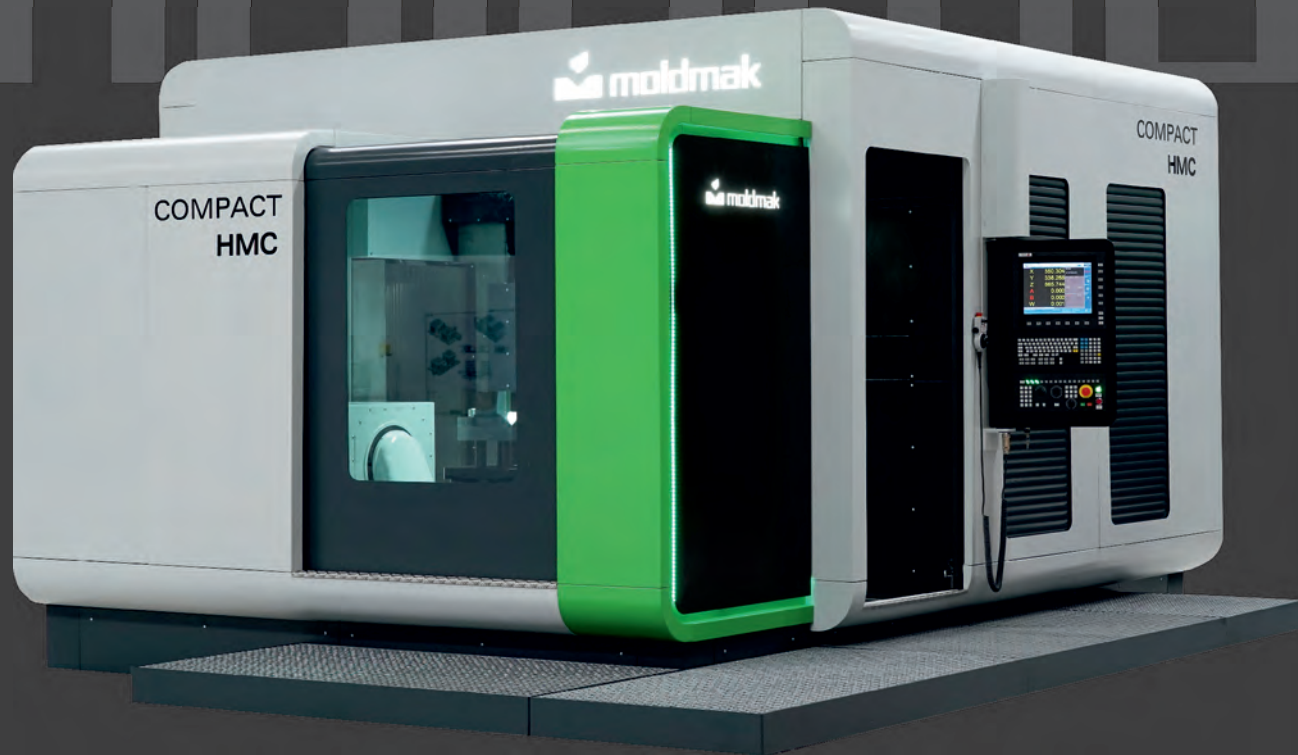




Process machine for mold making

COMPACT HMC

Horizontal Machining Centre with Deep Hole Drilling



Company

Moldmak focuses its activity on the design / development, production and commercialization of CNC (Computer Numeric Control) machines to optimize the production process in the mold manufacturing sector.

Aware of the strong competitiveness of the worldwide market for machine tool production and bearing in mind the requirement for quality and commitment to efficiency and sustainability, Moldmak is the result of more than 35 years of experience, research and development in the manufacture of molds. In order to distinguish itself from the competition by creating even more efficient production solutions, at the technical and economic level, Moldmak comes to fill an absence of solutions in the market of mold's intelligent production systems.

Since its start, the company integrates a team with extensive national and international experience and with demonstrated results in the sector. In fact, it was the dissatisfaction with the functional limitations of the machines used in the mold industry, which created the opportunity to develop a new business project. Only with the accumulated experience of the team, the deep knowledge of the molds' production process and the domain in the development of high precision CNC machines, it is possible to raise the bar of the current state of the art, establishing a new product of great impact in the sector.



Horizontal Machining Centre with Angular capacity and Deep Hole Drilling



Process machine for mold making

Commitment to mold machining process

The experience gained in the mold industry and the detailed understanding of the needs of the industry have given birth to MOLDMAK which today boils down to more than 35 years of mold making experience, research and development and aims to distinguish itself from the competition by creating productive solutions increasingly efficient at the technical and economic level.

MOLDMAK is 30% faster than conventional solutions because:

- It reduces hand overs and setup times, leaving more available time to perform the multiple machining processes required for part execution.
- It shortens execution times due to the advantages of being a horizontal Spindle machine with vertical angular capacity and table rotations on the horizontal plane.
- Reduces cascade of nonconformities, because it can include at the end of each task dimensional control. This way, only one geometrically validated part advances to the next step or process.



Industry 4.0



IoT



Communication



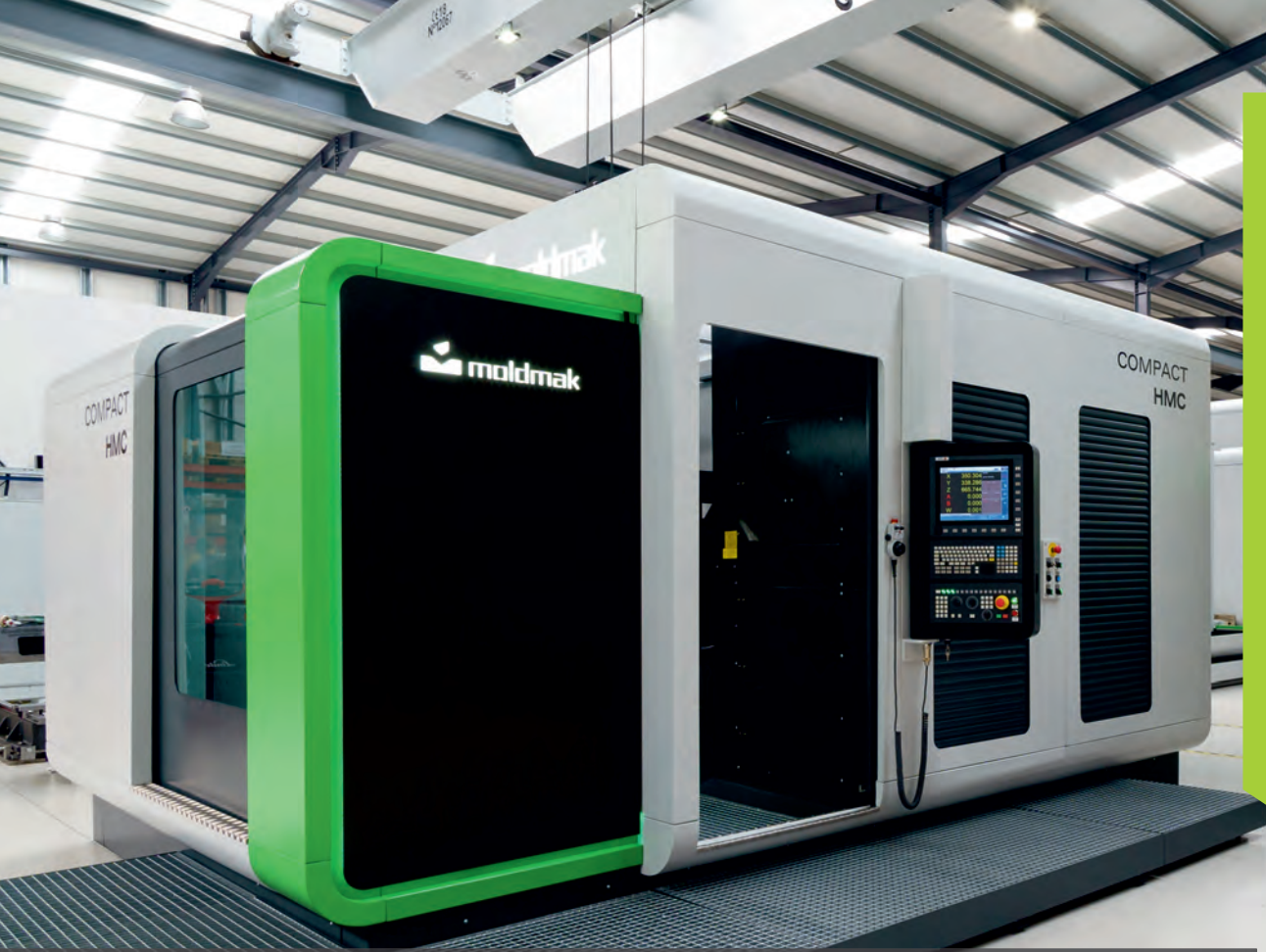
Maintenance



Management



Monotorization



COMPACT HMC

Horizontal Machining Centre with Deep Hole Drilling



- Moldmak COMPACT HMC is a horizontal machining centre of high-speed HSC of 6 continuous axis, to execute molding areas in parts up to 850Kg. Allows to work all 5 part faces in the same setup. Suitable for machining inserts and moving elements made of high hardness steels. It provides the use of deep hole drilling tools with dedicated “W”. The machine can be equipped with palletizing system and automatic tool change.
- Moldmak, as a result of its maturity in the mold industry, developed this machine in order to optimize the production process of molds for injection or other areas of mechanical engineering.

- ✔ Parts up to 850kg
- ✔ Feed 30mts/min / acc 1G
- ✔ 5 continuous axis
- ✔ 6th axis for deep hole drilling
- ✔ 18.000 rpm
- ✔ 22kW

The horizontal architecture of the Compact HMC allows for a wide and comfortable operator accessibility to the work area as well as access from the bridge over the screed. This structural arrangement gives the machine a high rigidity which allows for great capacity in chip breaking processes in hardened or hardened steels.

Moldmak's domain in mold machining processes was reflected at the level of machine construction engineering in terms of thermal, dynamic and static stability.

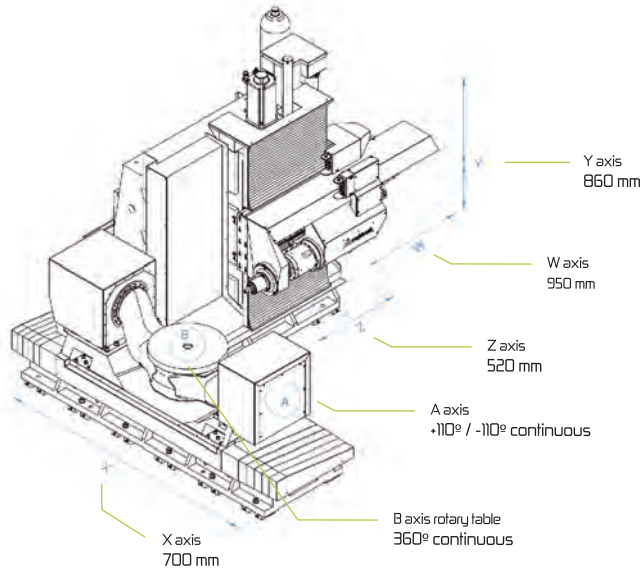
This new Compact HMC solution makes it possible to broadly access the entire volumetry of the part to be machined, taking advantage of all the capabilities of 3+2 and 5 continuous axes machining.

Additionally, the Compact HMC is equipped with a "W" axis dedicated to deep hole drilling processes in the same setup.

The Compact HMC has been designed with particular attention to the needs for machining inserts and movable elements made of high-hard steels, and therefore we have equipped the machine with direct-drive drive and direct feedback on all axes to enhance the machine's precision and repeatability.

The Compact HMC is equipped with an automatic tool and pallet changing system, process control and industry 4.0 interfaces.





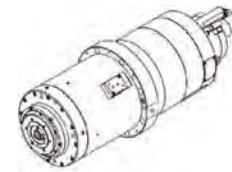
6 High speed continuous Axis

Highlights

- Foundry Structure – 16 ton
- Emulsion tank – 2.000 Lts
- High pressure pump – 80 bar; 80 L/min
- Direct drive axis – 30 m/min
- DAPI – Process control
- Geometric validation of the part
- Process / Productivity monitoring

Peripherals

- ATC – up to 60 tools
- Tool Measuring – longitude and diameter
- Electrical cabinet cooling and emulsion cut

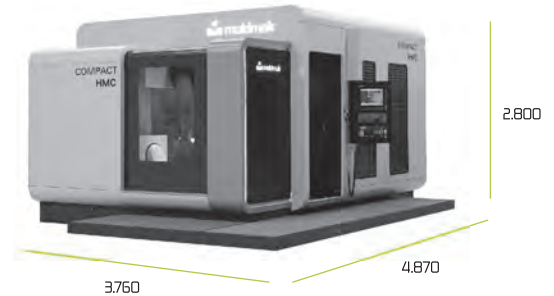
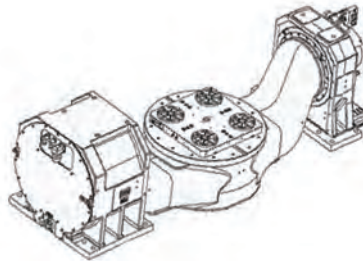


Spindle

Motor Spindle	18/22 kW
rpm	18.000
Torque S1	80 Nm
Torque S6	98,6 Nm
Cone Tool	HSK A63

COMPACT HMC

Horizontal Machining Centre with Deep Hole Drilling



A axis activated by torque motor	1/1
Max angular load to 90°	850 Kg
Continuous operation precision	≤ 0,001°
Angular capacity	+110° / -110°

B axis activated by torque motor	1/1
Table speed	100 rpm
Hydraulic Blockage double effect	2500 Nm
Rotary table/plate dimensions	Ø 600 mm
Continuous operation precision	≤ 0,001°

Machine Cover

- Complete cover round the machine with sliding doors.
- Easy access to operator's working area.
- All peripherals within the machine.
- Wide workpiece entry when transported with crane.



Process machine for mold making



MULTI-TASKING

Multitasking capability enables it to respond effectively to the needs of various machining operations



HIGH STIFFNESS = HIGH PRECISION

Extremely robust and vibration free structure, helps to reduce tool wear



ANGULAR CAPACITY

The angular capacity with the rotary table ability allows machining with shorter tools



ROTARY TABLE - 8 AXIS

The rotary table allows machining all around the part with the same setup

DAPI - Drilling Adaptive Process Intelligence

The correct variable control is critical for machine's reaction during deep hole drilling operations.

When reaching intersection points the machine will automatically adjust the feed and rpms until all controlled parameters are stable again.

This automatic adjustment is generated by the machine without the use of CNC or CAM pre-programmed instructions.

This software application can be programmed to provide warnings when vibration or axial load level goes above the predefined set point.

This feature can also be used to program the machine to automatically change the tool (by a twin tool) when the predefined set point vibration level is reached (usually by tool wear).



Machining support software applications

Moldmak Sensing Control Machine Parameters

- ✔ Tool penetration force
- ✔ Tool vibration
- ✔ Spindle power used in the process
- ✔ Force made during the process
- ✔ Power used in the linear axis
- ✔ Force required by the axes
- ✔ Emulsion monitoring

In the deep hole drilling process:

- ✔ Allows to predict conditions for tool sharpening
- ✔ Avoid tool break
- ✔ Control for twin tool change
- ✔ Monitors and adjusts technological parameters in case of interceptions
- ✔ Allows presetting parameters by tool typology

From Portugal to the world

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