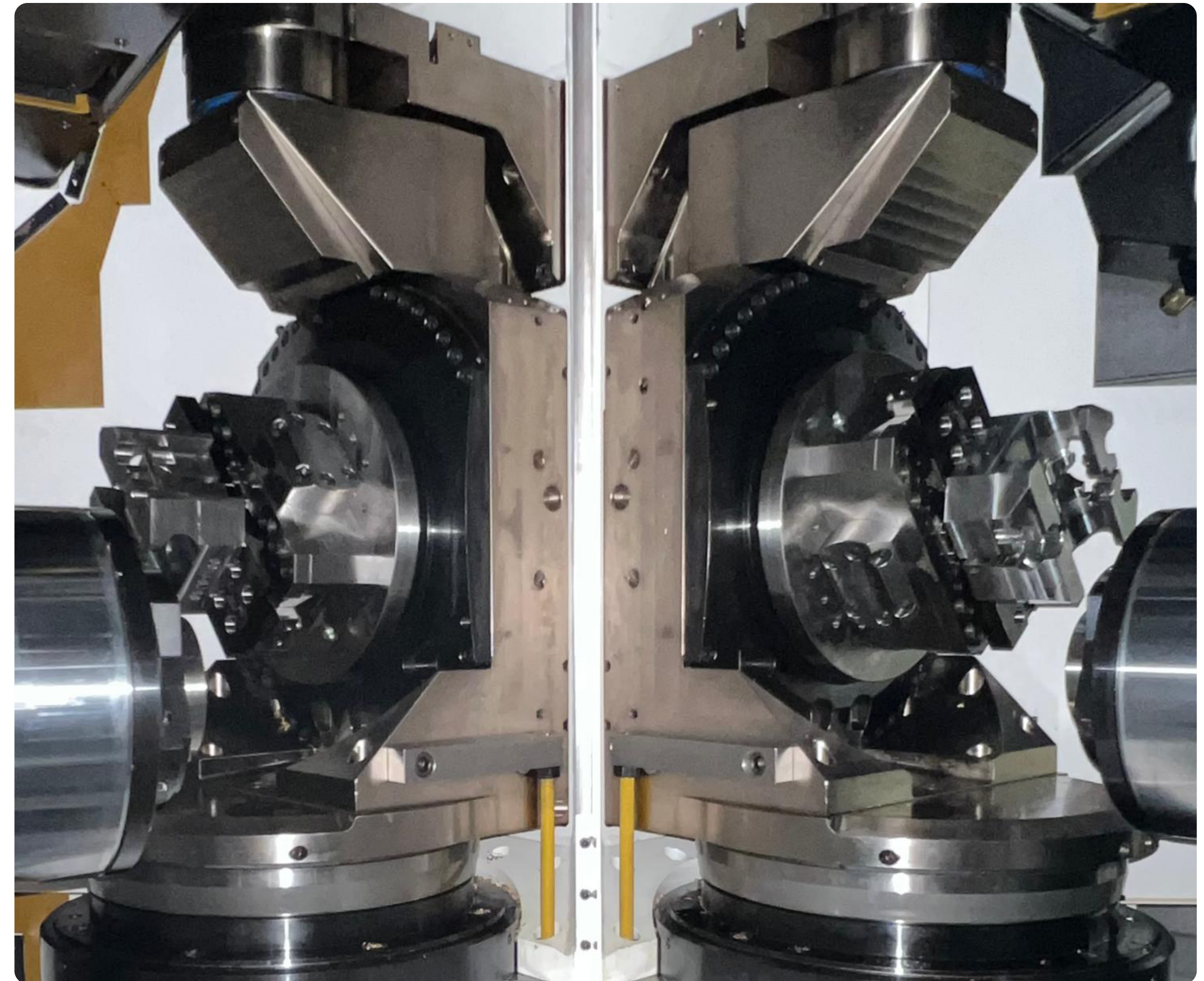
THE 5TH AXIS FOR COMPLEX PARTS AND TIGHT TOLERANCES

▶ **PLAY THE VIDEO**

With only 4-axes, complex parts often require repositioning that is not possible due to tight tolerances. Advantages of the 5th axis:

01. **Higher quality**
Fewer repositionings, reduced cumulative errors
02. **Simplified fixturing**
Cost savings on design and construction
03. **Faster retooling**
Shorter batch changeovers
04. **Simplified automation**
The robot manages only one part orientation

Construction technology: FEM-based structure, direct-drive systems, 0.001° absolute encoders, and hydraulic brakes.
The modular design enables integration of the A-axis even after Chrono has been installed.



5-AXES MACHINING CAPACITY

5 AXES, SAME STROKES,
GREATER FREEDOM

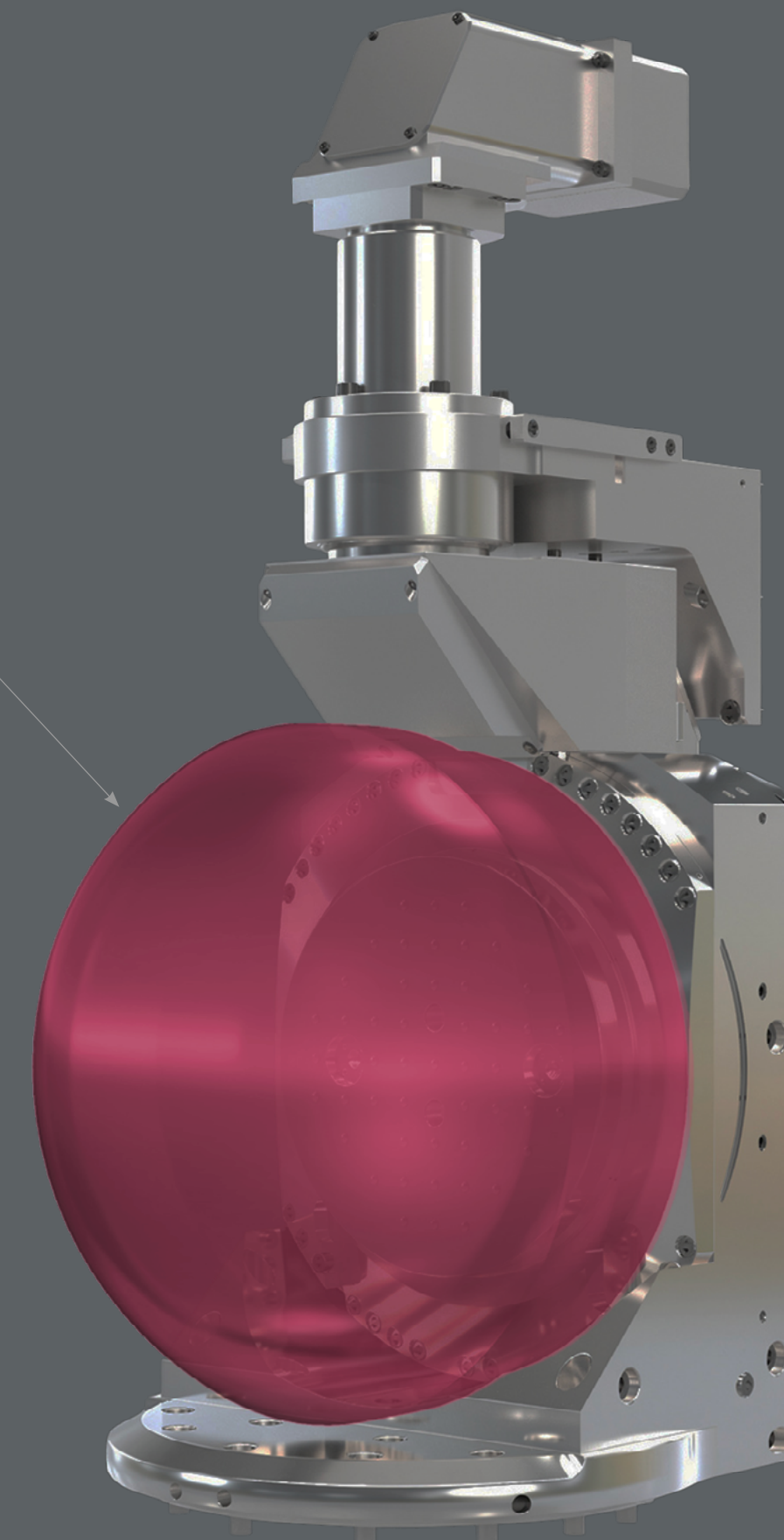
▶ **PLAY THE VIDEO**

A-AXIS WORKPIECE TABLE

Parameter	Unit	Value
Table diameter	mm	265

Both rotary axes feature torque motors, central encoders, and hydraulic brakes. Accelerations are automatically compensated by the CNC.

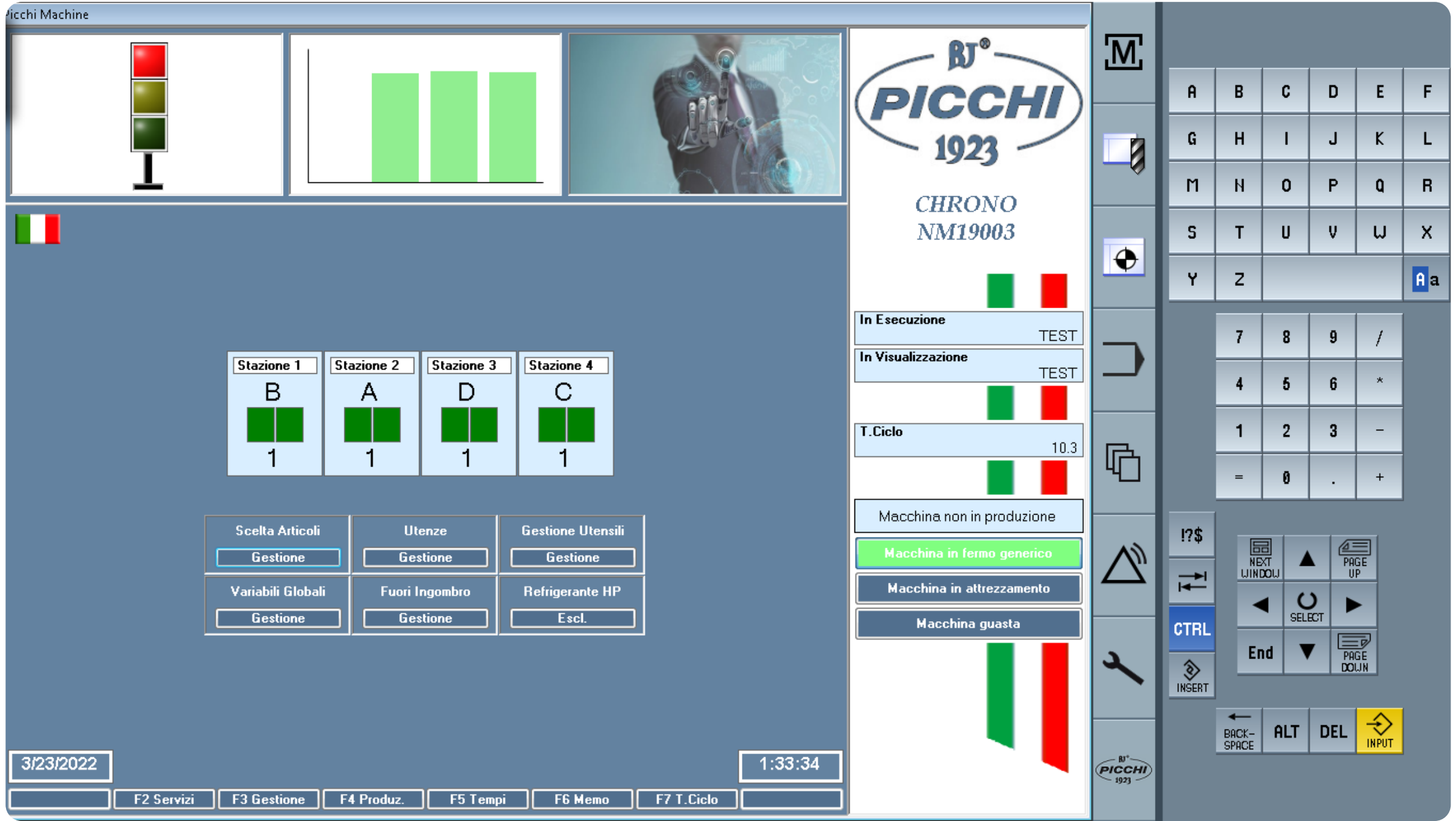
Ø430 mm



CONTROLLED POWER

Chrono stands apart from traditional machining centers. Our custom HMI makes it simple and intuitive.

- 01. **Quick cycle selection**
Each station can work on a different part
- 02. **Tool management**
Load/unload via list or manual selection

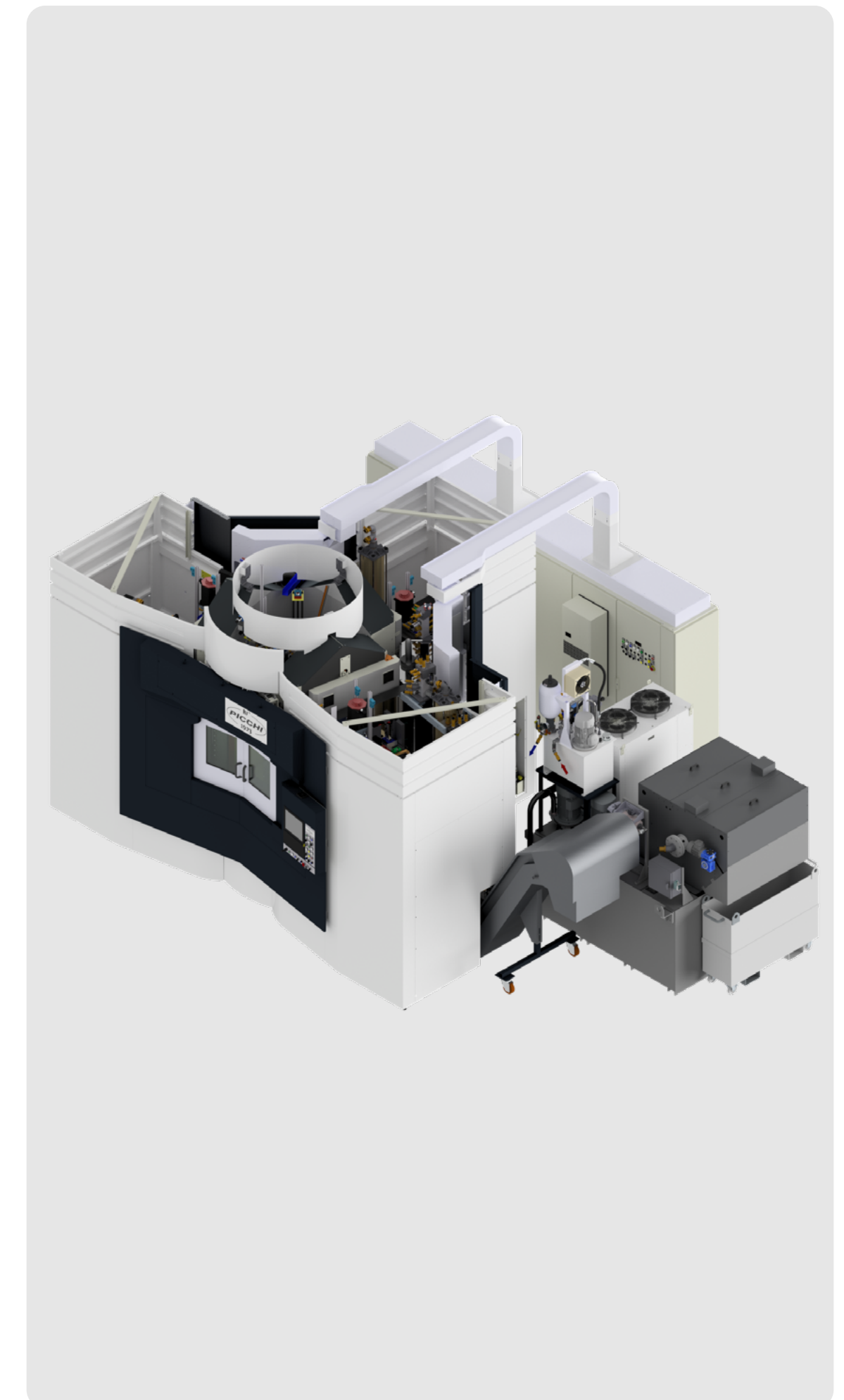
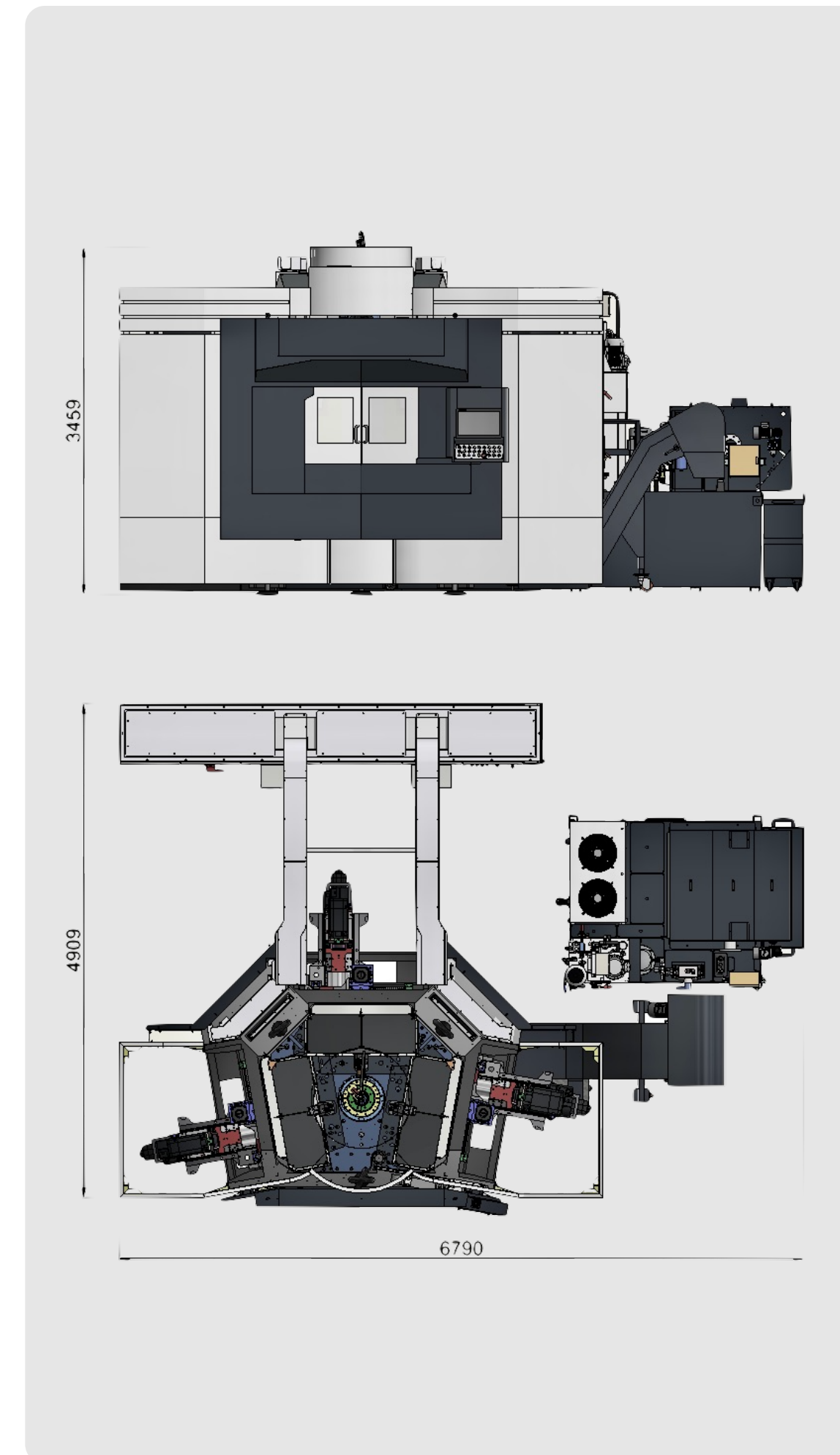


HIGH POWER IN A SMALL FOOTPRINT

3 TRADITIONAL MACHINING CENTERS: ~90 M²
CHRONO: 33 M²

Chrono Layout (3 machining centers, 4 stations):
approx. 33 m², including all auxiliary systems.

01. **Accessible systems**
for fast maintenance
02. **Uniform footprint**
same for 4- and 5-axes configuration



P_SAFE_STOP SYSTEM

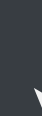
ACTIVE EMERGENCY PROTECTION

The machine operates at high feed rates.
An uncontrolled power outage is a real risk.

The P_SAFE_STOP system safely brings the linear axes to a stop even without power, recovering kinetic energy and converting it into electrical energy. This energy keeps the CNC active until the emergency braking cycle is completed.

Controlled Stop.
Protected Machine.
No damage.

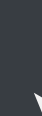
POWER OUTAGE



P_SAFE_STOP
SYSTEM ACTIVATION

Functioning

Kinetic energy recovery and
conversion into electrical
power for emergency braking



EMERGENCY STOP

HARD-TO-MACHINE MATERIALS, NO COMPROMISE

Working with materials like lead-free brass or long-chipping steels is more than a matter of parameters: it is a process challenge. PRT is Picchi's answer.

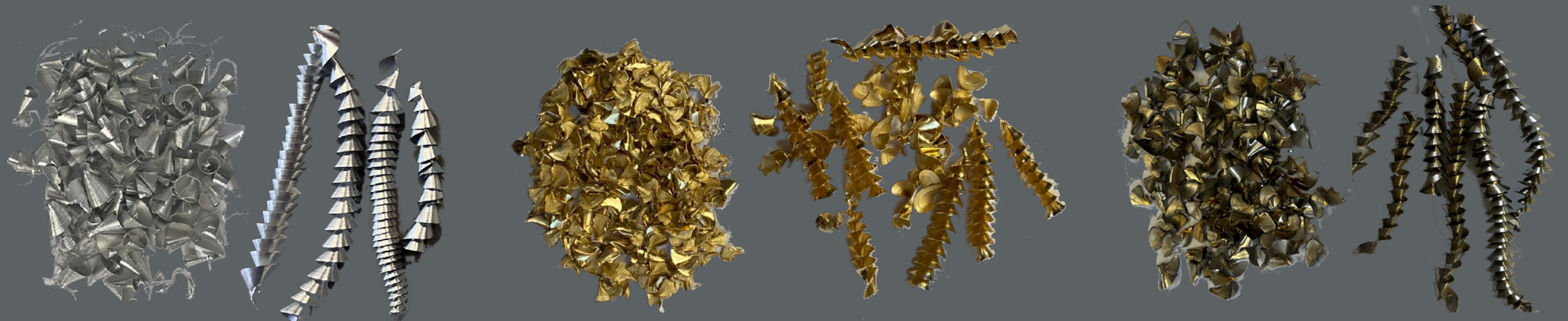
[▶ PLAY THE VIDEO](#)

PRT AND PRFC: PICCHI TECHNOLOGY FOR CHALLENGING MATERIALS

Self-adaptive software that automatically adjusts machining parameters according to the desired chip size, without manual intervention. This ensures a stable, repeatable process and longer tool life.

MANAGED OPERATIONS

01. Drilling operations (PRT)
02. Single-point threading with recessing unit (PRFC)



MACHINED MATERIALS

01. Lead-free brass alloys
02. Steel alloys
03. Stainless Steel
04. Lead-free aluminum
05. Special alloys



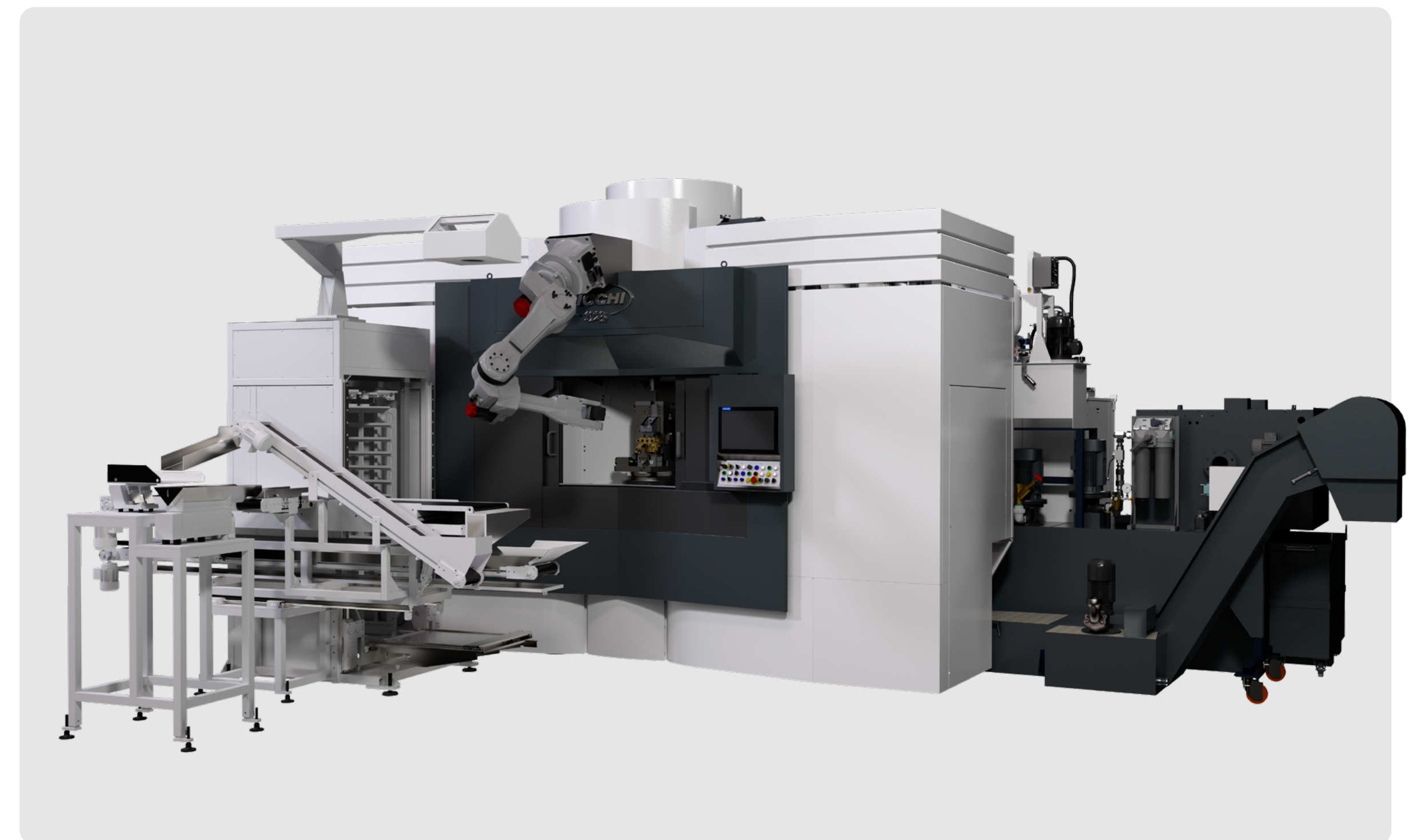
Multi-way valve body
Cycle time: 41 sec.

ONE POINT OF CONTACT, NO CRITICAL INTERFACE POINTS

MACHINE AND AUTOMATION DEVELOPED TOGETHER

Integrated systems deliver greater efficiency: by automating operations, they reduce risks and ensure higher reliability at every stage.
Chrono, the robot, and the vision system are combined into a single-operator interface.

- 01. “Turn-key” solution, single responsibility
- 02. Integrated training
- 03. Streamlined support



TAILORED AUTOMATION FOR EVERY NEED

ROBOT + BELT WITH VISION SYSTEM

High volumes, uniform parts.



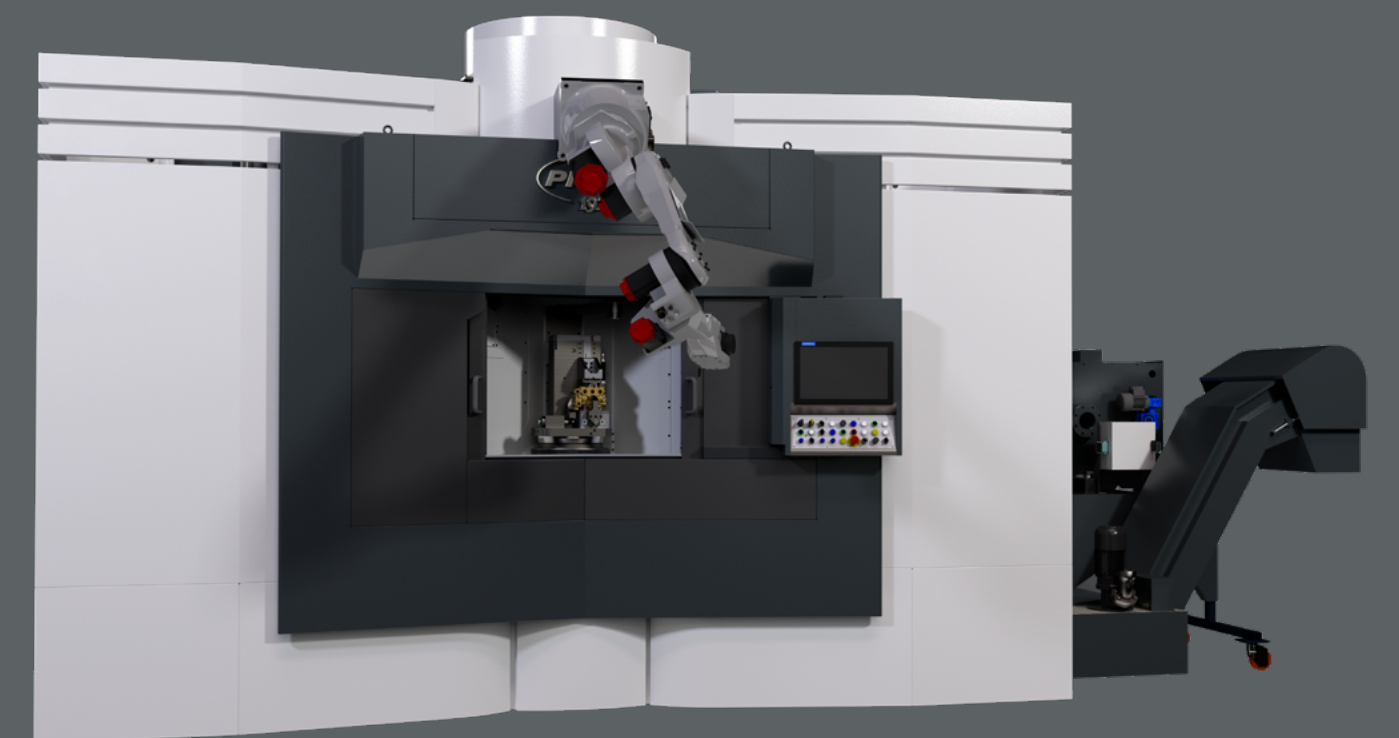
ROBOT + PALLET SYSTEM

Continuous production with unattended shifts.



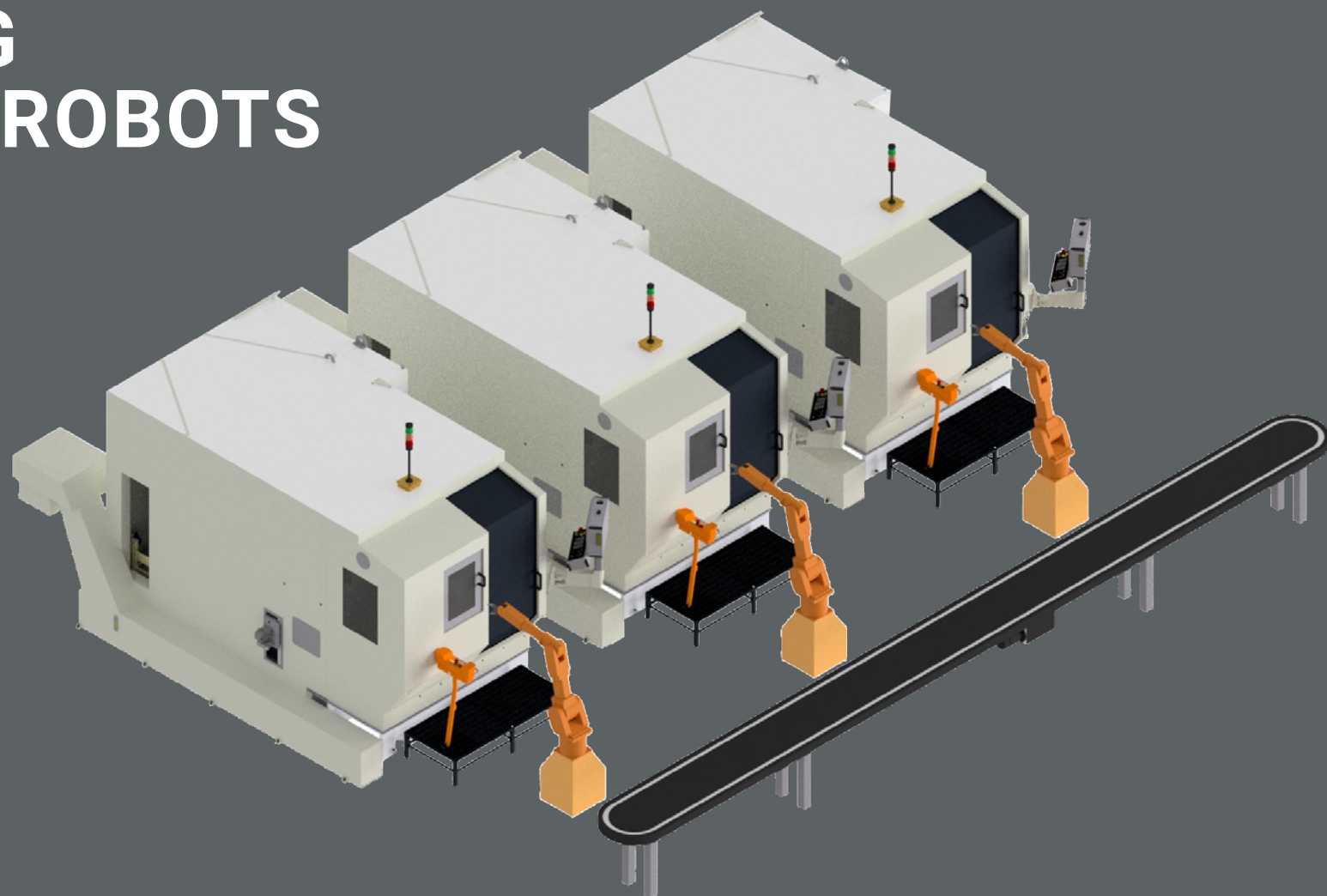
INTEGRATED HANGED ROBOT

Minimum footprint, maximum accessibility.



CHRONO VS 3 TRADITIONAL MACHINING CENTERS

3 MACHINING CENTERS + 3 ROBOTS



Parameter	Unit	Value
Machines	n.	3
Robot	n.	3
Chip conveyors and filtration systems	n.	3
Fixturing	n.	6
Tools	n.	60
Footprint	m²	90
Energy consumption	kW	45

CHRONO



Reduced staffing requirements and higher overall efficiency.
If a single machining centers runs at 95%, three machines together drop to 86%.
Chrono exceeds this value with just one machine.

Parameter	Unit	Value
Machines	n.	1
Robot	n.	1
Chip conveyors and filtration systems	n.	1
Fixturing	n.	4
Tools	n.	20
Footprint	m²	55
Energy consumption	kW	40

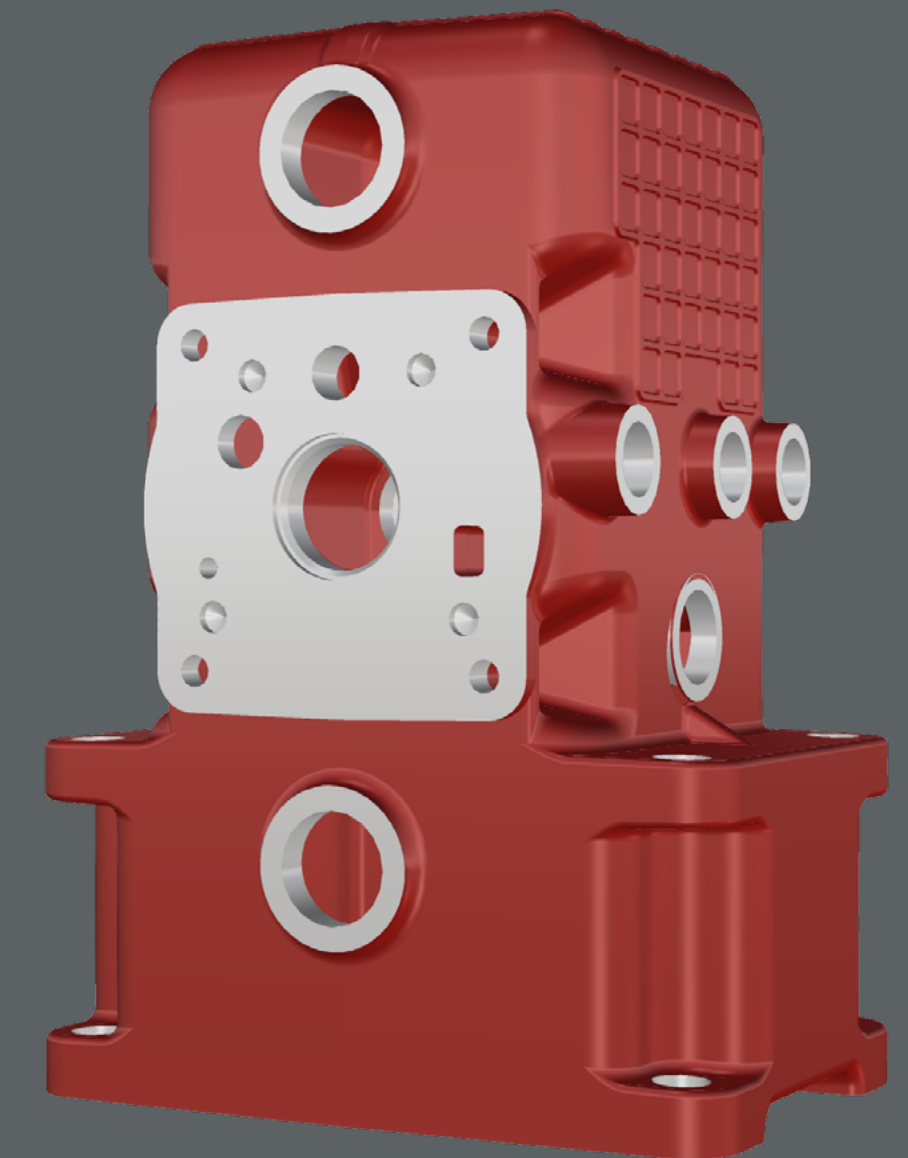
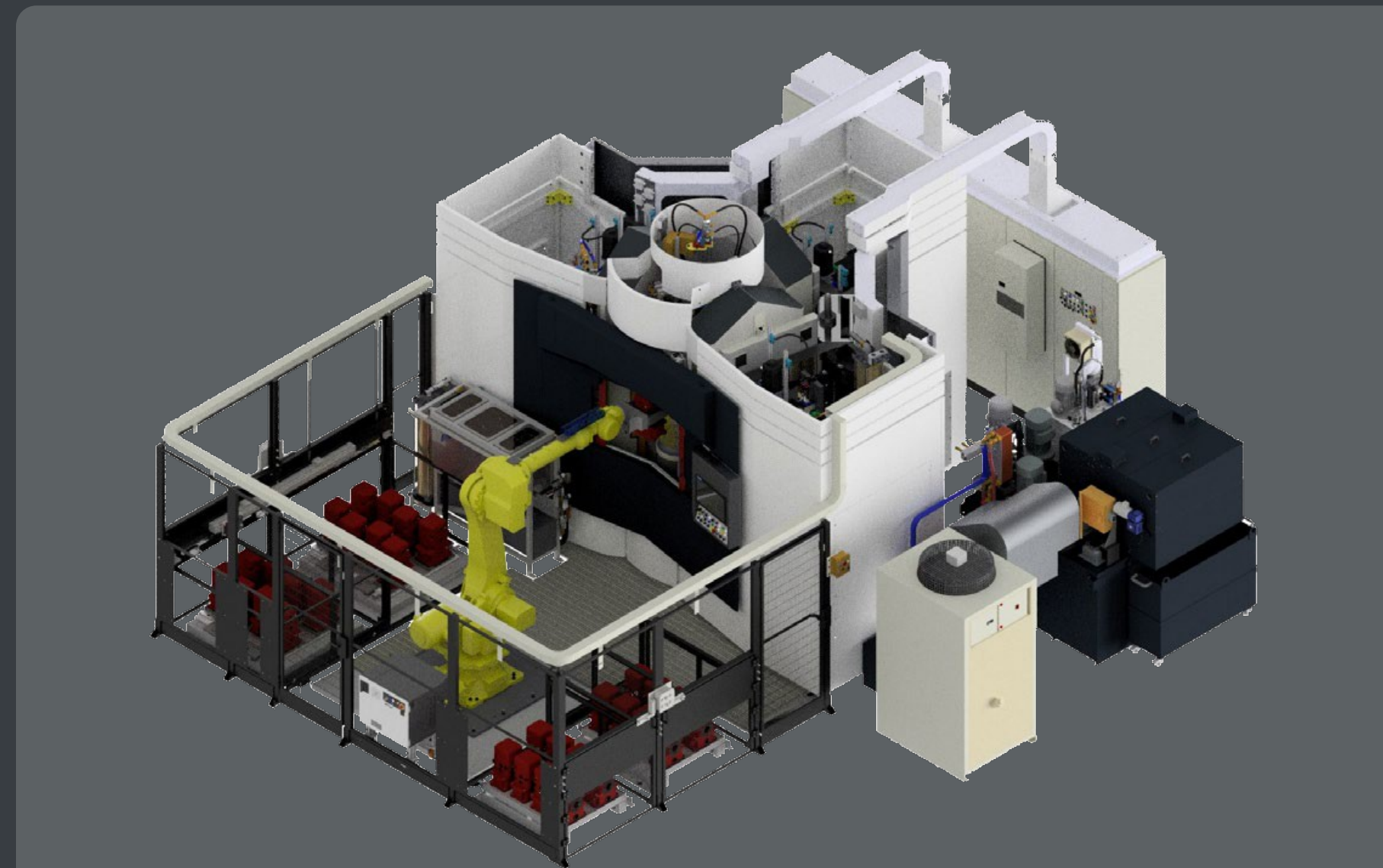
CASE STUDY CAST IRON BRAKING SYSTEM BODY

CHRONO 3 MACHINING CENTERS,
4 STATIONS, OP 10+ OP20 CYCLE

▶ PLAY THE VIDEO

Automation: pallet robot, fully autonomous cycle. The system operates autonomously.

Pallet changeover does not interrupt production.



Cycle time: 375 sec

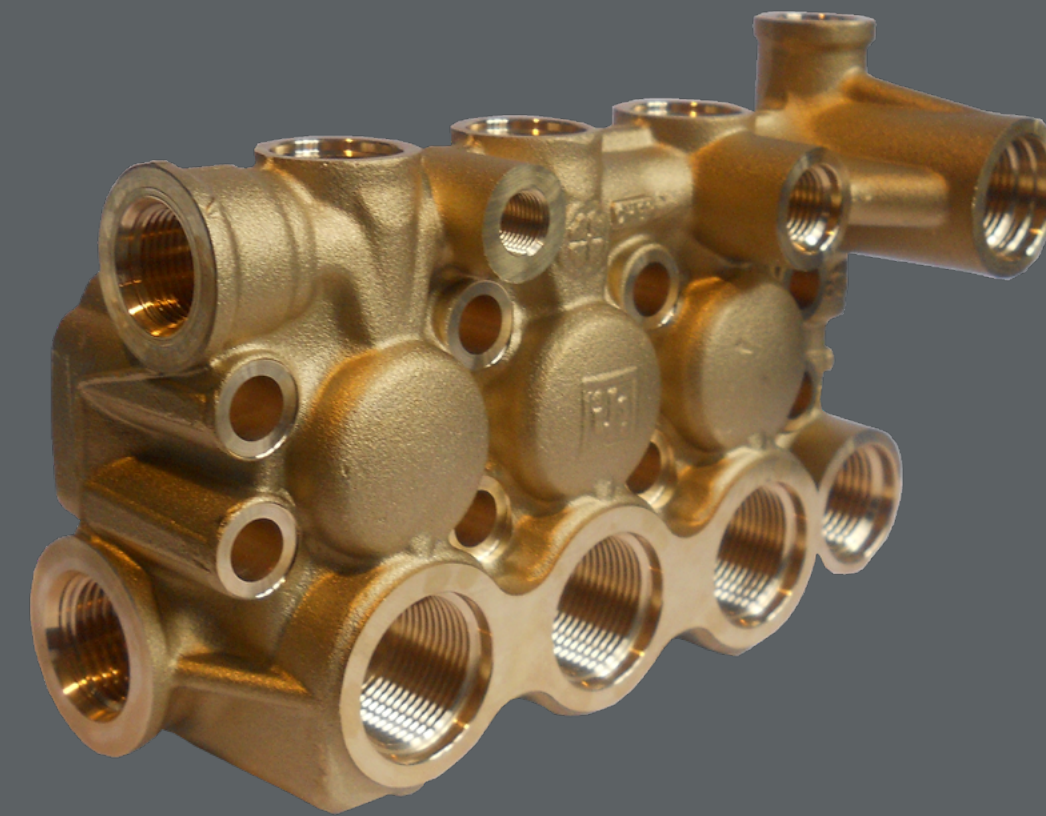
CASE STUDY HIGH-PRESSURE PUMP BODY

CHRONO 4 MACHINING CENTERS, 5 STATIONS

▶ **PLAY THE VIDEO**

Automation: dual-gripper robot — machining, deburring, washing, and palletizing in one cell.

Fully integrated process.
From raw to assembly-ready parts.



Cycle time: 105 sec

PICCHI S.R.L. PRODUCT RANGE

THE RIGHT TECHNOLOGY FOR EVERY
PART AND ANY PRODUCTION VOLUME.

Transfer Line



TR

Maximum productivity,
unbeatable cycle times.



COMBYBAR

Bars of any geometry,
high-volume production.



COMBYAX

Complex components,
multiple directions.

Machining Center



CHRONO

Flexibility and productivity,
variable batch sizes.



LET'S DISCUSS YOUR PROJECT.

Each application has its own challenges.
Our technical department studies your production needs
and proposes the most suitable Chrono configuration.

PICCHI S.r.l.

Dal 1923, Italian technology
for high-volume production.

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