

MASTER 23

CNC WORKING CENTRE
FOR GLASS



 **INTERMAC**

THE COMPACT SOLUTION FOR THE NEEDS OF LARGE COMPANIES AND SMALL-SCALE ARTISANS



THE MARKET CALLS

for evolution in production processes, coupled with quick and certain delivery times, to meet ever growing demand for bespoke products and unique requests. In achieving this, high standards of quality must always be achieved.

INTERMAC RESPONDS

with manufacturing technologies that aim to solve this, through a passion for innovation and expert knowledge in material processing. **Master 23** is Intermac's most compact range of processing centres for machining glass. Designed to meet the needs of large companies producing big batches, but also small-scale artisans who decide to invest in the growth of their business and the evolution of the production process, obtaining high-quality results with limited outlay.



MASTER 23

- ✓ **COMPACT DIMENSIONS**
MAKING IT IDEAL FOR COMPANIES WITH LIMITED SPACE.
- ✓ **OPTIMUM VERSATILITY**
THANKS TO THE WIDE VARIETY OF POSSIBLE MACHINING OPERATIONS.
- ✓ **MAXIMUM QUALITY AND PRECISION.**
- ✓ **EXCELLENT PRODUCTION EFFICIENCY**
THANKS TO THE PERFECT INTEGRATION WITH ROBOTS
FOR THE PRODUCTION OF LARGE BATCHES.

OPTIMUM VERSATILITY THANKS TO THE WIDE VARIETY OF POSSIBLE MACHINING OPERATIONS

Master 23 can carry out a wide variety of complex machining operations, guaranteeing first class finish quality.

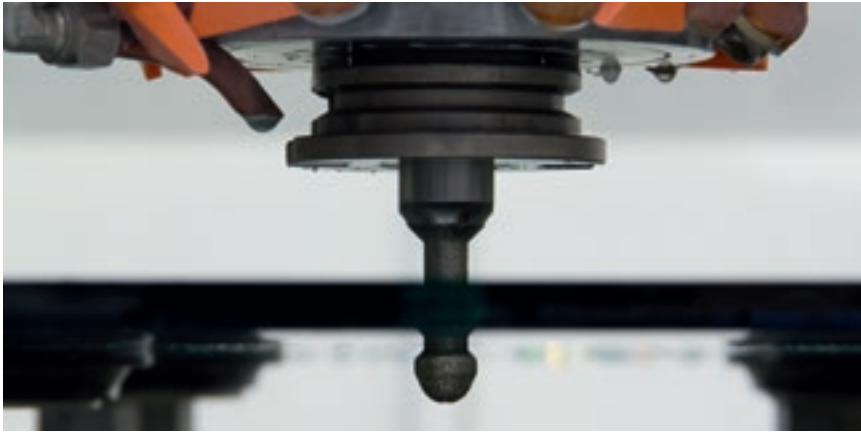


↙
Milling.



↙
Grinding and peripheral finishing.

3-axis machining guarantees optimum reliability and precision when creating doors, bathroom unit tops, shower enclosures or glass for household appliances and the automotive and electronic sectors.



Boring integrated with the Helix system.



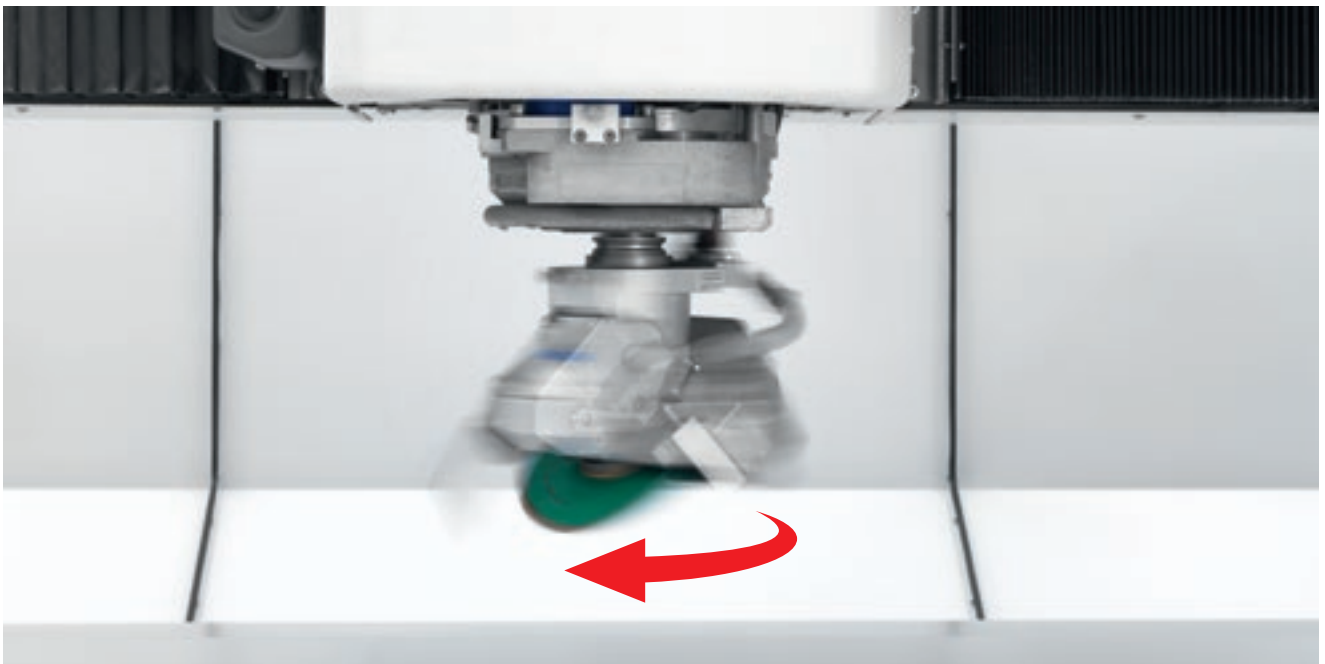
Boring from above.



Surface writing.

INCREASING PERFORMANCE

The possibility to configure the machine with the endless rotation C axis ensures the perfect execution of even the most complex machining operations in a smooth, accurate manner and heightens the potential.



Intermac aggregates guarantee top results with every machining operation.



Engraving with an aggregate.

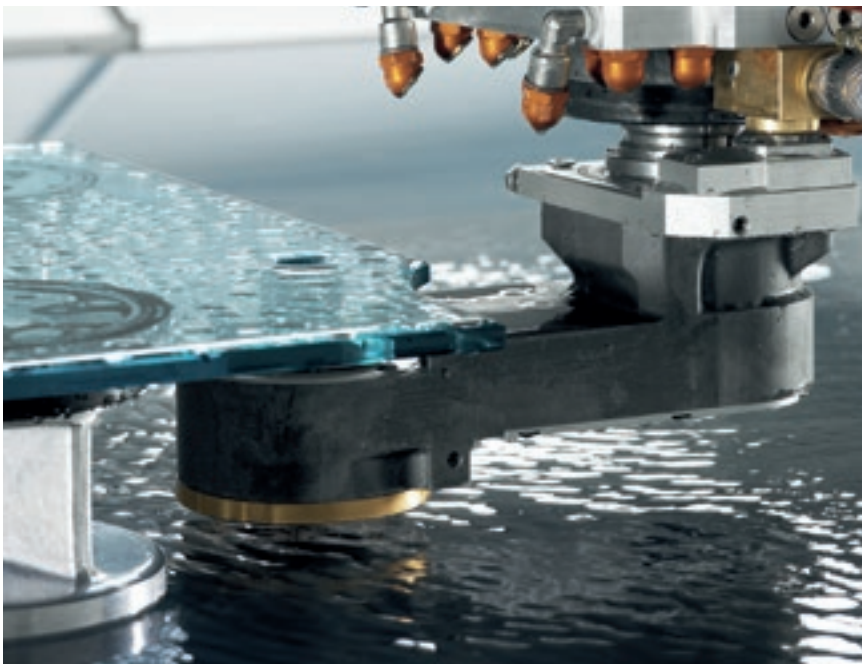


Cup grinding and finishing with an aggregate.

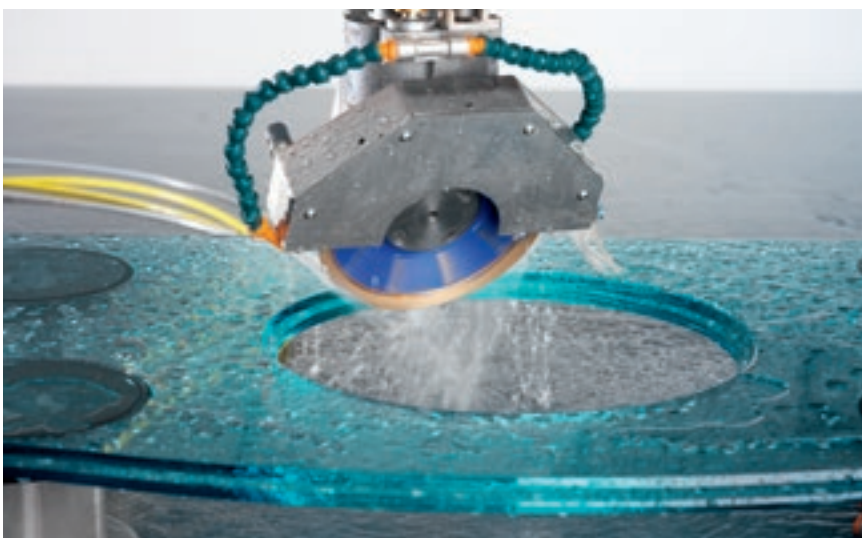
Master 23 can manage long, complex machining operations and also shorter ones for mass production, ensuring optimum results in both cases.



Drilling from below with an aggregate.



Saw disk.



INNOVATION

INTERMAC TECHNOLOGY

The high technological content of the world's most popular working centres satisfies the specific needs of the glass industry.

Configurations with 3 or 4 axes fitted with aggregates for managing a vast range of machining operations. For all the configurations, the components are the same as for the top-of-the-range solutions.

23

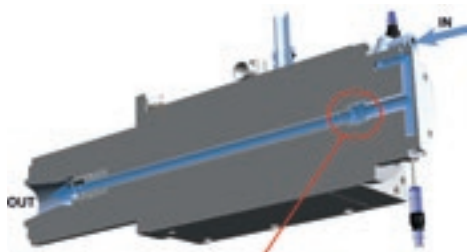


MAXIMUM MACHINING RELIABILITY AND PRECISION



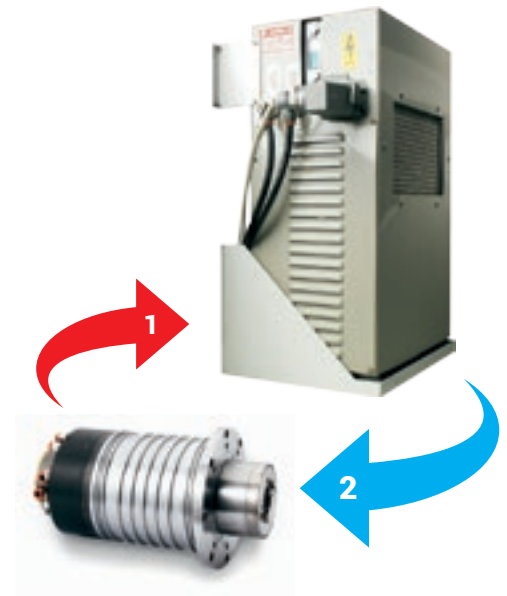
The Master range is fitted with spindles manufactured by HSD - a world leader in its sector. They guarantee optimum power, compact dimensions and extremely high finishing standards.

- ✓ **+60% spindle lifespan and noise reduction**
thanks to 4 ceramic bearings that offer greater resistance to mechanical stress.
- ✓ **Greater reliability**
thanks to the use of stainless steel and the 55mm spindle shaft.



DPC (patented) - Controlled loss distributor

A patented system that ensures excellent reliability and a long lifespan, thanks to the innovative seal system with no mechanical contact.



Optional **glycol-based cooling** systems with a closed circuit that guarantees constant results over time and resistance to the maximum machining stress levels.

1. **High-temperature fluid**
(cooling system with heat exchanger).
2. **Low-temperature fluid**



Master 23 is equipped with an integrated system for the automatic greasing of the movement axes, ensuring constant and precise maintenance every day.

The machine work table is an extremely rigid structure upon which is placed an aluminium worktable calibrated to grant maximum flatness of the work area, fundamental for first class machining results.

The machine is designed to work in twin-station mode too.

The beam is moved by means of twin-motor gantry technology to ensure greater accuracy and a longer lifespan.



FAST, PRECISE TOOLING



Rear tool change with casings for machining residue protection on the 18-position tool rack and cover, with automatic tool loading via the working unit.



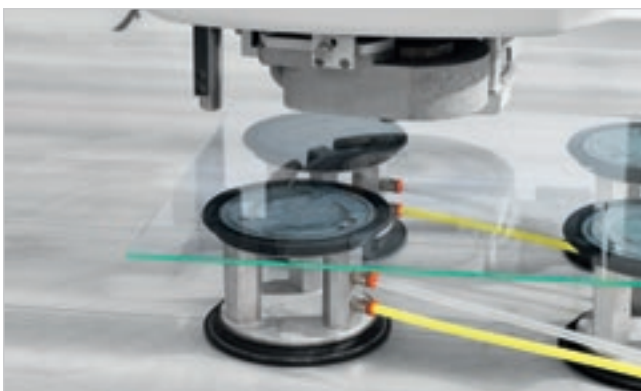
Tool change in 10 second

The fastest solution in the world of glass, thanks to the 8-position revolver magazine on the head.



Reading laser for the automatic recognition of the sheet orientation angle

Thanks to the laser scanner, the operator can position the sheet on any part of the work table (without having to make sure it's up against the stops). This reduces machining preparation times and the risk of errors. Speed and precision, for even more efficient production.



MACHINING QUALITY AND SPEED

Maximum results, thanks to the possibility to equip the machine with a series of optional elements using top quality components.



Master 23 can be fitted with the mechanical pre-setter which has a fully automatic system that quickly and simply ensures highly accurate and updated tool measurements during the machining processes, thereby avoiding any risk of error on the part of the operator.



Pressure intensifier for the external water

This is a circular wheel with small nozzles that increase the pressure of the external water. This optional device has a 3-position vertical movement to ensure that the water impact point is always the best one, regardless of the tool radius and height.

GLASS THICKNESS	STD SPEED	INCREASE
4mm	18m/min	+40% (up to 25m/min)
10mm	2.5m/min	+60% (up to 4m/min)
19mm	1.8m/min	+66% (up to 3m/min)

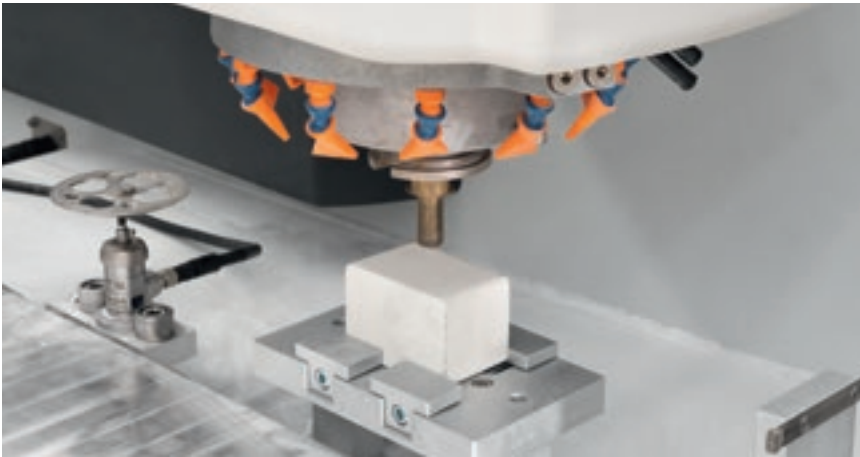


Quick piece locking system with vacuum, using the double pedal fitted on the machine as standard.

The optional dressing devices are positioned near the working area for fast, easy tool dressing operations that guarantee constant top quality and speedy execution. The dressers make Master 23 fully automatic, even for the longest machining operations, which means that manual operations are also simplified.



Drill dressing.



Finishing wheel dressing.



Diamond wheel dressing.



REVOLUTIONARY BORING

Helix is the Diamut tool that, when combined with Intermac software, exceeds all the limits of the traditional boring systems, using one single tool for all the boring, grinding and countersinking operations on glass sheets of up to 19mm.



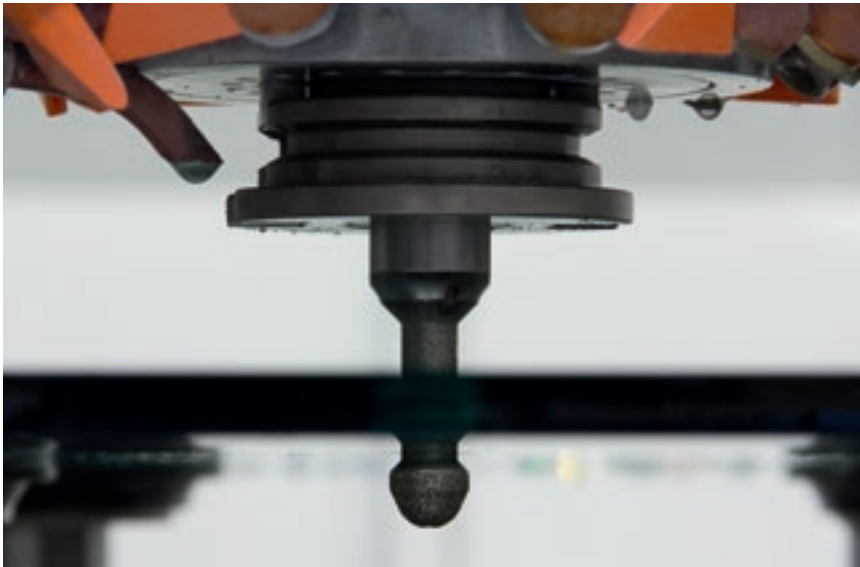
DEVELOPED, PATENTED QUALITY

Innovation created by a team of Diamut and Intermac experts, Helix Sistem is the perfect blend of hardware and software that emerges in the whole range of Master processing centres.

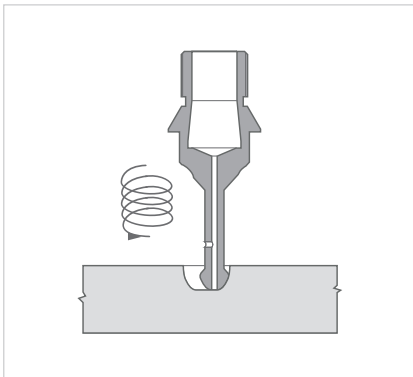
The new standard for boring operations.

Helix System was born of the desire to develop a revolutionary boring system unlike anything that has been seen on the market to date, capable of drilling holes with integrated upper and lower countersink on glass sheets up to 19mm thick, using a single tool on CNC machines.

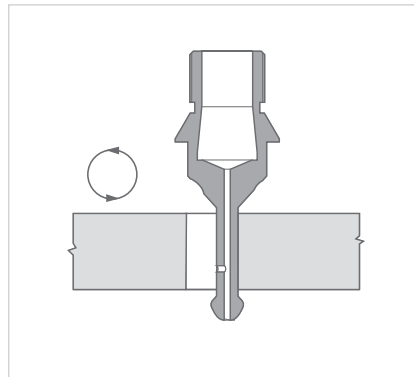
INTEGRATED BORING SYSTEM



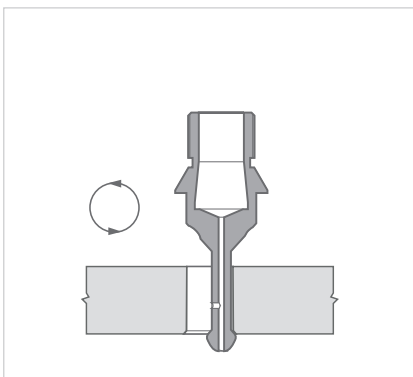
An innovative tool, managed by specific software.



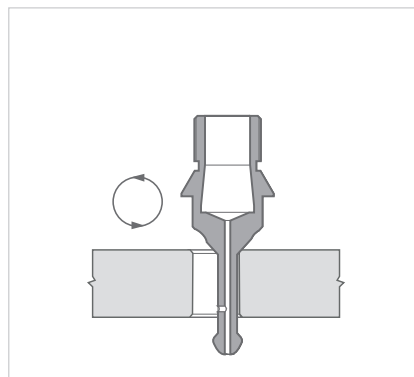
1_Boring with helical movement



2_Lateral grinding



3_Lower countersinking



4_Upper countersinking

- ▀ Maximum finish quality.
- ▀ Machining tolerances are halved.
- ▀ Holes with different diameters, with just one tool.
- ▀ Can also be used on laminated glass.
- ▀ Integrated upper and lower countersinking.
- ▀ Machining operations on any part of the sheet.
- ▀ Tool cleaning blow after the machining operation.

EFFICIENT PRODUCTION, WITH NO LIMITS

Master 23 can be perfectly integrated in a line with robots and loading/unloading systems. It's the ideal solution for those who need automated solutions for producing large batches (the household appliance field and the automotive, electronic and furnishing sectors).



MASTER 23 increases productivity and reduces production costs thanks to:

- ▀ **The possibility to work with twin stations,** with piece loading and unloading while the machine is running.
- ▀ **Reduced work time for the operator**
- ▀ **Simplification of the work for the operator,** who only needs to manage the racks at the start and end of the machining batch.
- ▀ **Machining operations that require no supervision and have no time limits (24/7)**

INDUSTRY 4.0 READY

Industry 4.0 is the latest industry frontier, based on digital technologies and machines that speak to the companies. The products can be interconnected with the production processes via smart networks.



Intermac's commitment is to transform our customers' factories with real-time technology, ready to guarantee digital manufacturing opportunities, with smart machines and software packages becoming vital tools that facilitate the daily tasks of people all over the world who machine glass, stone, metal and more. Our philosophy is a practical one: to supply entrepreneurs with solid data that can help them to lower their costs, optimise their processes and improve their results.

And that means being 4.0 ready.

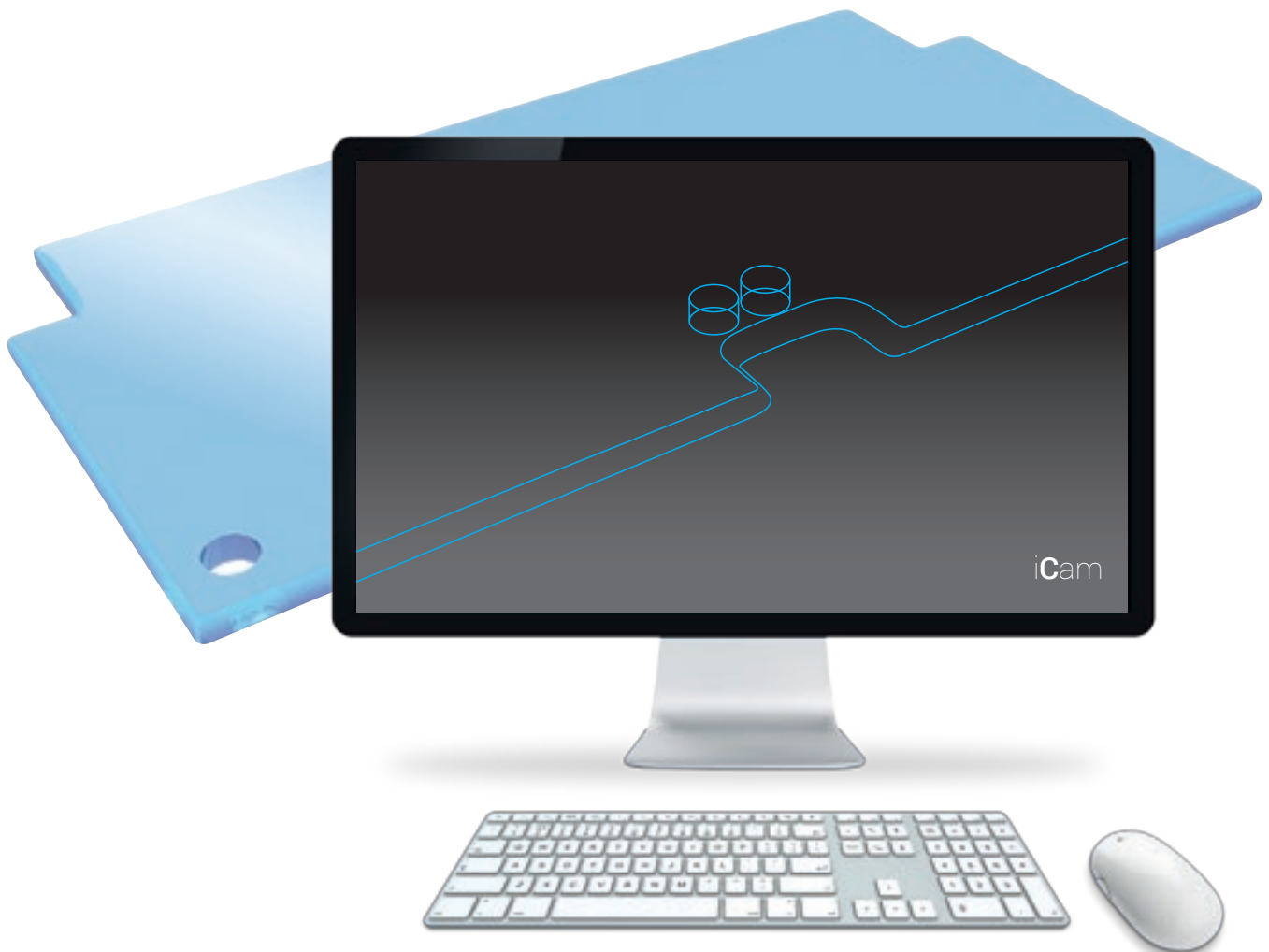
THE MOST SIMPLE ANSWER

WITH OVER 6,500 PACKAGES INSTALLED AND USED BY SATISFIED CUSTOMERS IN 180 COUNTRIES THROUGHOUT THE WORLD, ICAM IS A HIGHLY RELIABLE AND ROBUST SOFTWARE THAT COMBINES TOP PERFORMANCE WITH EXTREMELY EASY USE.

- **Ease of use**
A simple, powerful interface for working quickly and easily.
- **Time savings**
Positioning of stops and suction cups within the CAD/CAM environment, minimising tooling times even when the project is subject to modifications.
- **Innovative**
A unified interface for the CAD and CAM environments.
- **Automated**
The parametric library and "Indoor" module allow machining operations to be generated quickly and automatically in accordance with the item being created.
- **Service quality**
The expertise of the Service Worldwide network.

iCAM

**DESIGNED TO MEET THE REAL PROGRAMMING NEEDS
OF MASTER WORKING CENTRES, WITH THE AIM OF MAKING
THE JOB QUICKER AND EASIER. SOLUTIONS BASED
ON THE STANDARDS BUT FOCUSED ON THE FUTURE.**



PROTECTION AND SAFETY FOR ALL MACHINING OPERATIONS

Intermac has always paid the utmost attention to the health and safety of its customers. The protection of every operator during the use of the machine is of vital importance, preventing any possible distraction or error that could lead to inconvenience or even accidents.



One indispensable condition for obtaining any sort of financing is the respect of the machinery directives and workplace health and safety regulations.

With Master processing centres, the operator is protected by:

- ▀ Ergonomic front guards of a suitable height that are also explosion-proof (certified by external bodies with "detonation" tests) .
- ▀ Side and rear guards made of a metallic material subjected to special anti-corrosion painting cycles.
- ▀ Electric and pneumatic systems fully integrated in the machine and protected by closed doors .
- ▀ Inaccessibility of moving machine parts.
- ▀ A clean working environment (water and machining residues are not dispersed).
- ▀ Reduced noise levels, fully complying with the machinery directive.



Optimum convenience in the operations thanks to a hand-held terminal with:

- ▀ Quick, simplified positioning of the stops and suction cups thanks also to the possibility to tool the work table with the doors open.
- ▀ Simplified tool preparation, thanks to the optimum control of the working head directly on the piece to be machined, and no limits between operator and Master.
- ▀ Machining speed control.
- ▀ Emergency button always near the operator's hand.
- ▀ Start buttons for the two machining stations.
- ▀ A machining pause and restart button.

Extremely easy to use, thanks to the ergonomic console and user-friendly operator interface.

The use of a PC with the Windows operating system, makes it easy and intuitive for the operator.



SERV ICE & PARTS

Direct, immediate coordination of service requests between Service and Parts. Support for key customers from specific Intermac personnel, in-house and/or at the customer's site.

INTERMAC SERVICE

- ▣ Machine and line installation and start-up.
- ▣ Training centre for Intermac field technicians and subsidiary/dealer personnel; customer training directly at the customer's site.
- ▣ Overhaul, upgrade, repairs and maintenance.
- ▣ Remote diagnostics and troubleshooting.
- ▣ Software upgrade.

85

Intermac field technicians in Italy and worldwide.

20

Intermac technicians working in Teleservice Centre.

35

certified dealer technicians.

50

training courses in a variety of languages every year.



SERVICE TEAM

The Biesse Group promotes, cares and develops direct and constructive relationships with the customers to meet their needs, improve after-sales products and services through two dedicated areas: Intermac Service and Intermac Parts. With its global network and highly specialised team, the company offers on-site and on-line assistance and spare parts for machines and components anywhere in the world, 24/7.

INTERMAC PARTS

- ▀ Original Intermac spare parts and spare parts kits customised to suit the machine model.
- ▀ Spare part identification support.
- ▀ Offices of DHL, UPS and GLS couriers located within the Intermac spare parts warehouse, with multiple daily pick-ups.
- ▀ Optimised order dispatch time, thanks to a global distribution network with de-localised, automated warehouses.

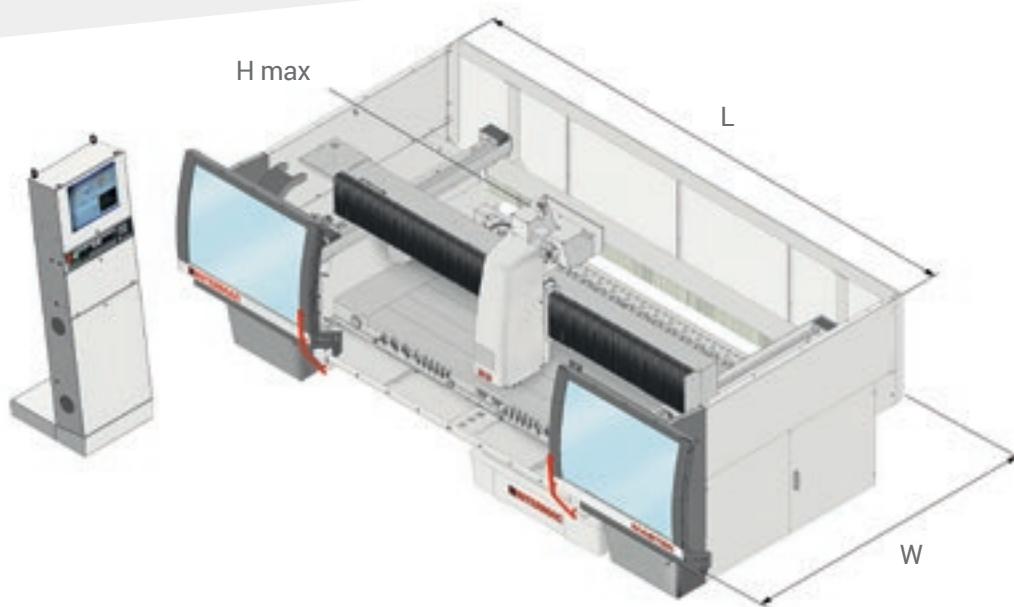
95%
of machine downtime orders dispatched within 24 hours.

95%
of orders dispatched on time.

30
spare parts staff in Italy and worldwide.

150
orders processed every day.

TECHNICAL DATA



MASTER 23

Maximum piece size for machining with a 100m grinding wheel (peripheral grinding)	mm	2500x1200 *
Z axis stroke	mm	275
Overall machine dimensions	mm	L: 5380 (doors open) L: 4700 (doors closed) W: 2680 H MAX: 2620
C axis stroke (optional)	mm	∞
Max axis speed (X - Y - Z)	m/min	60 - 30 -15
Work table height	mm	730
Electrospindle power	kW	9,2
Max electrospindle rotation	rpm	12000
Tool coupling		ISO 40
Rear tool magazine (optional)	positions	18
Tool magazine on head (optional)	positions	8 (6 if the C axis is fitted)
Working air pressure	bar	7
Max air consumption	NI/min	160
Internal water consumption	l/min	10.5

* Some optional elements may reduce the dimensions of the maximum machinable piece.

COMPLETE RANGE OF SOLUTIONS FOR GLASS



TABLES FOR FLOAT GLASS CUTTING



Genius RS-A

Genius CT-A series

Genius CT-PLUS

Genius CT-RED series

TABLES FOR LAMINATED GLASS CUTTING



Genius LM series

Genius LM-A series

MACHINES FOR LAMINATED AND FLOAT GLASS CUTTING



Genius Comby Lines

LINES FOR LAMINATED OR FLOAT GLASS CUTTING



Genius Lines & Systems

WATERJET



Primus series

DOUBLE ENDING MACHINES AND SYSTEMS



Busetti FK series



Busetti F series



Busetti P series



Customised solutions

WORK CENTRES



Master 23



Master ONE



Master 33.3-38.3-45.3



Master 33.5-38.5-45.5- 45.5 Plus



Master 63-65



Master 95



Master 185

SPECIAL WORK CENTRES AND AUTOMATIC CELLS

SPECIAL WORK CENTRES AND AUTOMATIC CELLS



Master with belts



Master working cell

WORK CENTRES ENGRAVING



Master 34

VERTICAL MACHINES



Vertmax series



V-Loader

VERTICAL WASHING MACHINES



Aqua series

TOOLS FOR GLASS



Diamut tools

STORAGE & HANDLING SYSTEMS

STATIC STORAGE



MOVETRO SERIES - Classifiers

CLASSIC DYNAMIC STORAGE



MOVETRO SERIES - Loading machines

INNOVATIVE DYNAMIC STORAGE FOR MASS PRODUCTION



MOVETRO SERIES - Shuttle storage systems

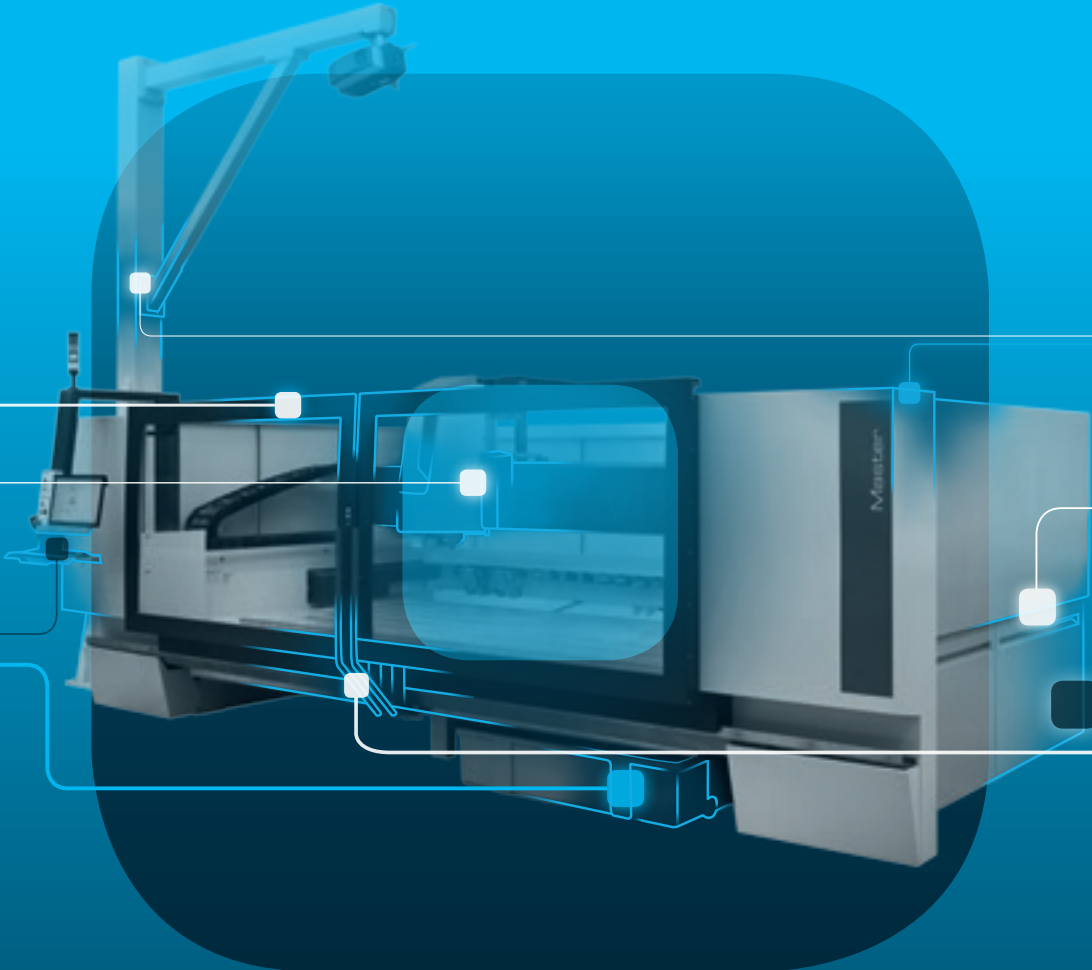
INNOVATIVE DYNAMIC STORAGE FOR DYNAMIC PRODUCTION



MOVETRO SERIES - Overhead crane - Telescopic loading machines - Arpa

SOPHIA

GREATER VALUE FROM MACHINES



SOPHIA is the IoT platform which enables its customers to access a wide range of services to streamline and rationalise their work management processes.

☐ SERVICES

☐ PREDICTIVE

☐ ANALYSIS

 **INTERMAC**

in collaboration with **accenture**

MADE WITH INTERMAC

GLASS ART AND CUTTING-EDGE TECHNOLOGY

"In Fiam's workshops, we have always tried to respond to designer ideas, even when they were apparently impossible to implement. Designers, like artists, have a creativity that stimulates cutting-edge innovation. So, over time, we have been able to develop new technologies that have allowed us to create unique objects on an industrial scale".

"Everything started with a stool. A glass stool, of course. A photographer friend came to see me in my glass workshop, saw me standing on the stool and took a picture that was published in some

newspapers. That's when I thought: why not try to make furniture with this material?"

From the first, self-built oven to bend glass sheets through to the first collaborations with artists and designers, it's been an ongoing learning curve.

Along with design innovation, Fiam has always invested in technological innovation too. In this respect, the partnership with Intermac for the development of solutions such as bilateral grinding machines and the Master processing centres range is a strategic one.

Our company has always worked in partnership with internationally-renowned Italian and foreign designers.

People like Massimo Morozzi, Rodolfo Dordoni, Giorgetto Giugiaro, Enzo Mari, Cini Boeri through to Vico Magistretti, Ron Arad, Makio Hasuike. Not forgetting Philippe Starck, Daniel Libeskind and Massimiliano Fuksas".

*Vittorio Livi,
founder and sole administrator
of Fiam Italia, Italy*

