





## COMI集团历史

1973 COMI公司，由合作伙伴恩佐·巴拉比奥先生和雷莫·塞尔托里先生创建于1973年8月，瞄准热成型机械的设计制造特别是在冰箱行业，迅速成长为领域内里程碑式的跨国企业。

1994 COMI开始设计制造塑料和复合材料用激光切割机（3轴和5轴），从而可为汽车工业客户提供完整的解决方案。

2008 Techmill公司加入COMI集团，成立专门生产CNC加工中心和水切割机床的公司。

2009 COMI与LDSA公司，法国水切割设备领域的领导者，达成合作协议，共同开发应用于汽车和航空领域的相关设备。

2010 与AMUT 公司，意大利挤出机领域的领导者，共同开发基于高压成型技术和高速节拍的门衬成型设备。

2011 收购CBM，一家专业从事包装领域成型机的小型公司，以完善COMI公司的产品系列。

2012 收购BENAZZATO，一家提供用于重金属比如钢和钛合金加工的高性能CNC加工中心的公司。

2013年COMI与AMUT携手成立AMUT-COMI公司，专注于包装领域自卷料开始的热成型设备的生产。

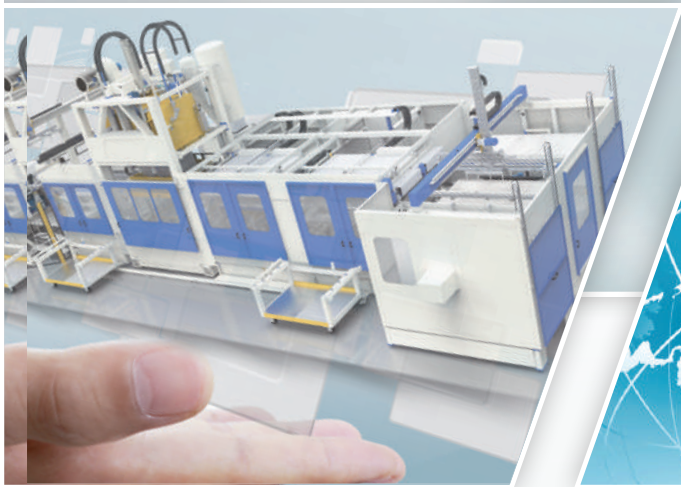
2014 凭藉超过三十年的在服务于热成型设备的压力机方面的生产经验，COMI开始进入复合材料、橡胶，热固材料用模压成型压力机的生产和市场推广。

2015 收购Parco公司及其专利技术，整合其与COMI 的技术和商务优势，专业服务于全球发达地区市场。

2015 成立贸易公司Quantum，从事设备工装和机械装备的市场开发和销售。

2016年 成立新的子公司COMTECH，为中北美地区的客户提供技术和商务服务。

2016年，收购Satech并成立COMI Satech，进一步提高在立式和卧式压力机翻新方面专业化水平，以及增强在SMC、GMT、LFT-D等复合材料部件生产的交钥匙工程上的能力。



## The history of COMI Group

1973 COMI is established in August by the two partners Enzo Ballabio and Remo Sertori, with the aim of designing and producing thermoforming machinery, specifically for the refrigeration sector, becoming in a short period of time a milestone for multinational corporations of the market.

1994 Starts the design and construction of Laser Cutting machines (3 and 5 axes) for plastics and composites, in order to supply a complete solution to its customers in the Automotive Industry.

2008 TechMill joins COMI group, setting the company dedicated to produce CNC Machining Centres for composite materials and WaterJet cutting machines.

2009 Partnership agreement with LDSA, French leading company in the waterjet cutting field, to jointly develop machines for the Automotive and Aerospace sectors.

2010 Cooperation agreement with AMUT SpA, Italian leading company in extrusion machines, to jointly develop a new range of machines for the production of inner doors machines with High Pressure technology and the fastest production output.

2011 Acquisition of CBM, Italian company specialized in thermoforming machines for the packaging field, in order to complete the COMI product range.

2012 Acquisition of BENAZZATO, Italian company producing CNC milling machining centres for high performance milling of heavy materials such as steel and titanium.

2013 COMI and AMUT join forces creating AMUT-COMI, focusing the company in the production of thermoforming from reel in the packaging field.

2014 Thanks to the 30+ years of experience in the production of presses for the thermoforming machines, COMI starts the marketing and manufacturing of compression presses for composites, rubber, thermosetting and special presses.

2015 Acquisition of Parco and its patents of advanced technologies, with the aim of joining its technical and commercial skills with the COMI ones to professionally serve the most developed global markets.

2015 Establishment of the trading company Quantum, marketing machine tools and mechanic's workshop equipments.

2016 The new subsidiary COMTECH USA is established to provide a technical and commercial service to its North and Central America customers.

2016 Acquisition of Satech and opening of COMI Satech, improving the press division with a professional service and revamping for vertical and horizontal presses, in addition to turn-key systems for the production of SMC, GMT, LFT-D composite materials parts.





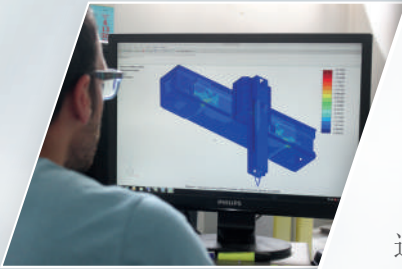
## 公司理念 *Our philosophy*

国际市场上的持续提高的竞争力，需要来自公司的成熟专业技术的支持。

产品的质量 and 最佳技术解决方案，只是一个起点，对于细节的关注才是差异化并打开成功之门的钥匙。

*The continuously increasing competitiveness on the International markets, requires the most skilled expertises from Companies.*

*The quality of the product and the best technical solution, are only a starting point, but is the care of details that make the difference and drive to "key to success".*



## 设计 / *Designing*

我们所有的设备均采用最先进的三维CAD系统设计、并经过结构优化分析、应力理论计算和有限元分析（FEM/FEA）。

这保证了设备在任何工作条件下的最佳性能和可靠性。

*All our machines are designed with the most modern three-dimensional CAD systems and the structural sizing and theoretical calculation of all the stresses are made by using the finite element analysis method (FEM / FEA).*

*The result is the best guarantee of product's performances and reliability in all working conditions.*



## 交钥匙工程 / *"Turnkey" project*

不局限于设备使用和培训的培训，而是我们所有的专业技能和诀窍都向客户开放。

对制造过程管理以实现最佳效率的重视只是我们最基本的要求，而对客户生产需求和设备定制的强烈关注，让我们总是能够为客户提供最优化的解决方案。

*Not only training courses for the use and maintenance of our machines, but all our know-how is at our Customers' disposal.*

*The engineering of the manufacturing process is of basic importance in order to achieve the best efficiency; the greatest attention to the customer's production needs and the setup of tailored equipments allow us to always offer the most efficient solution to our Customers.*



## 售后服务 / *After-sale service*

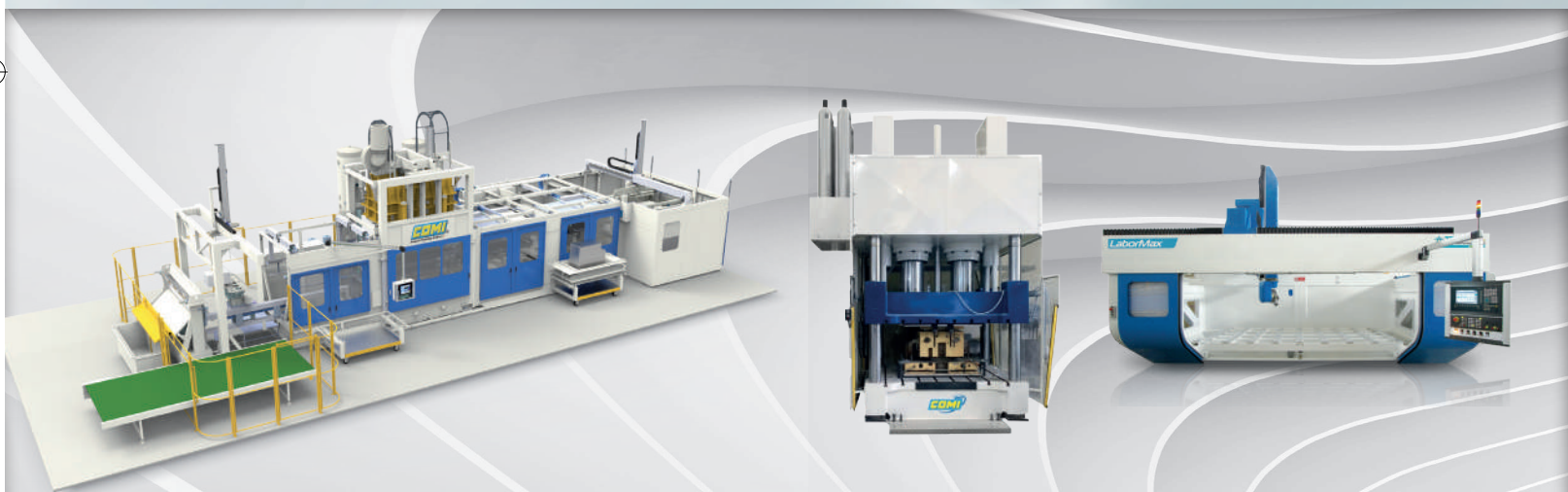
对于高效售后服务和快速备件获得渠道的重视，已经成为全球客户的一个基本要求。

采用最先进的可以在市场上方便获取的部件，以及所具备的优秀供应商网络，让我们可以快速有效地响应客户的需求。

*The importance of relying on an efficient after-sales service, and the rapid availability of spare parts, are now a basic requirement form Customers all over the world.*

*The use of the best components available in the market, and a network of qualified dealers, allows us to respond to this need in the most efficient and rapid way.*

# 技术 | *Technologies*



## 热成型

### 家电制造设备

- 热成型机
- 冲裁压机
- 冲裁模具

### 工业

- 单工位板成型机
- 下料设备
- 自动上料

### 热成型模具

## 压机

- 模压
- 注射压机
- 温控

## 数控加工中心

- CNC 铣床
- 水切割
- 激光切割

## 工程

- 交钥匙工程
- 喷涂单元
- 工作区

# 应用领域和材料

- |      |        |
|------|--------|
| 冰箱   | 木材     |
| 家电   | 复合材料   |
| 运动物品 | 塑料     |
| 医疗   | 玻璃钢    |
| 工装模具 | 碳纤维    |
| 汽车   | 低密度树脂  |
| 航海   | 高密度树脂  |
| 航空   | 铝      |
| 铁路   | 轻质合金   |
| 家具   | 钢铁     |
| 建筑   | 钛合金    |
| 再生能源 | 高级材料   |
|      | 玻璃     |
|      | 大理石和石材 |



# Application Fields and Materials

- |                    |                     |
|--------------------|---------------------|
| Refrigerators      | Wood                |
| Appliances         | Composites          |
| Sportive articles  | Plastics            |
| Medical            | Glass fiber         |
| Mould and plugs    | Carbon fiber        |
| Automotive         | Low density resins  |
| Nautical           | High density resins |
| Aerospace          | Aluminum            |
| Railway            | light alloys        |
| Furniture          | Steel and iron      |
| Architecture       | Titanium            |
| Renewable energies | Advanced amaterials |
|                    | Glass               |
|                    | Marble and stone    |

# 单工位LaborForma *Single station LaborForma*



## **Thermoforming** 热成型

LaborForma 成型机系列，适用于最大厚度8mm 的 HIPS/ABS/PMMA/PP塑料板材材料，最大厚度3mm的 PVC以及大约2mm的卷状材料。

设备用于生产任何热成型物品：车用物品（门板，仪表盘，保护件），卫浴家具物品（浴缸，浴盆，淋浴盆，淋浴墙），家用电器物品（冰箱，容器，真空吸尘器），灯饰，头盔等等。

LaborForma 是塑化和成型发生在一个工位的设备，工作台的换位通过伺服电机和功能件全自动实现，通过操作面板操作。

可以选用不同的加热器：陶瓷、石英或卤素。

上下料可以采用人工或自动方式，可根据生产要求的不同采用不同的技术方案，比如：自动上料器、链式输送装置、旋转台。

*The thermoforming machines of the LaborForma series, are suitable for working plastic sheet materials HIPS / ABS / PMMA / PP in cycle, with thickness up to approx. 8 mm, PVC up to 3 mm and also reel-to-reel up to approx. 2 mm.*

*These machines are suitable for the production of any thermoformed article: articles for cars (door panels, dashboards, protections), articles for the bathroom furniture (bathtubs, tubs, shower trays, shower walls), articles for household appliances (refrigerators, containers, vacuum cleaners), illuminated signs, helmets, etc*

*LaborForma is a single working station machine, where plastification and forming take place. The displacement of the planes is made by the servomotor and the functions, fully automatic, are handled by the operator panel.*

*Different type of heaters can be used: ceramic, quartz or halogen.*

*The material's loading/unloading can be manual or automatic, with different technical solutions according to the production requirements such as: automatic loader, chain conveyor, rotary table.*

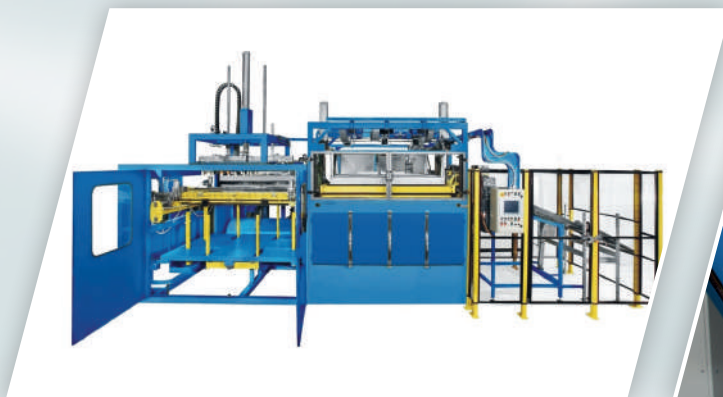
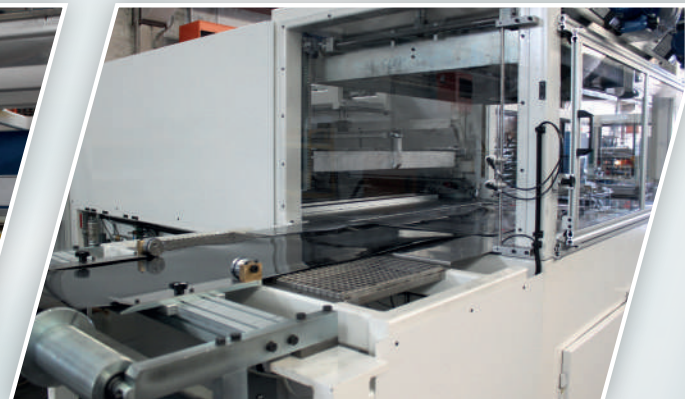




### 标准尺寸 / *standard dimensions*

1000x700x300* mm	1250x800x300* mm	1500x1000x300* mm
1500x1300x300* mm	2000x1000x300* mm	2000x1200x300* mm
2000x1500x300* mm	2200x1200x300* mm	2500x1500x300* mm
3000x1200x300* mm	3000x2000x300* mm	4000x2000x300* mm

\* 成型深度最高可达1300mm / *depth of the moulded pieces available up to 1300 mm*



# 真空成型 *Vacuum Forming*



**Thermoforming** 热成型

真空成型机Basicline 和 Superline系列由一系列连线工作站组成，可以全自动完成成型过程。

适用于板材材料（HIPS和ABS）的自动工作循环，厚度0.5-8mm

它是一种通用的系统，可以生产家用冰箱的内胆和门衬，不需要任何额外的调整。

Basicline设备配有单加热站，而Superline配有二个加热站。

成型过程通过模具内真空实现。

所有COMI连线机型可集成到客户的产品生产线。可以按照客户需求通过一系列选配项的选用以提高生产能力和效率。

COMI连线机型可以匹配切割和冲孔整体机械系统。

另外，通过TechMill，可以为工件的最后精加工配备数控铣削加工中心、水切割或激光切割设备。

*The thermoforming machines mod. BasicLine and Superline of Vacuum Forming line are composed of a series of in-line stations which make the forming process fully automatic.*

*They are suitable to work in automatic cycle plastic material in sheet (ABS and HIPS) with thickness from 0,5 up to 8 mm.*

*It is a universal system suitable for the production of household refrigerator inner doors and liners, which does not need any additional adjustment.*

*The BasicLine machine is equipped with a single heating station, while the SuperLine machine is equipped with two heating stations.*

*The forming process is obtained through the establishment of vacuum in the mould.*

*All in line COMI machines are planned to be integrated into the production lines of the customers. They can be equipped with a series of optionals which increase productivity and efficiency in accordance with the customers' requirements.*

*COMI in line machines can match the whole mechanical systems of cutting and drilling.*

*Furthermore, through TechMill, it is possible to provide CNC Milling machines, WaterJet or Laser Cutting machine for the finishing of the pieces.*

生产速度BLX / SLX

**Production speed BLX / SLX**

内胆 / Inner liners			门衬 / Inner doors		
HIPS	3,5 mm	Up to 90 pcs/h	HIPS	1,2 mm	Up to 190 pcs/h
ABS	2,8 mm	Up to 90 pcs/h	ABS	1,0 mm	Up to 190 pcs/h

标准尺寸 / *standard dimensions*

2000x900x600\* mm

2000x1000x600\* mm

2200x900x600\* mm

2200x1000x600\* mm

\* 成型件成型深度最大可达800mm / *depth of the moulded pieces available up to 800 mm*

生产速度 BasicLine 和 SuperLine 标准型

**Production speed BasicLine and SuperLine STANDARD**

内胆 / Inner liners			门衬 / Inner doors		
HIPS	3,5 mm	Up to 100 pcs/h	HIPS	1,2 mm	Up to 220 pcs/h
ABS	2,8 mm	Up to 100 pcs/h	ABS	1,0 mm	Up to 220 pcs/h

标准尺寸 / *standard dimensions*

2000x900x600\* mm

2000x1000x600\* mm

2100x1250x600\* mm

2200x900x600\* mm

2200x1000x600\* mm

\* 成型件成型深度最大可达800mm / *depth of the moulded pieces available up to 800 mm*



# 新一代 New Generation



## **Thermoforming** 热成型

真空成型机Basicline 和 Superline新一代系列由一系列连线工作站组成，可以全自动完成成型过程。

适用于板材材料（HIPS和ABS）的自动工作循环，厚度0.5-8mm

它是一种通用的系统，可以生产家用冰箱的内胆和门衬，不需要任何额外的调整。

成型过程通过模具内真空实现，而材料起泡阶段通过一套安装在成型站上部的“钟箱”执行。

成型过程通过模具内真空实现，而材料起泡阶段通过一套安装在成型站上部的“钟箱”执行。

不同型号的加热器可供选择：陶瓷、石英或者

Flash black（黑陶瓷），您也可选择阳模或阴模成型方式。

所有COMI连线机型可集成到客户的产品生产线。可以按照客户需求通过一系列选配项的选用以提高生产能力和效率。

COMI连线机型可以匹配切割和冲孔整体机械系统。

另外，通过TechMill，可以为工件的最后精加工配备数控铣削加工中心、水切割或激光切割设备。



The thermoforming machines mod. BasicLine and Superline of New Generation line are composed of a series of in line stations which make the forming process fully automatic.

They are suitable to work plastic material in sheet in automatic cycle (ABS and HIPS) with thickness from 0,5 up to 8 mm.

It is a universal system suited for the production of household refrigerator inner doors and liners, which does not need any additional adjustment.

The forming process is obtained through the establishment of vacuum in the mould, while the bubble stage of the material is executed by a "bell" located in the upper section of the forming station.

All the displacements are made by the Servomotor and the functions, fully automatic, are handled by the operator panel.

Different type of heaters are applicable: ceramic, quartz or flash back (black ceramic) and you can use positive and negative moulds.

All in line COMI machines are planned to be integrated into the production lines of the customers. They can be equipped with a series of optionals which increase productivity and efficiency in accordance with the customers' requirements.

COMI in line machines can match the whole mechanical systems of cutting and drilling.

Furthermore, through TechMill, it is possible to provide CNC Milling machines, WaterJet or Laser Cutting machine for the finishing of the pieces.

## 生产速度 BasicLine 和 SuperLine 新一代

### ***Production speed BasicLine and SuperLine New Generation***

内胆 / Inner liners			门衬 / Inner doors		
HIPS	3,5 mm	Up to 130 pcs/h	HIPS	1,2 mm	Up to 250 pcs/h
ABS	2,8 mm	Up to 130 pcs/h	ABS	1,0 mm	Up to 250 pcs/h

## 标准尺寸 / ***standard dimensions***

2000x900x600\* mm

2000x1000x600\* mm

2100x1250x600\* mm

2200x900x600\* mm

2200x1000x600\* mm

\* 成型件成型深度最大可达800mm / *dept of the moulded pieces available up to 800 mm*



# 压空成型 *Pressure Forming*



## *Thermoforming* 热成型

真空成型机压空成型机型由一系列连线工作站组成，可以全自动完成成型过程。

适用于板材材料（HIPS和ABS）的自动工作循环，厚度0.5-8mm

它是一种通用的系统，可以生产家用冰箱的内胆和门衬，不需要任何额外的调整。

成型过程通过模具内真空实现，而材料起泡阶段通过一套安装在成型站上部的“钟箱”执行。

不同型号的加热器可供选择：陶瓷、石英或者Flash black（黑陶瓷），您也可选择阳模或阴模成型方式。

与成型过程同时且为保持和强化真空动作，可以采用置于钟箱内部的压空成型（压缩空气2/4bar）。该类设备的另一个特点是采用快速成型件冷却系统，保证了高生产节拍和相当大的材料节约。



The thermoforming machines Pressure Forming are composed of a series of in line stations which make the forming process fully automatic.

They are suitable to work in automatic cycle plastic material in sheet (ABS and HIPS) with thickness from 0,5 up to 8 mm.

It is a universal system suited for the production of household refrigerator inner doors and liners, which does not need any additional adjustment.

The forming process is obtained through the establishment of vacuum in the mould, while the bubble stage of the material is executed by a "bell" located in the upper section of the forming station. All the displacements are made by

the Servomotor and the functions, fully automatic, are handled by the operator panel.

Different type of heaters are applicable: ceramic, quartz or flash back (black ceramic) and you can use positive and negative moulds.

In parallel with this forming process and just to keep up and strengthen the vacuum action, it is possible to use the Pressure Forming (compressed air 2÷4 bar) placed inside the bell. The other peculiarity of this machine is the use of the Cooling System which allows a rapid cooling of the thermoformed piece and ensures high production capacity as well as a considerable material saving.

## 生产速度 BasicLine 和 SuperLine 压空成型

### ***Production speed BasicLine and SuperLine Pressure Forming***

内胆 / Inner liners			门衬 / Inner doors		
HIPS	3,5 mm	Up to 180 pcs/h	HIPS	1,2 mm	Up to 300 pcs/h
ABS	2,8 mm	Up to 180 pcs/h	ABS	1,0 mm	Up to 300 pcs/h

### 标准尺寸 / ***standard dimensions***

2000x900x600\* mm

2000x1000x600\* mm

2100x1250x600\* mm

2200x900x600\* mm

2200x1000x600\* mm

\* 成型件成型深度最大可达800mm / *depth of the moulded pieces available up to 800 mm*



# 切割机 Guillotines

COMI单刀或双刀切割机可以完美集成到成型设备上执行内胆和门衬的剪切操作。可以选用不同的配置以满足工厂需求和生产节拍要求。

COMI has developed single or double blade cutting stations that can be perfectly integrated in the thermoforming plant for the execution of the contouring of the liners and of the doors. Different configurations are possible to meet the plant requirements and productivity.



双刀切割机  
DOUBLE BLADE GUILLOTINE



CF切割机  
CF GUILLOTINE

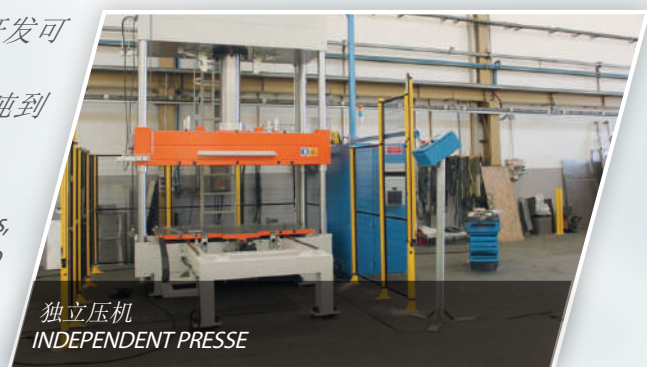


分离切断机  
SEPARATION CUTTING

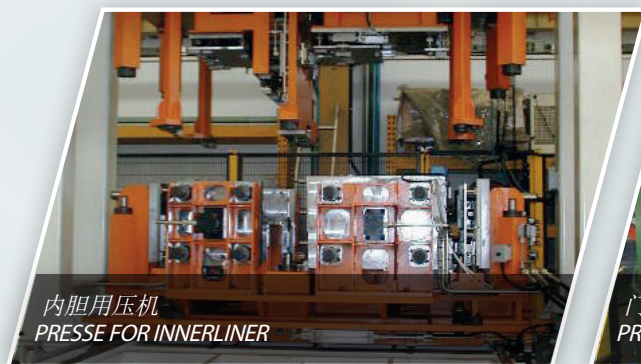
# 冲压机 Punching Presses

用于成型后内胆和门衬的冲孔，压机专门开发可以与成型机连线布置。压机锁模力按照不同的要求开发设计，从30吨到200吨。

For the punching of the thermoformed liners and doors, dedicated presses have been studied and realized in order to be put in line with the thermoforming machines. Presses with different closing force planes have been studied for the various solutions, starting from 30 tons up to 200 tons.



独立压机  
INDEPENDENT PRESSE



内胆用压机  
PRESSE FOR INNERLINER



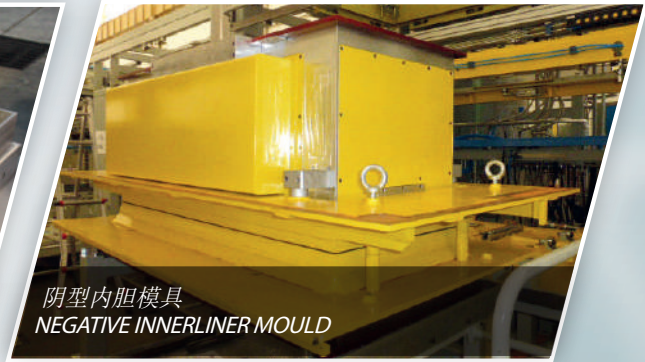
门衬用压机  
PRESSE FOR INNERDOORS



# 成型模具 Thermoforming moulds



双腔内胆模具  
DOUBLE CAVITY INNERLINER MOULD



阴型内胆模具  
NEGATIVE INNERLINER MOULD

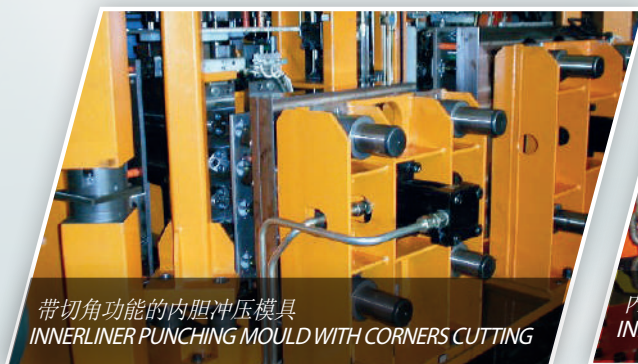


对开门内胆模具D  
SIDE BY SIDE INNERLINER MOULD

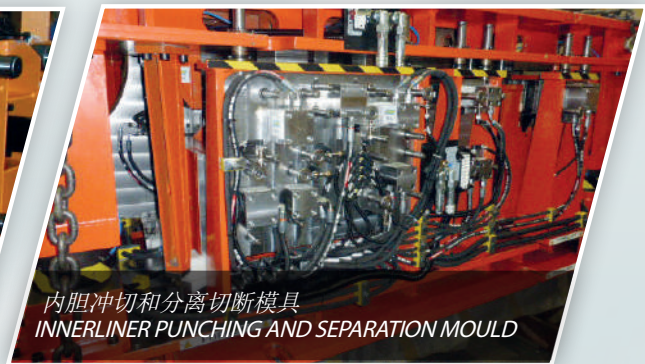
通过40年的长期经验，COMI可以提供高质量的成型模具，可以让客户获得更好的材料分布和更好的最终产品质量并伴随着性能的改善。

*Thanks to a long-standing experience gained in 40 years of activity, COMI is able to supply high-quality thermoforming moulds that provides customers with a better distribution of the material and a better definition of the end product with consequent improved performances.*

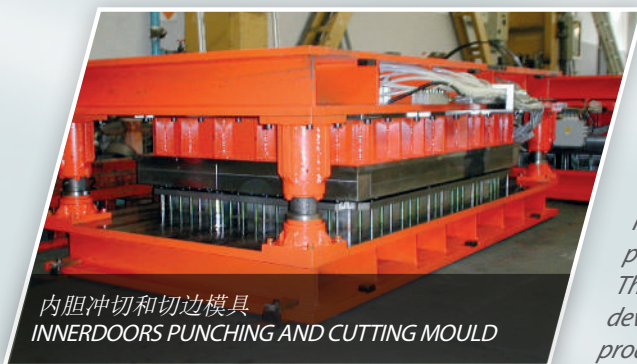
# 冲压模具 Punching moulds



带切角功能的内胆冲压模具  
INNERLINER PUNCHING MOULD WITH CORNERS CUTTING



内胆冲切和分离切断模具  
INNERLINER PUNCHING AND SEPARATION MOULD

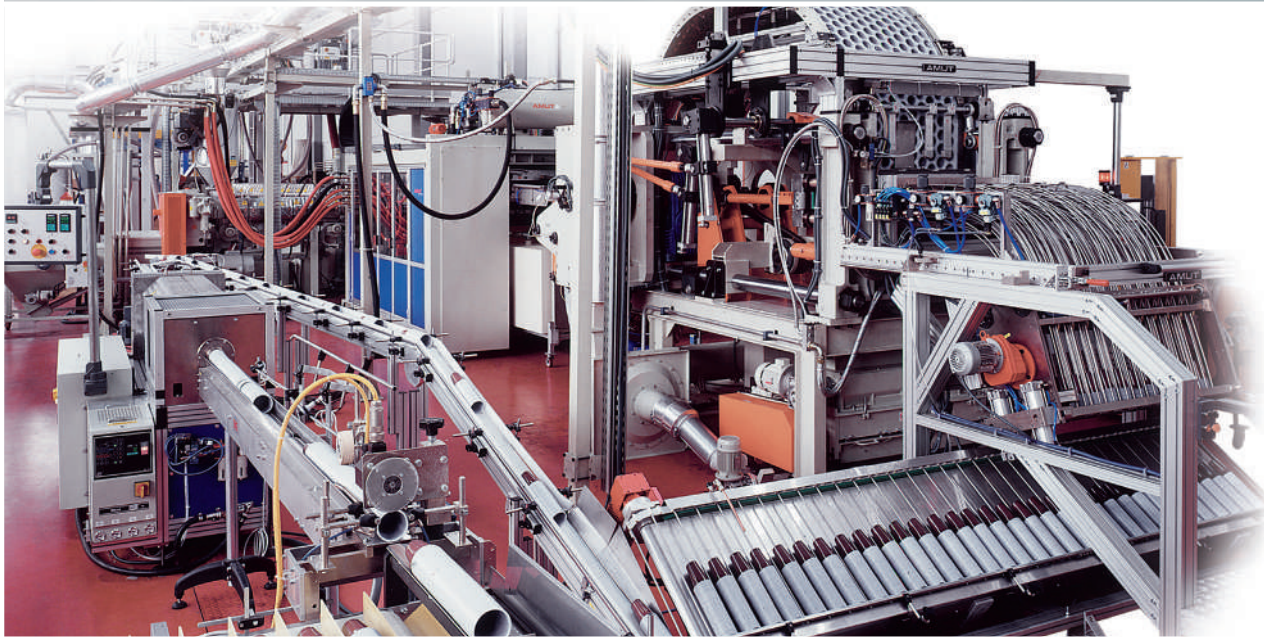


内胆冲切和切边模具  
INNERDOORS PUNCHING AND CUTTING MOULD

为完成生产循环，COMI也可以提供冲压模具用于工件的最后加工。在冰箱行业的直接经验让我们可以根据不同的生产需求提供最佳的技术解决方案。

*In order to complete the production cycle, COMI can also provide punching moulds for the piece finishing. The direct experience in the refrigerator field enables us to develop the best technical solution according to the different production needs.*

# Amut Comi



## Thermoforming 热成型

### 技术与专业化: 一个成功的结合

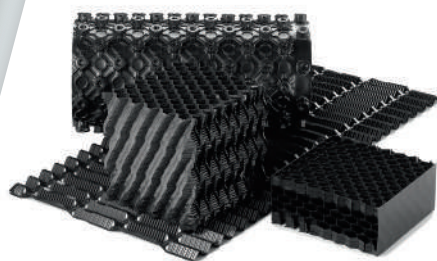
AMUT-COMI诞生于两个公司的联合合作: AMUT公司, 一家起步于诺瓦拉的有悠久历史的公司, 在塑料成型设备以及特别在卷料热成型机制造领域拥有超过55年的经验; COMI公司, 自十九世纪七十年代开始设计制造高端板料热成型机, 已经成为意大利冰箱市场此类设备的领导者之一, 并通过收购意大利CBM公司进入包装行业.

怀着挑战自我的激情以及技术进步的使命, AMUT-COMI期待成为所有热成型塑料产品制造商的合作伙伴.

### Technology and specialization: a successful meeting

AMUT-COMI was born out of a meeting between AMUT S.p.A., historical company from Novara, with over 55-year experience in the plastics processing construction plants and particularly its division for thermoforming machine from reel, and COMI S.p.A. that, from the 1970's, designed and manufactured high-level thermoforming machines from sheet, already a leader in the Italian refrigerator market and recently entered in the packaging industry through the acquisition of the Italian company CBM.

With a great passion for challenges and a natural vocation for technological development, AMUT-COMI wants to be a reference partner for all thermoformed plastics manufacturers.





### 模内成型和冲压

这些设备适用于材料为 PP, GPPS, HIPS, PET, PLA, PVC, 阻隔材料以及热塑材料的, 需要极高质量和精度, 甚至其材料带有明显收缩率的产品: 比如饮料杯和食品包装, 带低形位公差 of 容器, 和/或自动装填管线, 等等。

### In-mould forming and punching

These machines are suitable for products in PP, GPPS, HIPS, PET, PLA, PVC, barriered and thermoplastic materials in general, which require the highest quality and accuracy, even in case of materials subject to a remarkable shrinkable: such as cups for beverages and foods packaging, containers with low geometric tolerances and / or for automatic filling lines, etc.



### 压空/真空成型以及平板模切

高效解决方案用于盘碟、花盆、工艺和食品容器等的成型, 适用各种热塑材料 (PET, PS, OPS, PP, PVC, 阻隔材料等等)。

高度柔性: 大批量生产的高性能, 而低成本快速模具工装保证了小批量生产的经济性。

### Pressure / vacuum forming and steel rule die cutting.

Efficient solution for the thermoforming of trays, plates, lids, plant pots, technical and food containers with every thermoplastic material (PET, PS, OPS, PP, PVC, barrier materials, etc.).

Highest flexibility: high performances for large productions but quick tooling and moulds low cost allowing production of small batches economically.



### 特殊设备

AMUT-COMI为特殊产品提供特别的设计制造解决方案。这是一个按客户需求和市场趋势持续发展的产品门类。

### Special Machines

AMUT-COMI designs and manufactures special solutions for specific products. It is a continuously evolving range of machines developed according to customers' requirements and market trends.

# 压力机 Presses



Presses 压力机

COMI设计制造融合创新技术的压力机，用于新一代复合材料部件的生产，模压成型压力机以及注射成型压力机：每台压机都是“客户定制”，并保持一贯的高质量和与最新技术同步。

公司首先致力于成为优秀的工程合作伙伴其次才是一个压机供应商：成型技术和咨询，模具/加热炉供应，以及自动化。

COMI Satech 提供模压成型和注射压力机的专业化翻新改造，并从事100到2000吨模压成型压力机的生产制造。

*COMI designs and manufactures innovative presses for the production of new generation composites components, compression presses and injection presses for thermoset and rubber materials: every press is "customized", and is designed always including the latest technologies.*

*Our company works first as a qualified partner to analyze the customer needs and then as a reliable supplier for presses as well as technology, molds, automation and consulting.*

*ComiSatech performs full revamping of compression and injection presses, in addition to be a reliable supplier for extraordinary and standard maintenance services.*

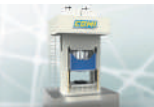
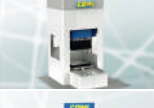

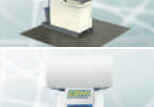
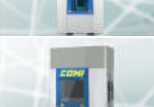




# 选择条件

## Selection criteria

✓ 最佳应用  
Best Application

✓ 推荐应用  
Suggested Application

	复合材料 COMPOSITES	橡胶 RUBBER	硅胶 SILICONE	树脂 RESIN	木材 WOOD	乙烯基 VINYL	铝 ALUMINIUM	航空航天 AEROSPACE	汽车 AUTOMOTIVE	船艇 MARINE	铁路 RAILWAY	风力 WIND	家用 HOUSING	军工 MILITARY	音乐 MUSIC	媒体 MEDICAL	电器 APPLIANCES	工业 INDUSTRIAL	
<b>Composite</b>	✓				✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<b>Carbontech</b>	✓				✓			✓	✓	✓	✓	✓		✓			✓	✓	
<b>Titanium R</b>						✓		✓	✓	✓	✓	✓				✓	✓	✓	
<b>Chrome R</b>		✓			✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<b>Aida R</b>		✓			✓			✓	✓	✓	✓	✓	✓	✓			✓	✓	
<b>Ermione R</b>		✓			✓			✓	✓	✓	✓	✓	✓	✓		✓	✓		
<b>Weldgum</b>		✓	✓					✓	✓	✓	✓	✓	✓	✓			✓	✓	
<b>Titanium TH</b>	✓			✓	✓			✓	✓				✓			✓	✓	✓	
<b>Chrome TH</b>	✓			✓	✓			✓	✓				✓			✓	✓		
<b>Develope</b>	✓	✓		✓				✓	✓	✓	✓		✓	✓		✓	✓	✓	
<b>Labortech</b>	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<b>Special</b>	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<b>Melody</b>						✓							✓						
<b>PVI</b>		✓	✓					✓	✓	✓	✓	✓	✓			✓	✓		
<b>HSP</b>							✓	✓	✓	✓	✓			✓			✓		

# 复合材料成形压力机

## *Composite presses*

COMI 复合材料模压成型机有整体框架式，立柱式上，下压板结构，应用于碳纤技术领域。

COMI所有复合材料模压成型机都可配置安装“APS”主动动态调平系统

The COMI presses for composites can be realized with monolithic frame or with column in the COMPOSITE series version, with two platens in the CARBONTECH series version.

All the COMI composite presses can be equipped with APS Active Parallelism System.

## COMPOSITE 2000

成形压力机COMPOSITE 2000 APS工作台尺寸3000\*2000, 整体框架结构配有APS主动并行系统。

*Press COMPOSITE 2000 APS platen 3000x2000 mm. Monolithic frame press equipped with Active Parallelism System. Press designed for the moulding of composite materials.*



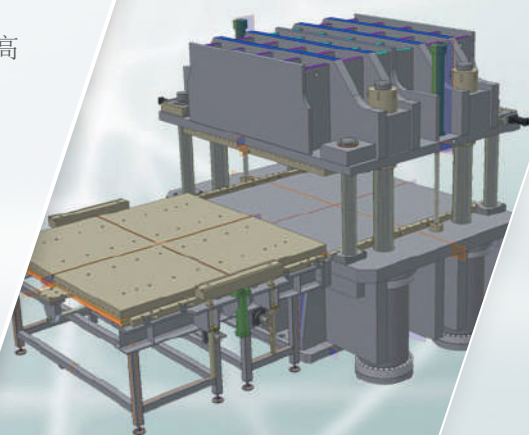
## CARBONTECH

双层压机带4套多更多套油缸，配有APS主动并行系统，用于高质量碳纤复合材料部件的生产。

Carbontech最佳应用领域是汽车和航空航天工业的碳纤复合材料部件的生产。

*Two floors press with 4 or more cylinders, equipped with active parallelism system APS, studied for the production of high quality composite material products in carbon fiber.*

*Carbontech has its best application in the production of carbon fiber components for the automotive and aerospace industries.*



# 橡胶成形压力机

## Rubber compression presses

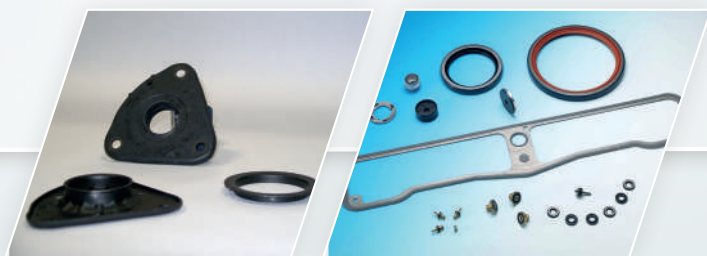
COMI 橡胶成形压力机采用整体框架或立柱式结构，配有向上或向下移动工作台。

The COMI presses for rubber comi can be realized with columns or with frame, with downward or upward of the movable plate.

### TITANIUM-R CHROME-R

成形压力机研发用于工程橡胶物品的模压成形，四柱式压机，TITANIUM系列配有向下运动式移动工作台。CHROME系列配有向上运动式移动工作台。

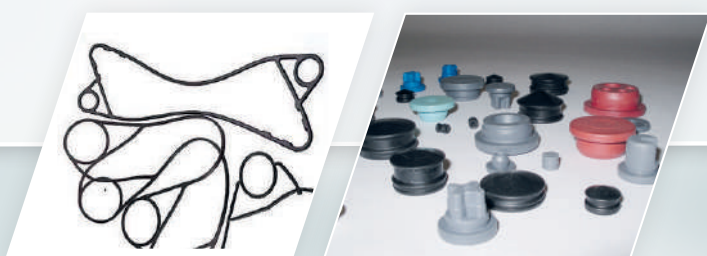
*Presses designed for the compression moulding of rubber technical items. They are 4 column presses with downward movement of the movable plate for the version TITANIUM and with upward movement for the version CHROME.*



### ERMIONE-R AIDA-R

成形压力机研发用于橡胶材料，橡胶盘的模压成形。整体框架式结构，ERMIONE系列配有向下运动式移动工作台。AIDA系列，配有向上运动式移动工作台

*Presse designed for the compression moulding of rubber items such as gasket, rubber plates. They are frame presses with downward movement of the movable plate for ERMIONE version and with upward movement for AIDA version.*



# 热固塑胶成形压力机

## *Thermosetting compression presses*

### TITANIUM-TH CHROME-TH

成形压力机研发用于热固树脂材料比如脲醛-三聚氰胺的模压成形，四柱式压机，TITANIUM系列配有向下运动式移动工作台。CHROME系列配有向上运动式移动工作台。

*Presse studied for the compression moulding thermosetting resins such as UREA - MELAMINA. They are 4 column presses with downward movement of the movable plate for TITANIUM version and with upward movement for CHROME version.*



# 实验室用压力机

## *Laboratory presses*

### DEVELOPE

DEVELOPE系列是设计用于实验室检测用小型压力机，四柱式结构，底部配有液压锁。

DEVELOPE系列压力机可配置：

- 真空室
- 双仓
- 网络连接

*Series DEVELOPE are small presses designed for laboratory tests. They are presses with a 4- columns structure with hydraulic bottom locking.*

*The series presses DEVELOPE can be equipped with:*

- V - Vacuum chamber
- DD - Double Deck
- LAN - Intranet connection





# 特殊压力机 *Special presses*

用于不同材料比如铝、橡胶或者注塑系统的垂直模压成形压力机系统，按客户特别需求定制。

*Plant for the vertical compression or injection molding of various materials. Systems designed on the customer's specific needs.*

## C-FRAME

C型压力机用于角部硫化，该压机采用整体结构，配有向下运动移动上台，结构坚固，刚性高。

移动工作台沿立柱运动。配有后进先出或先进先出注射器。

*CFrame press for corner vulcanization, the press is a monolithic press with downwards movement of the upper plate, strong and rigid structure.*

*Movable plate guide on columns. The press is equipped with injector tyoe LIFO or FIFO.*

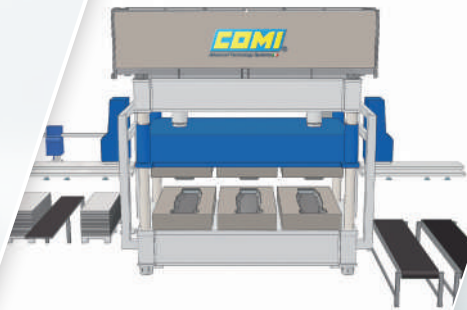


## HSP

压力机专门设计用于铝隔热板的模压成形，TITANIUM系列为四柱式压力机配有向下运动移动工作台，CHROME系列为框架式压力机配有向下运动移动工作台。

*The presses are specifically designed for the aluminum heat shields compression moulding. The HSP serie can be realized with column or with plates.*

*These high productivity presses can be equipped with APS system for the active parallelism control.*



# 注塑机器升级改造

## *Revamping of injection moulding machines*



**COMI**  
**SATECH**

我们的翻修改造可以在采用可靠原始结构件的基础上技术领先地重建注射成型压力机的性能

翻修工作可以涉及：

- 工作台的打磨
- 带反馈控制的液压系统
- 电气系统和电子控制的重新设计
- 新部件和新能力的应用，比如变频器，额外的注射组件，移动工作台等等
- 喷漆定制
- CE认证和24个月的新质保期
- 客户定制方案

翻修可能需要对设备的改造比如采用替代件或者增加适配双材料部件的注射组件。

*Our revamping allows to reconstruct injection moulding machines technologically advanced based on solid original structural elements.*

*The revamping activities can involve:*

- *Grinding of the platens*
- *Hydraulic system with feedback control*
- *Redesign of the electric system and control electronics*
- *Applicaion of new accessories and possibilities, such as inverters, additional injection groups, shifting platforms*
- *Customized painting*
- *CE certification and 24 months new warranty*
- *Custom-made solutions.*

*Revamping activities might be completed by the trasformation of the machine, for instance through the substitution or the addition of injection groups capable to obtain presses for bi-material components moulding.*

# 模压成型压力机的设计制造和翻修改造

## *Design, manufacturing and revamping of compression presses*



STV 100

STV 300

STV 500

STV 700

Comi Satech 设计制造100-2000吨的模压成型压力机，采用定制方式以完全满足客户的要求，并完全在意大利生产。

运动过程中的高精度和速度控制，保证了新材料（碳纤维、LWRT, LFT, SMC）的可靠成型

坚固、紧凑、便于安装，压力机的设计特别考虑了维护和安全。

*ComiSatech design and manufactures compression presses from 100 to 2.000 tons, customized to fully satisfy the operators needs and entirely produced in Italy.*

*Guarantees moulding of the most innovative materials (Carbon Fibers, LWRT, LFT, SMC) thanks to its precision and speed in the movement execution.*

*Solid, compact, easily installed, this presses are designed with particular attention to maintenance and safety.*

		STV 100	STV 300	STV 500	STV 700
锁模力 - Mould clamping force	KN	1000	3000	5000	7000
开模力 - Mould opening force	KN	100	300	500	700
开模行程 - Mould opening stroke	mm	1000	1200	900	800
工作台之间最大开口高度 - Max. daylight between platens	mm	1200	1300	1400	900
最小模具厚度 - Minimum mould thickness	mm	200	100	500	100
工作台外部尺寸 - External platens dimensions	mm	2350x1800	2350x2050	2360x1960	2600x1900
柱内空间 - Space between tie bars	mm	1975x1475	2000x1700	1800x1400	1900x1200
立柱直径 - Tie bars diameter	mm	125	125	180	250
工作台闭合速度 - Platens closing speed	mm/sec	500	500	350	200
工作台打开速度 - Platens opening speed	mm/sec	400	280	300	100
最大模压速度 - Max compression speed	mm/sec	25	30	25	25
工作台高度 - Working platen height	mm	800	800	750	850

# CNC数控加工中心-LABOR系列 CNC - LABOR line

Manufactured by



**CNC Milling** CNC数控铣削加工

Labor系列是通常用于塑料材料、玻璃钢、碳素纤维、复合材料的加工中心，也可加工铝材料。

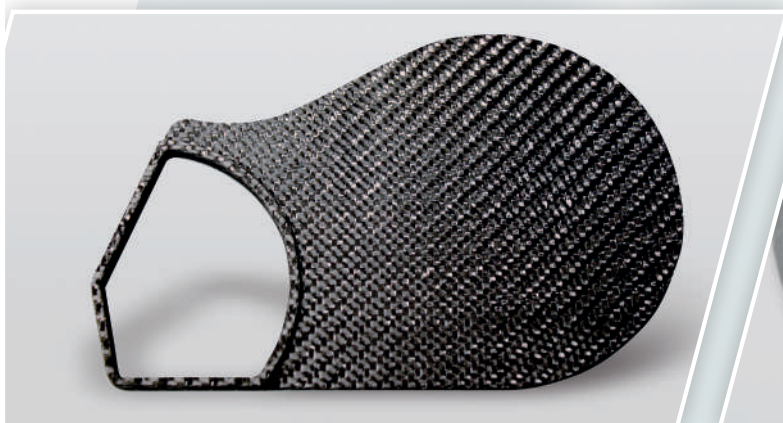
该系列按照生产类型和工件尺寸包含6个型号，特别适用于电器、家具、医疗、汽车和航海业的生产需求。

所有设备按国际上最严格的操作者和环境保护标准设计。

*Labor is the Machining Centre range dedicated to the manufacturing of plastic materials, glass fiber, carbon fiber, composites in general, up to aluminum.*

*The range consists of 7 models, according type of production and of size of the working piece, and is particularly suitable for the production needs in the fields of appliances, furniture, medical, automotive and nautical.*

*All machines are designed according to the most restrictive international standards in terms of safety for the operator and protecting the environment.*



# 选择条件

## Selection criteria

✓ 最佳应用  
Best Application

✓ 推荐应用  
Suggested Application

	复合材料 COMPOSITES	塑料 PLASTICS	树脂 RESIN	木材 WOOD	铝 ALUMINUM	轻质合金 LIGHT ALLOYS	钢 STEEL	钛合金 TITANIUM	航空航天 AEROSPACE	汽车 AUTOMOTIVE	游艇 MARINE	铁路 RAILWAY	风电 WIND	模具 MOLD	工业 INDUSTRIAL	
<b>LaborMix</b>	✓	✓	✓	✓					✓							
<b>LaborMax</b>	✓	✓	✓	✓	✓					✓		✓		✓	✓	
<b>LaborMac</b>	✓			✓		✓	✓		✓	✓					✓	
<b>LaborMidi</b>			✓		✓	✓									✓	
<b>LaborShape</b>		✓		✓		✓	✓		✓						✓	
<b>LaborMarine</b>	✓		✓	✓	✓					✓	✓					
<b>LaborWind</b>	✓		✓	✓	✓				✓		✓		✓			



## LaborMix

LaborMix 为5轴加工中心，设计用于加工塑料和复合材料，是用于“修整”的理想选择。按照工作头的配置，也可以用于小模具或模型。

*LaborMix is a 5 axes working center designed for machining of plastics and composites materials, ideal for “trimming” and, according to the working head configuration, can also be used for the working of small moulds and/or models.*

	轴行程 / Axis strokes	速度 / speed
X	2500-3000-4100-5100-6100 mm	80 mt/1'
Y	1500-2100-2600-3100 mm	80 mt/1'
Z	900-1200 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	2.2-12 kW
扭矩 / Torque	0,7-9,5 Nm
速度 / Speed	18.000-40.000 rpm



## LaborMax

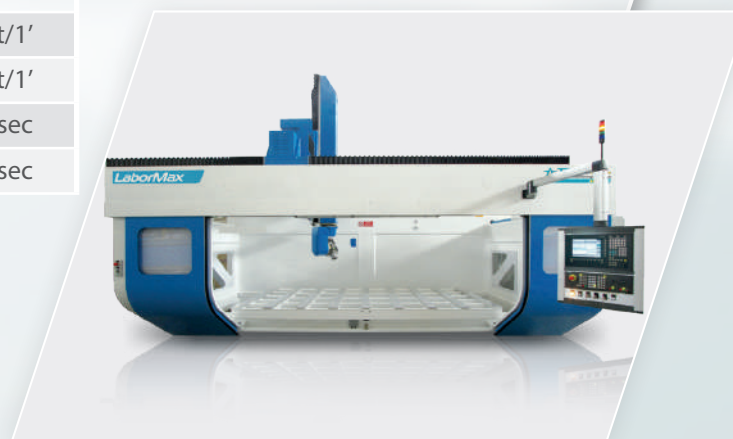
LaborMax 是Labor系列加工中心中万能型客户定制型号，设计用于相关软材料比如木材、玻璃钢、塑料，乃至硬材料比如碳素纤维、复合材料和铝合金的加工。

*LaborMax is one of the most versatile and customized model among the “Labor” range of CNC Machining Centers; designed to satisfy the milling requirements for relatively soft materials such as wood, fiberglass, plastic, up to harder materials such as carbon fiber, composites and aluminum alloys.*

	轴行程 / Axis strokes	速度 / speed
X	3200-4200-5200-6200 mm	80 mt/1'
Y	2000-2600 mm	80 mt/1'
Z	900-1200 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	10-18 kW
扭矩 / Torque	9,5-13,5 Nm
速度 / Speed	18.000-40.000 rpm



# LaborMac

LaborMac 是一种五轴加工中心开发用于优化铝和复合材料模具和部件的加工。在Y轴上的带整体式结构的移动龙门架具备极高的刚性限制了振动的产生从而帮助实现在高速度下的高质量。

LaborMac A型，专用于汽车领域的铝件加工，配有高稳固工作头、化学水冷系统，带T槽的钢平台和两套料屑输送装置。

C型，配有油雾装置，用于复合材料和树脂造模和修整加工。

*LaborMac is a 5-axis machining center specifically developed to optimize the machining of molds and parts in aluminum and composite.*

*The extreme rigidity provided by the monolithic structure with Gantry type mobile portal on the Y axis, significantly limits the vibrations helping to achieve very good quality even at high speeds.*

*LaborMac version "A", dedicated to aluminum machining typical of the automotive sector, is equipped with a working head of higher robustness, tool's cooling system by chemical water, steel table with T-slots and two chips conveyors.*

*The version "C", equipped with Oil Mist, offers instead high performance in modeling and trimming of composite materials and resins.*

Version C



Version A



轴行程 / Axis strokes		速度 / speed
X	2600 mm	80 mt/1'
Y	1500 mm	80 mt/1'
Z	1000 mm	60 mt/1'
A (*)	+/- 120°	40 mt/1'
C (*)	+/- 365°	30 mt/1'

主轴参数 / Spindle features	
功率 / Power	15 kW
速度 / Speed	24.000 rpm

\*工作头规格可变 / Variable depending on the head type

## LaborMidi

LaborMidi 是一种带有整体底座和移动“门架”，配有两侧滑动导轨的数控加工中心。基础3轴型号带垂直工作头，是加工复合材料面板和/或铝合金的理想选择，另外也有5轴型号。两种型号都充分考虑到了最严格的安全规则。

*LaborMidi is a CNC Working Center with monolithic basement and mobile "gantry" portal with double sliding guides for both sides; The basic 3-axis version is with vertical head, ideal for machining panels composites and/or aluminum, while a 5-axis version is also available. Both versions are arranged to be completely "caterized" as to comply with most severe safety regulations.*

轴行程 / Axis strokes		速度 / speed
X	2000-3000-4000 mm	80 mt/1'
Y	2000-15.000 mm	80 mt/1'
Z	300-750 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	15-40 kW
扭矩 / Torque	13,5-40 Nm
速度 / Speed	6000-30.000 rpm



## LaborShape

LaborShape 是一种带上横梁的加工中心，实际用于铝和轻质合金的高速加工，表面精加工精度最高。设备刚性极高，四面封闭，工作头带两个旋转轴上的“双驱动”，这是该型号的主要特征。

*LaborShape is a Working Centre with mobile upper traverse, designed for high speed machining on of aluminum and light alloys models, with the highest surface finishing. Machine structure extremely rigid, closed on all 4 sides and working head with "dual drive" on both rotary axes, are the main features of this model.*

轴行程 / Axis strokes		速度 / speed
X	1200-2000-2500-3000 mm	40 mt/1'
Y	1200-6000 mm	40 mt/1'
Z	1050-1600 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	22-30 kW
扭矩 / Torque	28-45 Nm
速度 / Speed	12.000-30.000 rpm





## LaborMarine

LaborMarine设计用于因为工件尺寸大而需要大工作面积和最大上下操作可达条件的场合，典型领域是航海建模领域，该设备首次开发用于此领域，目前在铸造建模领域被广泛赞誉。

*LaborMarine is designed to have large working areas and maximum accessibility for the loading/unloading operations, because of the big dimensions of the working pieces. Typical requirements for the nautical modeling sector, for which the machine has been first designed, though today this machine is particularly appreciated by the foundry modeling sector.*

轴行程 / Axis strokes		速度 / speed
X	2600-8000 mm	80 mt/1'
Y	2600-50.000 mm	80 mt/1'
Z	1200-2000 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	10-22 kW
扭矩 / Torque	9,5-18 Nm
速度 / Speed	18.000-24.000 rpm



## LaborWind

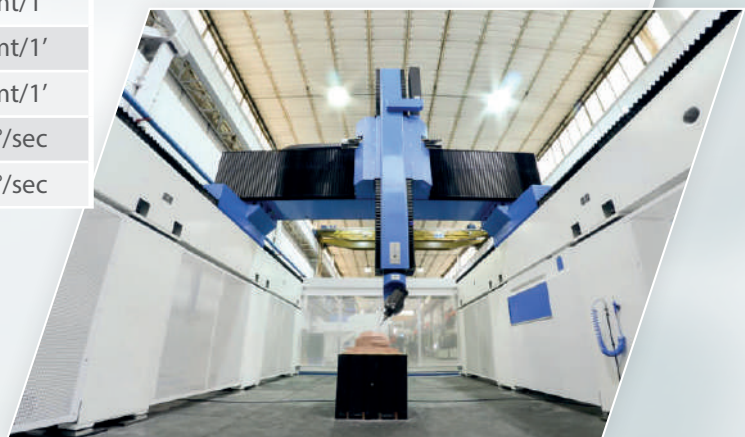
LaborWind是开发用于大工作区域特别是在Z垂直轴方向的加工中心。高架移动式龙门框架，架设在两侧的钢铁或混凝土支撑上，可以覆盖最大的工作表面而不影响基本的设备结构。

*LaborWind is the family of working centers developed for working applications requiring the largest working field, especially for the "Z" vertical axis. The overhead mobile portal structure, standing on lateral supports made of steel or reinforced concrete, allows to cover largest working surfaces without influencing the basic machine structure.*

轴行程 / Axis strokes		速度 / speed
X	2600-8000 mm	60 mt/1'
Y	2600-50.000 mm	60 mt/1'
Z	2000-4500 mm	30 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	22-30 kW
扭矩 / Torque	28-45 Nm
速度 / Speed	12.000-30.000 rpm



# CNC数控加工中心-VENTOR 系列 CNC - VENTOR line

Manufactured by



**CNC Milling** CNC数控铣削加工

Ventor是一种高性能加工中心，用于加工金属和高级材料，从铝和复合材料直到特种钢和钛合金。

特别设计用于最大需求来自于汽车和铁路领域的生产要求，但也特别考虑到了航空航海和航天业的应用。

产品范围包括8个不同配置的型号，比如带移动十字头、移动门架、移动和旋转台或移动立柱，以实现特定生产加工要求的最佳匹配。

*Ventor is the Machining Centre range of high performances, for the machining of metals and advanced materials, from aluminum and composites up to the special steels and titanium.*

*Specifically designed to match the most demanding production needs from the automotive to the railways sectors, but with special regards to the aeronautical and aerospace industries.*

*The range consists of 4 different models in various configurations, with moving crosshead, mobile gantry, moving and rotary table, or travelling column, as to match at the best the specific production requirements.*



# 选择条件

## Selection criteria

✓ 最佳应用  
Best Application

✓ 推荐应用  
Suggested Application

	复合材料 COMPOSITES	塑料 PLASTICS	树脂 RESIN	木材 WOOD	铝 ALUMINIUM	轻合金 LIGHT ALLOYS	钢 STEEL	钛合金 TITANIUM	航空航天 AEROSPACE	汽车 AUTOMOTIVE	船艇 MARINE	铁路 RAILWAY	风电 WIND	模具 MOLD	工业 INDUSTRIAL	
<b>VentorFast</b>					✓		✓		✓							
<b>VentorMaster</b>					✓		✓	✓		✓						
<b>VentorPower</b>						✓		✓	✓	✓						
<b>MonnaLisa</b>					✓		✓		✓							



## VentorFast

VentorFast是一种3轴加工中心，带有移动门架，用于钢和特种合金件的加工。

这是3个型号的第1个，按照主轴参数和设备结构进行区分。

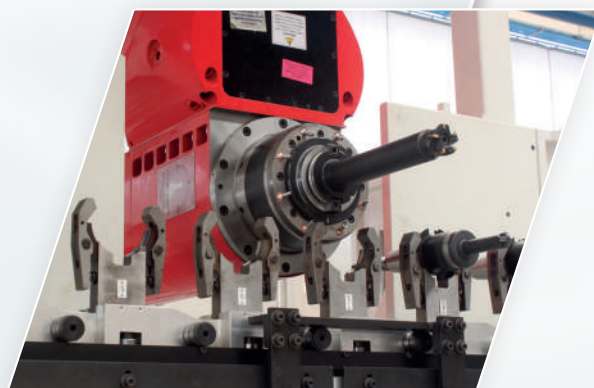
*VentorFast is a 5-axis machining center with mobile portal gantry type, for machining of steel and special alloys parts.*

*It is the first of the three models, differing among themselves according to the required spindle features and consequently the machine structure.*

轴行程 / Axis strokes		速度 / speed
X	2000-20.000 mm	60 mt/1'
Y	1600-4000 mm	60 mt/1'
Z	1000-2000 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	10-65 kW
扭矩 / Torque	40-180 Nm
速度 / Speed	5000-30.000 rpm



## VentorMaster

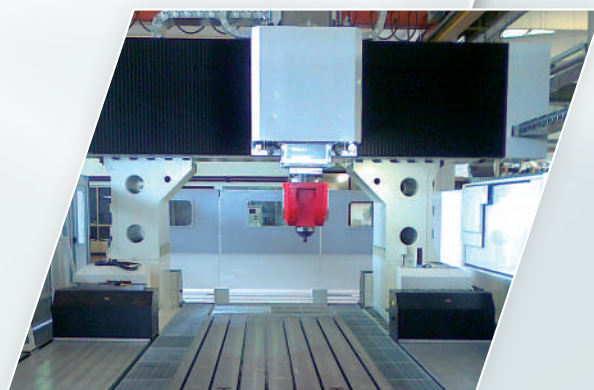
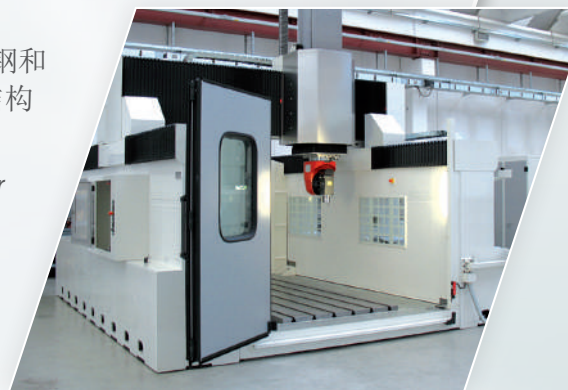
VentorMaster 是一种5轴立式铣削加工中心带移动门架，用于加工钢和特种合金以及钛合金部件。与VentorFast对比，是采用了更重的结构和“箱中箱”型垂直轴。

*VentorMaster is a 5-axis vertical milling center with mobile portal gantry type, for machining of steel and special alloys and titanium parts. Compared to VentorFast, it is featuring an heavier machine structure as well as a vertical axis RAM of "box-in-box" type.*

轴行程 / Axis strokes		速度 / speed
X	2000-20.000 mm	40 mt/1'
Y	1600-4000 mm	40 mt/1'
Z	1000-2000 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	30-100 kW
扭矩 / Torque	150-1000 Nm
速度 / Speed	5000-30.000 rpm



## VentorPower

VentorPower是我们的移动门架式铣削加工中心中最顶级的规格，是用于应用最广的钢、特种合金以及钛合金部件的制造需求。最领先的技术带来最杰出的性能，机器可配置“上横向移动”以便增加垂直行程，和/或“可互换主轴头”。

*VentorPower is the "top" model of our 5-axis vertical milling centers range of mobile portal gantry type, ideal for the most demanding manufacturing requirements for steel, special alloys and titanium parts. The most advanced technological solutions for the excellence of performances, it can be equipped with "Mobile upper traverse" to increase the vertical axis stroke, and/or with an "interchangeable spindle head".*

轴行程 / Axis strokes		速度 / speed
X	6000-40.000 mm	40 mt/1'
Y	3800-5000 mm	40 mt/1'
Z <sup>1</sup>	1500-2000 mm	30 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

主轴参数 / Spindle features	
功率 / Power	30-100 kW
扭矩 / Torque	150-1500 Nm
速度 / Speed	5000-30.000 rpm

\*工作头规格可变 / Variable depending on the head type

\*移动横向行程 / Mobile traverse stroke



## VentorFlex

VentorFlex是一种带垂直移动的多功能加工中心，设计用于加工中等尺寸的钢材料工件（比如模具），有3轴和5轴可选。可配备双维工作头，或者与移动台结合的倾斜头，双驱动或力矩马达型。

*VentorFlex is a machining center with mobile upright, extremely versatile, designed for the machining of steel medium size parts (eg molds). Available in 3-axi versions, the 5-axis version can be with a bi-directional head, or a tilting head combined with a rotary table, dual drive or with torque motor type.*

轴行程 / Axis strokes		速度 / speed
X	2600-8000 mm	60 mt/1'
Y	1000-3000 mm	60 mt/1'
Z	500-1500 mm	40 mt/1'
A (*)	+/- 120°	180°/sec
C (*)	+/- 365°	180°/sec

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
功率 / Power	22-80 kW
扭矩 / Torque	28-250 Nm
速度 / Speed	12.000-30.000 rpm



# Monnalisa

Manufactured by



**CNC Milling** CNC数控铣削加工

Monnalisa是一种创新型5轴卧式加工中心，专用于加工大尺寸铝质整体结构件，特别适用于航空领域。

工作台有两套大台面组成，对称布置（托盘切换），以便在工作过程中更换工件。铝工作台设计可以采用真空吸附或其它夹紧方式来固定工件，每个工作台承重2000kg。

两个台面的摆动型运动通过在他们轴向上的移动装置来实现。开放式的换件区域允许操作者在完全安全的情况下舒适地工作。

工件的装载非常容易，通过两套液压机械臂驱动转台 $\pm 90^\circ$ 的旋转，而台子的夹紧通过四套液压卡盘来实现。

*Monnalisa is the innovative 5 axes horizontal working center specifically developed for the machining of monolithic aluminum structural parts of large dimensions, particularly suitable for applications in the aeronautical sector.*

*The working tables are made by two large worktops, symmetrical to each other (pallet change) in order to be able to replace the pieces during the processing phases. The aluminum work plans are designed to use both the vacuum suction that any fixing system for the piece, with a flow rate of 2,000 kg for each floor.*

*The movements of the two boards, pendulum type, takes place thanks to translators carts that move on their scroll line. The open piece replacement area allows the operator to work in a very comfortable position and in full safety.*

*Loading in the machine of the pieces is made easy by the rotation of the table of  $\pm 90^\circ$  obtained with two mechanical arms hydraulically actuated, while for gripping the table four hydraulic pistons are used.*

X轴台车由一套铸铁材质双垂直刚性结构组成，通过4套齿轮变速箱和4套无刷伺服电机驱动。其设计为带有两套双驱动的龙门架，启动通过电子预加载。

Y轴在滚轴滑架上滑动，滑架轨道与X轴结构固连，Z轴是一个精校的结构通过滚轴导轨靴套上滑行，靴套与Y轴结构固连。

跨越垂直/RAM轴、Y轴和Z轴的系统由采用集成式箱内箱结构。

所有轴的位置通过增压和编码光学装置检测。

结构采用整体铸铁结构，并适当加强以获得最高的刚性和带有最小热漂移的动力性能。PT100热电偶集成在设备上用于检测温度并进行空间轴的补偿。

在工作表面下装有大尺寸抽吸装置（宽度800mm，高度300mm）可以每小时1立方米的速度抽吸料屑。

刀库最高可配置120或更多刀具，安置在侧面，在不用的时候可以有效的防止料屑和灰尘的进入。

*The X carriage is made by a rigid structure to double upright in cast iron and is moved by 4 gear-boxes with integrated pinion and 4 brushless motors. The scheme is a gantry of two Twin Drive systems for the recovery of the games via electronic preload.*

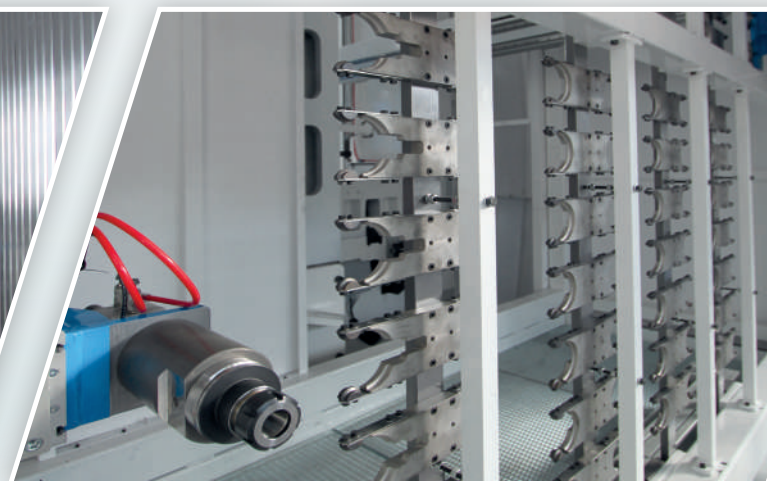
*The Y-axis slides on roller skates whose guides are mounted on the X axis fusion; the Z axis is made from a fusion rectified parallelepiped and slides on the roller guide shoes which are housed on the axis Y. fusionThe system to cross the vertical / RAM axis, Y axis and Z, respectively, consists of two integrated mergers Box in Box.*

*The position of all the axes is detected by optical lines pressurized and coded.*

*The structure is made entirely of cast iron and is suitably reinforced to obtain maximum rigidity and dynamic with minimal thermal drift. PT100 thermal probes are integrated for detection temperature for the upgrading of the dimensional axes.*

*Thanks to an evacuator with a large size tape (width 800 mm, height 300 mm) positioned below the work surface, a volume of 1 cubic meter of chips per hour is evacuated*

*The warehouse allows to have 120 tools or more, it is positioned laterally and is properly protected from chips and dust when not used.*



轴行程 / Axis strokes		速度 / speed
X	2000-6000 mm	60 mt/1'
Y	2000 mm	60 mt/1'
Z	1000 mm	60 mt/1'
A (*)	+/- 110°	180°/sec
C (*)	+/- 190°	180°/sec
工作台 (x2) Working table (x2)	2000 x 6000 mm	

\*工作头规格可变 / Variable depending on the head type

主轴参数 / Spindle features	
速度 - Speed	32.500 rpm
功率 / Power	90 Kw
扭矩 - Torque (*)	32 Nm (S1)
刀型 - Taper	HSK-F 80
刀库 Tool's magazine	40-500 places

\*恒转矩0-32500 rpm / Constant torque 0-32500 rpm

# 工作头

## Working heads

所有装在我们设备上的以连续插补运动的执行单元均完全由我们公司制造。包括两个产品系列。

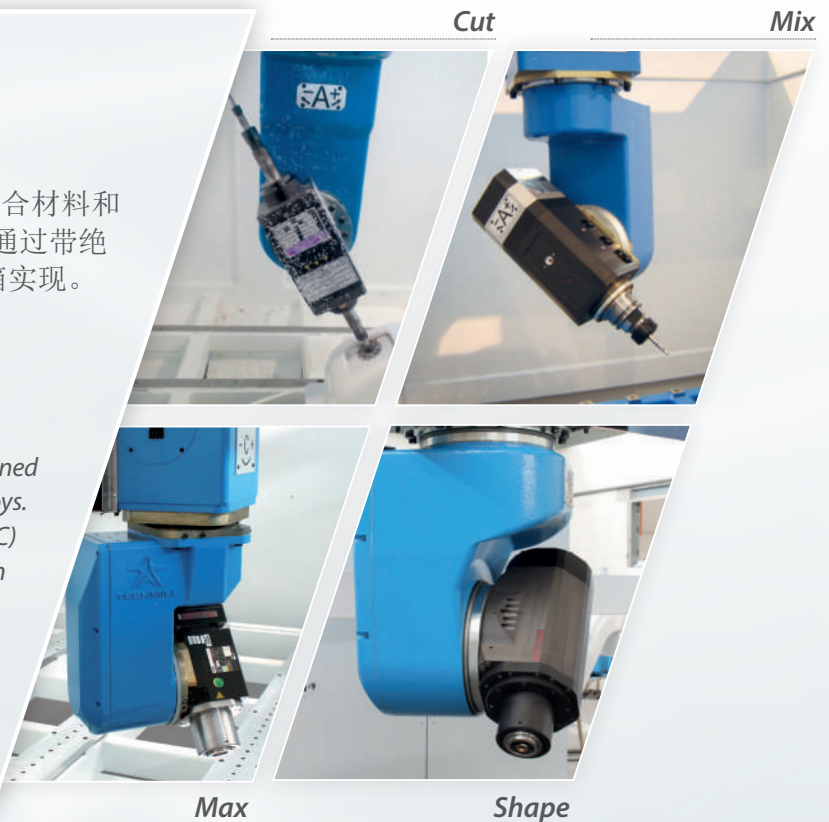
All operating units in continuous interpolation mounted on our machines are completely designed and manufactured by us. The range consists of two product lines.

### “M”型

M系列工作头，特别设计用于加工树脂，复合材料和轻合金的加工。具有旋转轴传动（A和C），通过带绝对编码器的伺服电机及相连的高精度变速箱实现。两个旋转轴（A和C）配有气动锁紧装置。

### “M” Models

The “M”-Series WORKING HEADS, are specifically designed for the machining of resins, composites and light alloys. They have transmission of the rotary axes (A and C) achieved through servo motors connected to high precision gearboxes and a measurement system with absolute encoders. Both rotary axes (A and C) are equipped with pneumatic locking device.



### “TB” Models

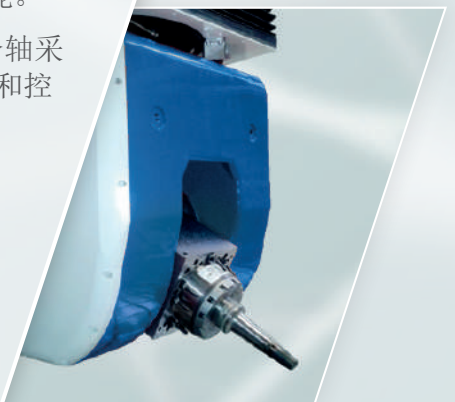
TB系列工作头是“叉”型，实际用于重载工况，提供优秀的精度和功率性能。

旋转轴A和C的运动通过YRT轴承实现，轴承带有三重循环预压滚针，每个轴采用“双驱动”型以消除反冲。角位置通过带双驱读取头的绝对编码器检测和控制。两个轴均配置液压锁紧系统。

### “TB” Models

The “TB” Series WORKING HEADS are “fork” type, designed for heavy working conditions, offering excellent accuracy and power.

The rotary A and C axis movement is obtained by Y.R.T bearings with triple recirculating of preloaded roller; each axis is of the “dual drive” type, to eliminate any backlash. The angular position is detected and controlled by an encoder with dual reading head, both axes are equipped with hydraulic locking system.





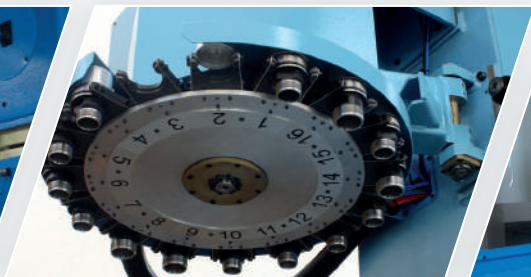
# 机器配置 *Machine configuration*

## 刀库 / *Tool's Magazines*

架式 / *Rack - 8/10/12/16 pos.*



转盘式 / *Rotating - 24/40 pos.*

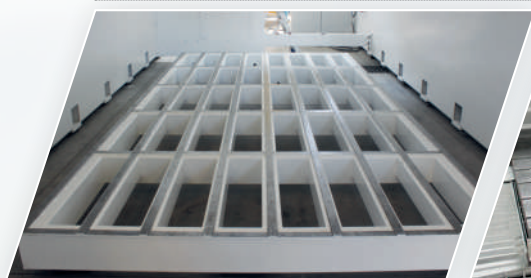


链式 / *Chain - 60/120 pos.*

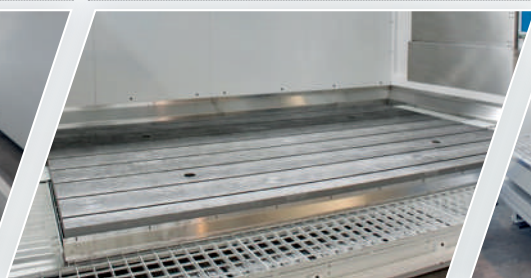


## 工作台 / *Working table*

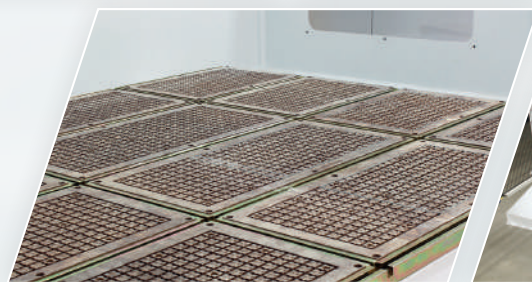
横梁 / *Cross bar*



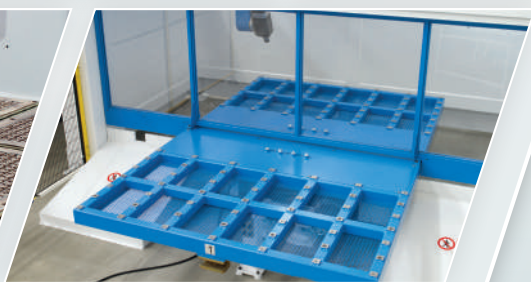
Stolle



铝 / *Aluminum*



Ranprex®



旋转 / *Rotating*

## 机器外壳 / *Machine enclosure*

整体仓室 / *Integral Cabin*

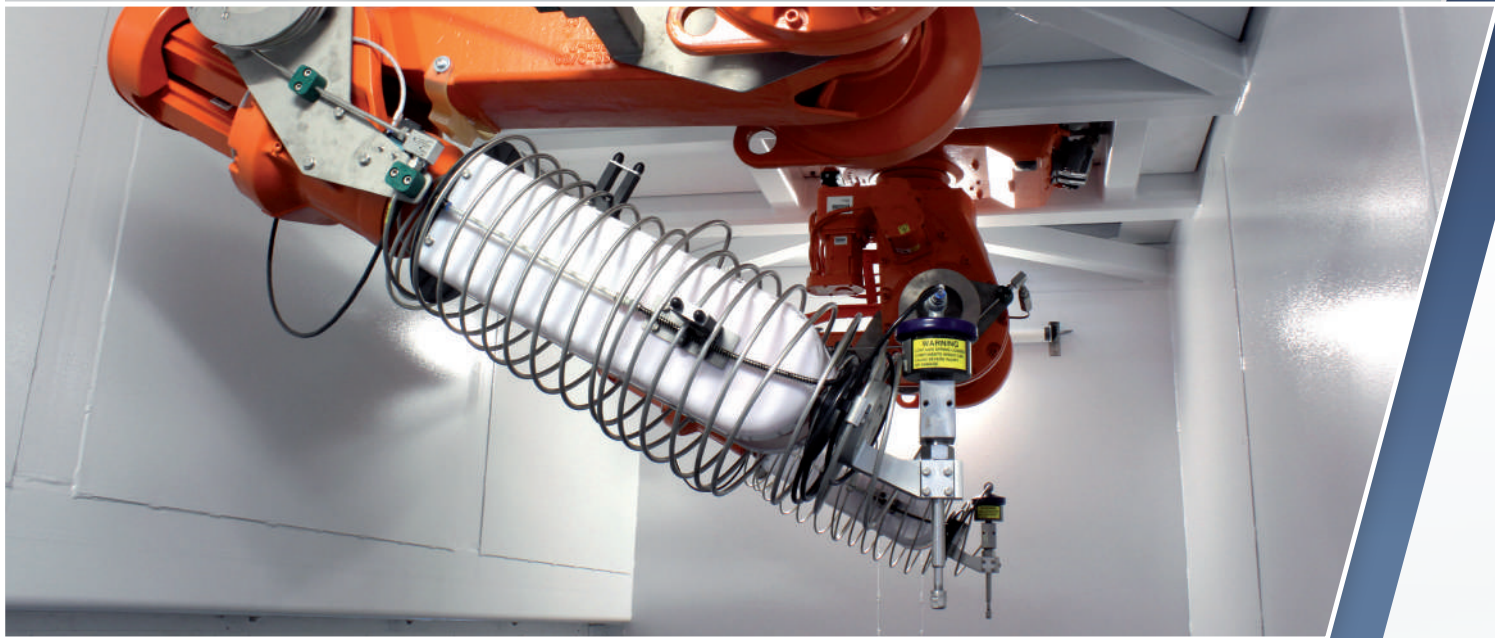


可移动折叠顶部 / *Retractable folding roof*



# 水切割 Waterjet cut

Manufactured by



**CNC Water jet cut** CNC数控水切割

水切割技术的使用可以在没有热应力的情况下切割任何材料工件（轻合金、铝、不锈钢、钛合金、大理石、花岗岩、复合材料等等）

切割采用纯水（避免软物质和材料污染）或加入磨料以增强喷射力。可以微米级精度切割厚硬材料而不会改变其物理和机械性能。

出于此原因，除了在航空领域广泛使用外，水切割在所有的工业领域得以应用，甚至在食品行业（冷冻食品切割）

出于此原因，除了在航空领域广泛使用外，水切割在所有的工业领域得以应用，甚至在食品行业（冷冻食品切割）

*The use of the waterjet technology allows the cutting of any material (light alloys, aluminum, stainless steel, titanium, marble, granite, composites, etc.) without any thermal stress.*

*The cutting can be made using pure water (in case of soft materials or materials suffering contamination) or with the addition of abrasive to amplify the jet power. Thus it is possible to cut with micrometric precision even thick hard materials without alteration of their physical and mechanical features.*

*For these reasons, besides being popular in the aeronautical sector, the waterjet cutting finds application in all the industrial fields, even in the food one (cutting of frozen food).*

*The waterjet machine range is made by 4 different models, differing from the size and type of application.*

## Medusa - AWJ

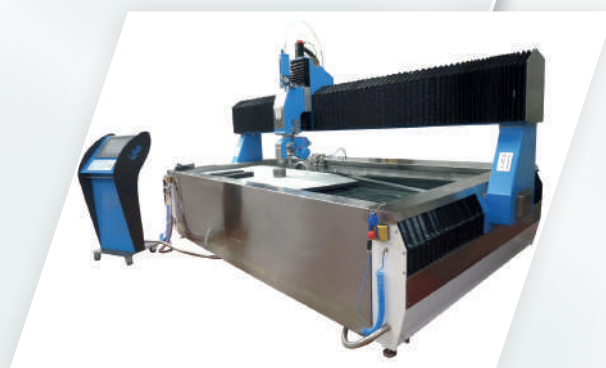
Medusa - AWJ JET 是带有龙门式移动桥架的切割机系列，用于大工件切割，因为可以配置多工作头也可以用于大批量生产。

在尺寸上，3轴或5轴工作头，以及双移动桥架等方面有几个版本可供选择。

*Medusa - AWJ JET is the series of cutting machines with movable bridge "gantry" type, ideal for cutting of large pieces as well as high production volume thanks to the possibility to have the multiple cutting heads configuration.*

*Several versions are available, in dimensions, with 3 or 5 axis head, even with twin mobile bridge.*

轴 / Axis	
Y=1000 :	1010-2010
Y=1500 :	1015-3015-6015
Y=2000 :	1020-2020-3020-4020-6020-7020
Y=3000 :	1530-2030-4030-6030-8030-10030-12030-14030
Y=4000 :	2040-3040-4040-6040-8040-10040-12040
Z	200 mm



## FB Jet

FB JET 是我们的水切割机的“入门级”型号，因其杰出的性价比被客户认可。设备结构为悬臂型，三面可及。不锈钢水箱与基座分离从而避免传递切割振动。

FB JET 是紧凑型设备采用高质量部件以保证长年使用情况下的最高精度。

*FBJET is our "entry level" waterjet cutting machine, recognized by customers for its excellent quality/price ratio.*

*The machine structure is cantilever type, with accessibility on three sides, while the stainless steel water tank is separated by the basement to avoid any cutting vibration transmission.*

*FBJET is a very compact machine made by very high quality components to guarantee the maximum reliability over the years.*

轴 / Axis	X	Y	Z
FBJETIII 4020	4000 mm	2000 mm	200 mm
FBJETIII 3317	3300 mm	1700 mm	200 mm
FBJETIII 1717	1700 mm	1700 mm	200 mm



## LC Jet

LC JET 是一种特别紧凑的水切割机，是技术工艺和顶端质量部件的完美结合：最新一代的发那科数控系统、KMT高压水射流泵、Windows界面、完全自助工作设计以及SGA磨料供应系统（精度+/- 5 %）

紧凑的尺寸，高精度的切割，完全闭合的保护舱让LC JET 成为小批量生产/空间受限情况下的完美选择。

*LCJET is an extremely compact waterjet cutting machine which combines all the state of the art techniques and top quality components: latest generation numeric control FANUC, high pressure water feed supplied by a KMT Waterjet Systems pump, Windows user interface, system designed to work in complete autonomy, SGA abrasive feed system (calibration of +/- 5 %).*

*The compact dimensions, the high quality precision cutting, the completely closed protection cabin make LCJET ideal for small production batches and/or where limited space is available.*

轴 / Axis	X	Y	Z
LC 1010	1000 mm	1000 mm	200 mm
LC 1010	1200 mm	1200 mm	200 mm
LC 1010	1000 mm	2000 mm	200 mm
Option 1T 3A			350 mm



## Cutting Box

Cutting Box 型是我们水切割机系统中的最先进的解决方案：按照独立工作站的构思，一般集成有带工作节拍要求的自动生产线。

按闭环单元设计，工作单元的切割头安装在ABB机器人上通过IRC5 控制单元来管理。夹紧工件的工作台托盘切换型，可以通过摆动循环上料和下料，同时保证操作者的最高安全。

Cutting Box 的最佳应用在汽车领域，用于汽车内部部件的修整（地毯、仪表盘，隔音板等）

*Cutting Box is the most advanced solution in our waterjet cutting systems: conceived as an independent station, it is usually integrated in highly automated manufacturing lines with stressful working cycles.*

*Designed as a closed cell, where the working units are cutting heads set on ABB anthropomorphic robot managed by last generation IRC5 control unit. The table on which the pieces are clamped is pallet changer type, allowing loading/unloading in pendular cycle and ensuring at the same time maximum safety to the operator.*

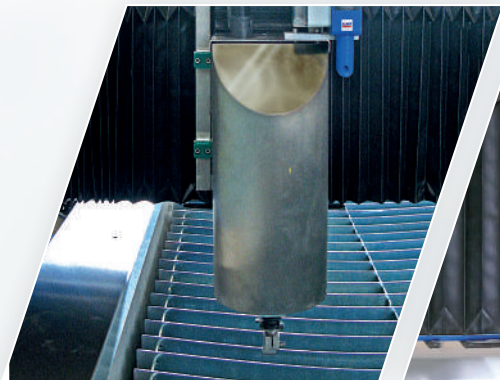
*Cutting Box finds its best application in the automotive sector, to perform trimming of internal parts of the car (carpets, dashboards, noise insulation panels, etc).*



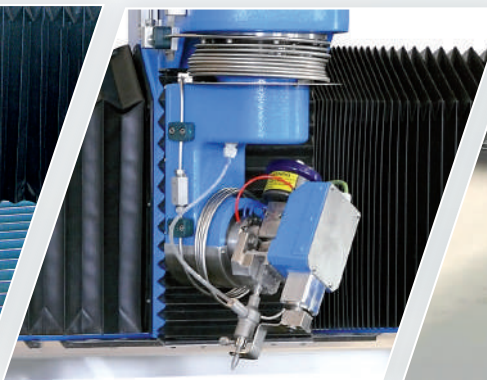
# 机器配置 *Machine configuration*

## 工作头 / *Working head*

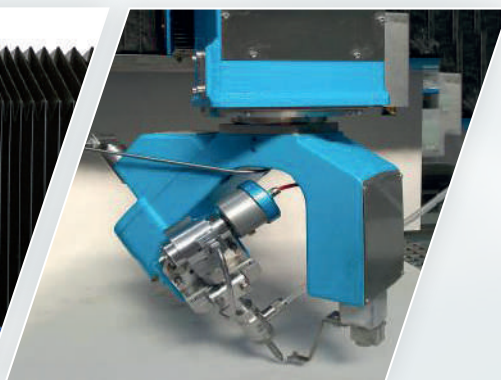
3 轴 - 3 axis



5 轴 - 5 axis

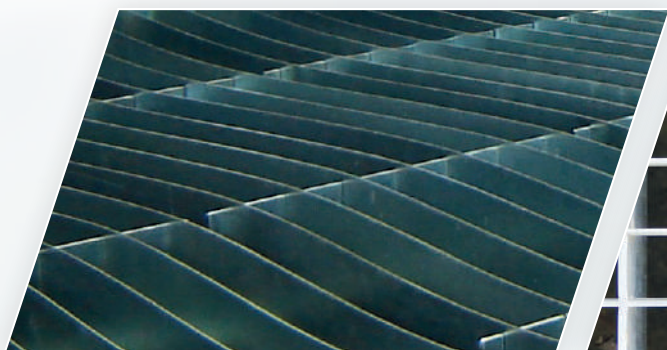


5 A. Active



## 工作台 / *Working table*

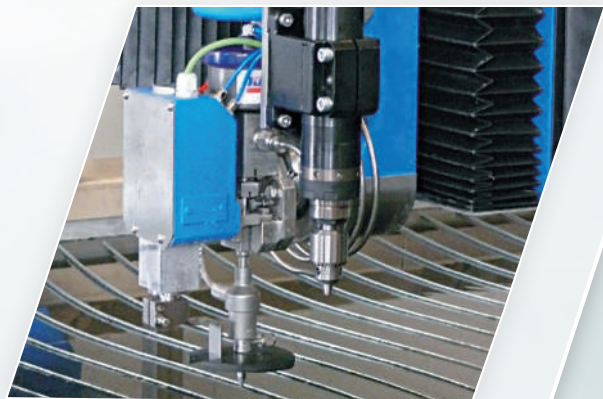
形 S/S Blade



交叉梁 / *Cross bar*

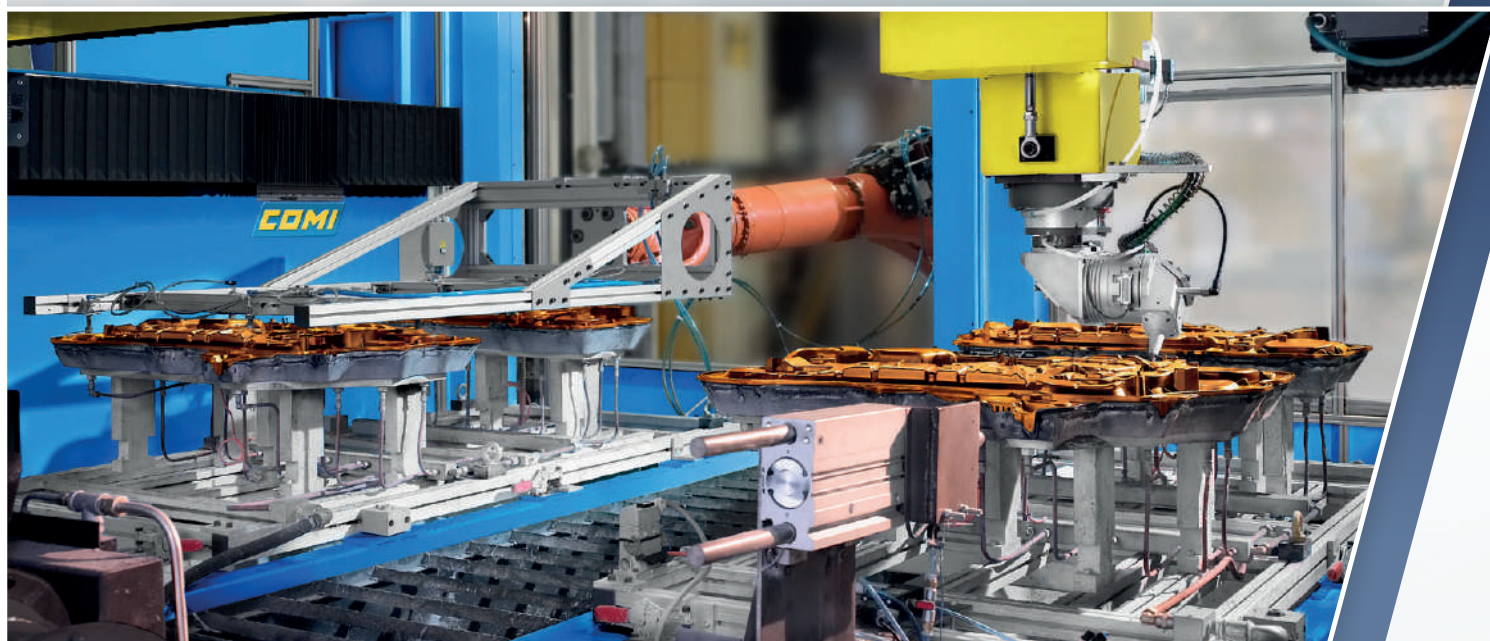


## 钻孔 / *Drill*



# 激光切割 Lasercut

Manufactured by



**CNC Laser cut** CNC数控激光切割

激光技术的主要特点是工作头和待切割工件之间的无接触，可以实现传统切割无法完成的极高切割速度。

该设备适用于具有复杂几何形状和极限切割精度的物品，可使用的材料范围非常广泛：复合材料，金属和轻合金，塑料，橡胶，数值，纸箱板，皮革，胶合板，纺织品等等。

公司的激光切割机主要集中于热成型件领域，汽车和模板领域，但在切割功率和尺寸适合的情况下也可以用于其它领域。

有两个激光切割机系列可供选择：SENIOR用于2D切割，以及SIMO用于3D切割。

*The main feature of the laser cutting technology is the absence of contact between tool and the part to be cut. This makes the cutting speed to be very high, which instead cannot be achieved by traditional cutting systems.*

*These machines are suitable for several applications whenever complex geometries and shapes are requested to be cut with the utmost precision. The range of materials which can be processed is wide: composites, metal and light alloys, plastics, rubber, methacrylate, cardboard, leather, plywood, textile, etc.*

*Our CNC laser cutting machines are focused mainly on thermoformed pieces sector, automotive and dieboards, but they can be used also in other fields as long as cutting power and dimensions are suitable.*

*Two lines of Laser cut machines are available: SENIOR for 2D cutting and SIMO for 3D cutting.*

## SENIOR (2D)

2D 激光切割机型号SENIOR采用固定台系统配有200w-2000w激光源。按照客户偏好可选用Fanuc或Rofin Sinar激光源。

高质量和切割精度：来源于先进的激光源，极端精密的机械系统，以及专为模板领域开发的创新解决方案。

*The bidimensional laser cutting machine mod. SENIOR is a fixed table system equipped with laser sources from 200W to 2000W. The machine is planned to seat Fanuc or Rofin Sinar laser sources at customer discretion. The high quality and cutting accuracy: outcome of an advanced technology of the laser sources and of an extreme precision of the applied mechanics, as well as the innovative technical solutions duly studied for dieboards sector.*

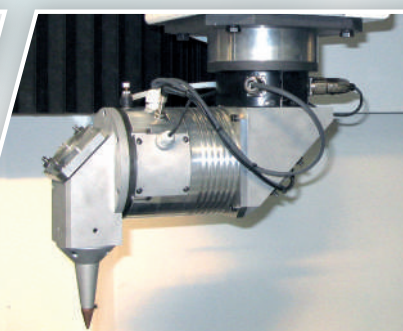
## SIMO (3D)

SIMO 是针对汽车工业的热成型件的三维激光切割机型。轴的平移采用直线电机，带有刚性门架以及两个不同的电机用于移动门架。

旋转轴采用了两套力矩马达和一套电气旋接件避免了机械的局限性而实现了整圈的旋转。该特点保证了一个大范围的方便的工作路径规划，可在更少的时间内执行复杂的高难度的运行轨迹并避免了作业处理中的不必要的销连运动。

*SIMO is addressed to the three-dimensional laser cutting details thermoformed for the automotive industry. The translation of the axes is by linear motors, with a rigidly "gantry" and two distinct motors for moving the portal.*

*It has been used two torque motors and an electrical manifold for the rotary axes of the cutting head avoiding the two axes mechanical limitations but ensuring more full turns. This feature grants a large and easy planning of works paths in order to perform complex and challenging tracks in less time and avoid dowelling the axes by unnecessary movements for the job process.*





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