Robotic cutting and deburring machine



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Work, commitment and passion are at home

After **designing and installing more than 500 robotic finishing cells** now it is clear that success depends on the ability to simplify and automate the supply chain.

Since 1985, we anticipate the needs of our partners to provide solutions to the foundries' requirements. We have metabolized the changes of the past three decades to **design machinery** in line with the latest market trends. Today, thanks to software and three-dimensional simulations, we are able to state the consumption, cycle times and finishing level of the part before the system is operational. A competitive advantage that is far from negligible.

We offer systems for various sectors (automotive, taps, lighting, furniture, plumbing etc.) with a common bond: total control. Over time, we have also organised services to monitor the efficiency of the machines as well as the production quality. The adoption of emerging technologies is also this, the right information at the best time.

Since 1996, our machines are working in 21 countries worldwide. In ten of these, including Germany, Austria, France, Spain, Turkey, Poland, China and Russia, we have a constant presence of dedicated agents and experts.





FROM THE DESIGN TO THE PRODUCTION

The technical and electrical office invests hundreds of hours to design and simulate every operation that the system will have to perform.

We are able to verify the feasibility of each operation, the time required or the most efficient system to achieve the desired result with the three-dimensional software support.

We think in terms of efficiency, for this reason each system is constantly checked during the entire development cycle. The time we invest in 3D design and cycle simulation brings many advantages, expecially during the installation phase: in fact, it takes only two working days from the delivery to the production start-up.



Meeting room





Mechanical processing area

System pre-assembly

Verification and testing phase







Standard Machines

Modern markets require flexible machines capable of satisfying different requests. Today, it is essential to adopt flexible solutions and concepts, our standard machines go this way. They are divided into specific models to work different part types by changing only certain accessories.

In addition to this, to produce an efficient and reliable system, **each standard machine, in collaboration with the client, can be carried out:** adding work units, modifying the loading/unloading systems, updating the vision systems and programming the software components.

They fall into the Standard category: AFC50P, AFC200P, RTS1200, AFC450, RBS550, GRD450, CDS600, and FDS900-1600.

The AFC50P, AFC200P, RTS1200 can be positioned in line and are designed to be placed into casting cells for cutting and deburring aluminium components.

The other machines (AFC450, RBS550, GRD450, CDS600, and FDS900-1600) are defined as Stand Alone. These are used for cutting, deburring and grinding operations. The right machine can be chosen depending on the material (aluminium, brass, bronze, steel or cast iron) and the size of the pieces to process.

Special Machines

Our standard machines are very flexible; sometimes there may be more special needs.

In these cases, we develop custom solutions. Our special work units are organised to optimize production times and costs even when there are particularly stringent constraints.

There are many reasons why we design special machines, among the factors that we have faced and solved more often in recent years are:

- The production of parts in large series
- Duty cycle limits
- Limited space dedicated to the machine installation
- Special process needs

In all these cases, we plan and verify with our staff the most effective way to satisfy our customer's needs at 100%.

MACHINE COMPARATIVE TABLE

		IN LINE	
	AFC50P	AFC200P	RTS1200
HANDLING	PART HANDLING	PART HANDLING	TOOL HANDLING
Max part size	Ø600 mm x h350mm	Ø800 mm x h800mm	Ø1200 mm x h1000mm
Max part weight	25kg	100kg	50kg
Robot Size	Payload 45 kg	Payload 205 kg	Payload 150 kg
MATERIAL PART	ALUMINIUM	ALUMINIUM	ALUMINIUM
Casting Technology	Die casting	Die casting - Gravity - Low pressure	Gravity - Low pressure
Disc cutting	•	•	•
Bend Saw cutting		•	
Filing	•	•	•
Deburring	•	•	
Grinding - Taping			
Milling	•	•	•
Sanding			
Drilling - Threading			
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AFC450	RBS550	GRD450	CDS600	FDS900-1600
PART HANDLING	PART HANDLING	PART HANDLING	PART HANDLING	TOOL HANDLING
Ø450 mm x h200mm	Ø550 mm x h250mm	Ø450 mm x h300mm	Ø600 mm x h320mm	Ø1600 mm x h600mm
25kg	from 20Kg up to 40kg	20Kg	20Kg	from 150Kg up to 200kg
Payload 45 kg	100kg	Payload 50 kg	150kg	150kg
ALUMINIUM	ALUMINUM-BRASS-BRONZE	STEEL-BRASS	CASTIRON	CAST IRON
Die casting - Gravity - Low pressure	Gravity - Low pressure	Die casting - Gravity - Low pressure		
•			•	
	•			
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•			•	•
•		•		
•			•	•
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ALUMINUM | IN LINE

AFC50P





Cutting Runner | Filing - Deburring | Milling

CAST IRON

STEEL

AFC50P PART HANDLING DIE-CASTING

The AFC50P is a machine engineered to be placed inside the die casting cell. It is designed to automate the cutting operations of the runner and the deburring and to simplify or eliminate the shearing mould. It also allows to save costs, logistics times and parts management.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø600mm H350mm
Max part weight:	25 kg
Equipment:	45 Kg Robot
	Cutting unit with 400 mm disk
	Turret revolver unit for pneumatic tools
	Milling electrospindles
	Exchanging part station
	Automatic door for loading shot blasting machine
	Supervision system
	One-block basement
	Safety cab



01 Detail of the cut pouring branch

02 Piece exchange station



ALUMINUM | IN LINE

AFC50P



03 Work unit: cutting unit, revolver turret and milling electrospindle

04 Filing tool

05 AFC50P

06 Filing tool







AFC50P

CAST IRON

ALUMINUM | IN LINE

AFC200P





Cutting Runner | Filing - Deburring | Milling

CAST IRON

STEEL

BRASS

BRONZE

ALUMINUM

AFC200P PART HANDLING DIE CASTING - LOW PRESSURE - GRAVITY

The AFC200P is a machine designed to be placed inside the die-casting cell. It was born mainly to automate the cutting operations of the casting branch and the deburring of large pieces. This machine can also be equipped with deburring tools.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø800 mm H800 mm
Max part weight:	100 kg
Equipment:	205 Kg Robot
	Cutting unit with 400 mm disk
	Vertical band saw
	Turret revolver unit for pneumatic tools
	Rotary table for loading-unloading parts
	Automatic gripper change
	Evacuator chip conveyor
	Supervision system
	One-block basement
	Safety cab
	Salety cab



01 Disc cutting unit

02 Guide Detail -Band saw blade



ALUMINUM | IN LINE

AFC200P



03 Vertical band saw

04 Inside of the machine

05 Cutting unit with disk and filing tool

06 Internal of the machine







AFC200P

BRONZE







ALUMINUM | IN LINE

RTS1200





Cutting Runner | Filing - Deburring | Milling

RTS1200 TOOL HANDLING LOW PRESSURE - GRAVITY

The RTS1200 is a machine with Tool Handling logic: the robot handles portable cutting and deburring units. This machine is particularly suitable for cutting and deburring castings which must be deburred along the entire mould closing line.

It is necessary to choose this machine when the castings are difficult to manipulate with a standard self-centering gripper.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø1.200 mm H1.000 mm
Max part weight:	50 kg
Equipment:	150 Kg Robot
	Portable disc cutting unit Ø 400 mm
	Portable deburring unit (electrospindles)
	Working unit warehouse
	Rotary table for loading-unloading parts
	Evacuator chip conveyor
	Supervision system
	One-block basement
	Safety cab



01 Mould closing milling line

02 Portable cutting unit



ALUMINUM | STAND ALONE

AFC450







LIGHTING



Cutting Runner | Filing | Deburring | Grinding - Taping | Milling | Sanding | Drilling - Threading

BRONZE

AFC450 PART HANDLING DIE CASTING - GRAVITY - LOW PRESSURE

The AFC450 is one of our most flexible deburring machines. It allows to combine numerous work units and match them with different tools and consumables to perform any deburring operation. This machine also boasts low production changeover times with practically zero retooling costs.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø450mm H200mm
Max part weight:	25 kg
Equipment:	45 Kg Robot
	Peripheral grinding device with 1/2/3 independent groups
	Orbital sanding group
	Cutting unit with 400 mm disk
	Turret revolver unit for pneumatic tools
	Drilling unit
	Threading unit
	Loading/unloading conveyor belts in PVC
	ERG7 Visualization system
	Evacuator chip conveyor
	Supervision system
	One-block basement
	Safety cab



01 Sanding group

02 Turret revolver unit for pneumatic tools

ALUMINUM | STAND ALONE

AFC450



03 Inside of the machine

04 Group of sanding

05 Loading conveyor belt with visualization system

06 Internal of the machine









ALUMINUM | STAND ALONE

AFC450



07 Drilling unit

08 Turret revolver unit for pneumatic tools

09 Operator's panel

10 Pneumatic flaring tool









ALUMINUM BRONZE BRASS | STAND ALONE

RBS550











Cutting Runner

PART HANDLING GRAVITY - LOW PRESSURE

The RBS550 is a vertical band saw machine designed to separate sprues and ingates from casting. It is characterized by a compact design, an extremely rigid structure, a 3-axis CNC robot and a high-performance blade guide.

The RBS manages to guarantee low cycle times, with precise cuts, constant and extremely close to the figure to be cut.

TECHNICAL SPECIFICATIONS:

RBS550

Max part size:	Ø550 mm H250mm
Max part weight:	From 20 kg up to 40 kg
Equipment:	3-axis CNC robot engineered by Trebi
	Vertical band saw
	Rotary table for loading-unloading parts
	Evacuator chip conveyor
	Supervision system
	One-block basement
	Safety cab



01 Cutting detail

02 Rotary Table



ALUMINUM BRONZE BRASS | STAND ALONE

RBS550



03 Inside of the machine

04 Inside of the machine

05 CNC

06 Cutting robot





ALUMINUM BR/



Y+

RBS550

ALUMINUM BRONZE BRASS | STAND ALONE

RBS550



07 Inside of the machine

08 Cutting detail

09 Table rotation

10 Cutting detail


ALUMINUM





STEEL AND BRASS | STAND ALONE

GRD450





TAPS



LIGHTING

HANDLES

Grinding - Taping

GRD450PART HANDLINGDIE CASTING - GRAVITY - LOW PRESSURE

First born of our family, GRD450 is the ideal machine for grinding aesthetic components. According to the customer's needs, the machine can be equipped with a maximum of nine independent grinding groups and standard or dedicated warehouses.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø450 mm x H300 mm
Max part weight:	20 kg
Equipment:	50 Kg Robot
	Peripheral grinding device with 1/2/3 independent groups
	Rotary table for loading-unloading parts
	Supervision system
	One-block basement
	Safety cab



01 Handle grinding

02 Grinding group



STEEL AND BRASS | STAND ALONE

GRD450



03 Grinding of taps

04 Grinding of furnishing components

05 Grinding of chair bases

06 Handle unloading belt





CAST IRON

STEEL

BRONZE

BRASS



CAST IRON | STAND ALONE

CDS600





Cutting Runner | Filing- Deburring | Milling

STAND ALONE

The CDS600 is designed to cut and deburr medium-sized cast iron components. Its particularity lies in the flexibility and ability to maintain high performance without compromising thanks to the possibility of using up to 4 diamond wheels.

TECHNICAL SPECIFICATIONS:

Max part size:	Ø600 mm x H320 mm
Max part weight:	20 kg
Equipment:	150 Kg Robot
	Tailstock device for clamping
	Robot seventh axis
	Cutting unit with 350 mm disk
	Deburring unit with 350 mm disk
	Milling tool
	Rotary table for loading-unloading parts
	Magnetic tape for chip conveyor
	Supervision system
	One-block basement
	Safety cab



01 Deburring spindle

02 Deburring spindle with diamond wheel



CAST IRON | STAND ALONE

CDS600



03 Inside of the machine

04 Inside of the machine

05 Loading/unloading table

06 Working unit





FDS900-1600







MANHOLES



FDS900-1600 TOOL HANDLING

The FDS, in both sizes, is the ideal solution for finishing large cast iron pieces. Both versions are organised on the Tool Handling concept: the robot handles portable cutting and deburring units with diamond tools.

The FDS is also equipped with a tool warehouse and automatic exchange system on the robot.

TECHNICAL SPECIFICATIONS:

Max part size:	FDS900: Ø900 mm x H600mm FDS1600: Ø1600x600 mm
Max part weight:	FDS900: 200 Kg FDS1600: 150 kg
Equipment:	150 Kg Robot
	Portable cutting unit with 350 mm disk
	Portable deburring unit (electrospindles)
	Working unit warehouse
	Rotary table for loading-unloading parts
	Magnetic tape for chip conveyor
	Supervision system
	One-block basement
	Safety cab



01 Deburring with diamond wheel

02 Portable cutting and deburring unit



BRONZE

SPECIALS CHAIR BASE CLEANING

The first example of a special machine is the cell customised for polishing chair bases.

The cell is equipped with a Fanuc R1000 Robot and 6 independent peripherals for polishing.

The loading storage is also equipped with 10 positions with a maximum capacity of 50 bases and a 3-level unloading belt.



CHAIR BASES CLEANING **| USA**



SPECIALS ROBOTIC DEBURRING CELL FOR CAR DOORS

The robotic cell designed for car door deburring is a special project equipped with 2 ABB IRB6700 Robots, 2 grinding peripherals and 2 working groups each.

The first group has a front motorisation while the second one has a rear motorisation.

The machine is also implemented by automatic gripper change storage, by a vision system and by loading/unloading part system with conveyors.



STRUCTURAL | POLAND



SPECIALS DIE-CASTING PRESS TENDING SYSTEM AND AFC50P FOR ENGINE BASE FRAME

The cell designed to finish engine base frame is made of die-casting press tending system and an AFC50P for cutting, deburring and part marking system.

Equipped with an ABB IRB6700 robot, the cell is implemented by an induction heating system for inserts and a castings cooling rack.

The process is controlled by a customised supervision and management software.





ENGINE BASE FRAME **| ITALY**



SPECIALS LINE FOR THE GRINDING TAPS

The line of robotic cells for grinding taps is a special project installed in the 90s and still running full time.

Each machine is equipped with a Fanuc M710iC/50E robot, 2 grinding peripherals with 2 or 3 independent work groups and rotating tap storages.



GRINDING TAPS **| ITALY**



TECHNOLOGY



01 | One-block basement

The base on which to fix the units has constant interaction over time between robots and components. This also facilitates cleaning because cables and pipes are always hidden from view.

02 | High rigidity robot

We use robots with high rigidity to obtain shorter cycle times. During processing the vibration reduction allows us to improve performance by reducing the cycle time and making tool life longer.

03 | Customised units and tools

Thanks to specific tools with 3D compensation systems we are able to guarantee a constant result over time with low costs. In fact, we apply commercial consumables for an extraordinary flexibility on our tools.

04 | Large variety of tools

The many types of tools which technicians handle can be equipped on our turret revolver. Our client may choose from 25 different tools, the ones best suitable for their production.

05 | Closed system

To offer a clean and safe working environment, aligned with the latest regulations (ATEX), we only produce with completely closed machines. The machine cabin increase safety (preventing access according to current standards), improve sound insulation and simplify the cleaning of the whole area.

06 | Intelligent 2D and 3D vision systems

To further optimise production, the AFC series can be equipped with various vision technologies. The systems offer from position tracking to geometry control.



PROCESSES AND MATERIALS

In Line Machines

The supply chain with in-line machines is a perfect mechanism in which each operation marks the time. Our machines **can be placed inside casting cells**, in a continuous flow between casting and finishing. This approach makes the machining part process continuous and much more effective.

In this way, it is possible to streamline and simplify the logistics between the phases and in some cases eliminate operations such as the part cutting.

Automating the supply chain also allows you to obtain product and process certification. Thanks to total control, the human factor is reduced and the parts benefit from it: always identical and in accordance with the specifications.

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RTS1200	page 24

Stand Alone Machines

The use of our stand alone machines allows us to significantly reduce production costs.

By introducing in production these cells you can **eliminate numerous manual operations**; they replace a lot of workers. Stand alone machines streamline the process, reduce risks and noise pollution, and improve the working environment and the life quality for workers.

Thanks to the reduction of specialised human resources, harmonise production by eliminating disputes: each part is the same as the previous one without the possibility of error.

AFC450	page 26
RBS550	page 32
GRD450	page 38
CDS600	page 42
FDS900-FDS1600	page 46

Aluminium

In the production of aluminium castings, our robotic finishing machines can be used in different stages of the process. They perform operations of runner cutting, deburring, grinding or complete polishing of the profiles. Furthermore, by using robotic cell as a machining centre, we can perform drilling and threading operations.

We have defined specific machine configurations to maximise performance or flexibility. There are solution in line or stand alone.

For us there is no absolute best solution, but only the one best suited to the customer's needs.

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Cast iron

The processing of cast iron parts requires the use of very specific machines and a deep material knowledge.

Aware of the forces necessary to cut and deburr this material at best, we have engineered units with far greater power than those normally used. We also use large-capacity robots with extreme rigidity to handle the parts.

Our attention to detail is able to make a difference in these fettling processes.

CDS600	page 42
FDS900-FDS1600	page 46

Steel and Brass

For the brass and steel production chain we offer only stand alone cells for finishing. These falls into three main categories: cutting, grinding and polishing. The three operations can not be combined because the runner cutting is always carried out before machining, grinding after that polishing takes place only at the end.

For cutting brass castings the best solution is to use machines with band blade cutting technology. This technology allows low operating costs and excellent speed. All our cutting machines are flexible and suitable for a much higher quantity of castings compared to disk cutting machines.

In grinding brass castings the machines require the use of specific robots as well as a configuration with many abrasive grinding belts. We know it well, because we have been manufacturing these machines since the 90s.

In most cases, after grinding, the polishing is carried out, this is carried out by manipulating the part on cotton brushes. Our machines can use different types of brushes, both in material and in size, according to the needs and the kind of polishing required.

RBS550	page 32	
GRD450	page 38	





TREBI TRAINING

The right conditions are needed to make the most of every machine. For this reason, for each cell we supply specific manuals and train the personnel who will be in charge to use the machine. In this way, the client has full autonomy to use and maintain the machine.

More trained human resources to maximise production.

TREBI MAINTENANCE

To keep the machine always at maximum efficiency we have developed an annual maintenance schedule.We check the conditions and replace everything you need to make the machine works at its best.

Periodic checks to extend the cell life time with zero production stops.

TREBI DATABASE

Having the information available at the right time can make a difference. How many parts did the machine produce and what code? What is the cycle time or how many units have been used? With our Trebi database software installed, it is possible to monitor numerous parameters in real time.

For more information on production just with one click. Industry 4.0 ready.



To keep a system in good "health", attention and supervision are necessary in the various phases of its life time. Thanks to an intrinsically safe cloud, we can connect to the machine to check its status and assist the client during programming.

The machine will always be at its best with our technical support.

TREBITOOLS

We only select certified partners and supply everything needed for production. We have a warehouse dedicated to a series of consumable materials suitable for processing parts (contact wheels, grinding belts, cutting disks, wheels, etc.)

With consumables always available, the client is free to produce better and without worries.



To minimize downtime we have organised a group of specialised technicians together with a well-stocked spare parts warehouse. In case of need, we are ready to make service by restoring full system operation as quickly as possible.

When time is short, organisation and expertise make the difference.

WORLD

Trebi worldwide

Since 2000, we have been working to consolidate our presence in foreign markets. Today our systems are present in 21 countries around the world including Germany, France, Austria, Spain, Switzerland, Turkey, the United States, Brazil, Sweden, Colombia, Poland, China, Russia, Belarus, Ukraine, Thailand and Southeast Asia. In ten of these, we have a constant presence of sales engineers and technicians.

The growth of exports is the result of advanced and flexible design solutions combined with our ability to always provide effective answers in a short time.





build up for perfection



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