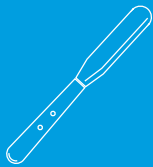


# DIGITAL WORKFLOW THE FUTURE IS NOW

## **AXYA**

*CAD/CAM Systems  
support and management project*

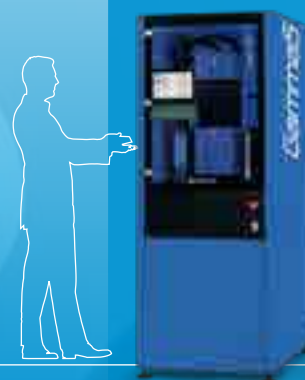




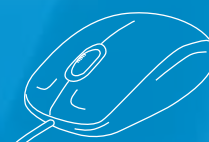
E V O L U

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# REVOLUTION



## Towards the dental laboratory 4.0



The dental laboratory sector, which has always been associated with manual ability and skills of the single technicians, is undergoing a total change in recent years, thanks to the new digital technologies. Digitalisation, virtualisation and CAD/CAM systems are the new instruments, and the new language of the dental technician. At the start of this fourth industrial revolution, great opportunities can be seized for those who can perceive and manage the change.

# The technological evolution

Digital technology breaks new ground and brings new possibilities, which can be exploited only if the dental technician is able to play his new role.



## Everything changes. Can we ignore this?



**In the last 10 years, what seemed impossible has come true.**

Cars with no driver, nanotechnologies, artificial intelligence are all innovations which once seemed science fiction, but have become real today. All this will improve our lives, but will substantially change the dynamics for people and companies that will have to make a total changeover.

## The line for the change has already been drawn



**They say that future evolution is hard to predict, but it seems clear that information technology and production automation in laboratory,** as well as the use of CAD/CAM technologies, are a necessary route for all those who want to grow and face the new competitive challenges of the future.



**Evolution or extinction.  
Nature teaches...**

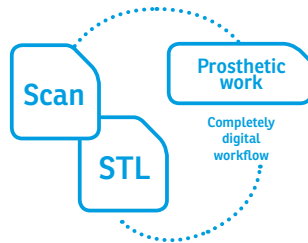
We must be aware that those who "will not be part of the digital world" and will be stuck with traditional procedures, will hardly survive this radical change.



**Greater degrees of control, repeatability and accessibility. Everything changes for the better.**

The traditional impression taking system requires the management of a prosthetic work, its treatment and shipment. Today, the impression consists of a computer file which can be managed and sent as required. Definite, repeatable precision positively revolutionises your working system.

# The opportunities offered by digital technologies



**Technology neither creates, nor destroys professionalism. It adds value to it.**



**First of all, it is important to understand that the digital age adds great value to the role of the dental technician,** who is not a mere user of preset systems, but an autonomous operator specialised in the use of digital tools.



## The value of remaining *craftsmen*, with the tools of the digital age

Maybe the *mouse* has replaced the *spatula*, but dental technician's skills are still the bases of the qualitative result which, together with the use of advanced systems and software, creates a degree of *efficiency, quality and repeatability* which could not be attained before the onset of these new technologies.



## A vital link in the chain of value

The role of the dental technician is becoming increasingly central, since the *technological interconnection* between the surgery and the laboratory obviously creates a real partnership, with the sharing of common technologies.



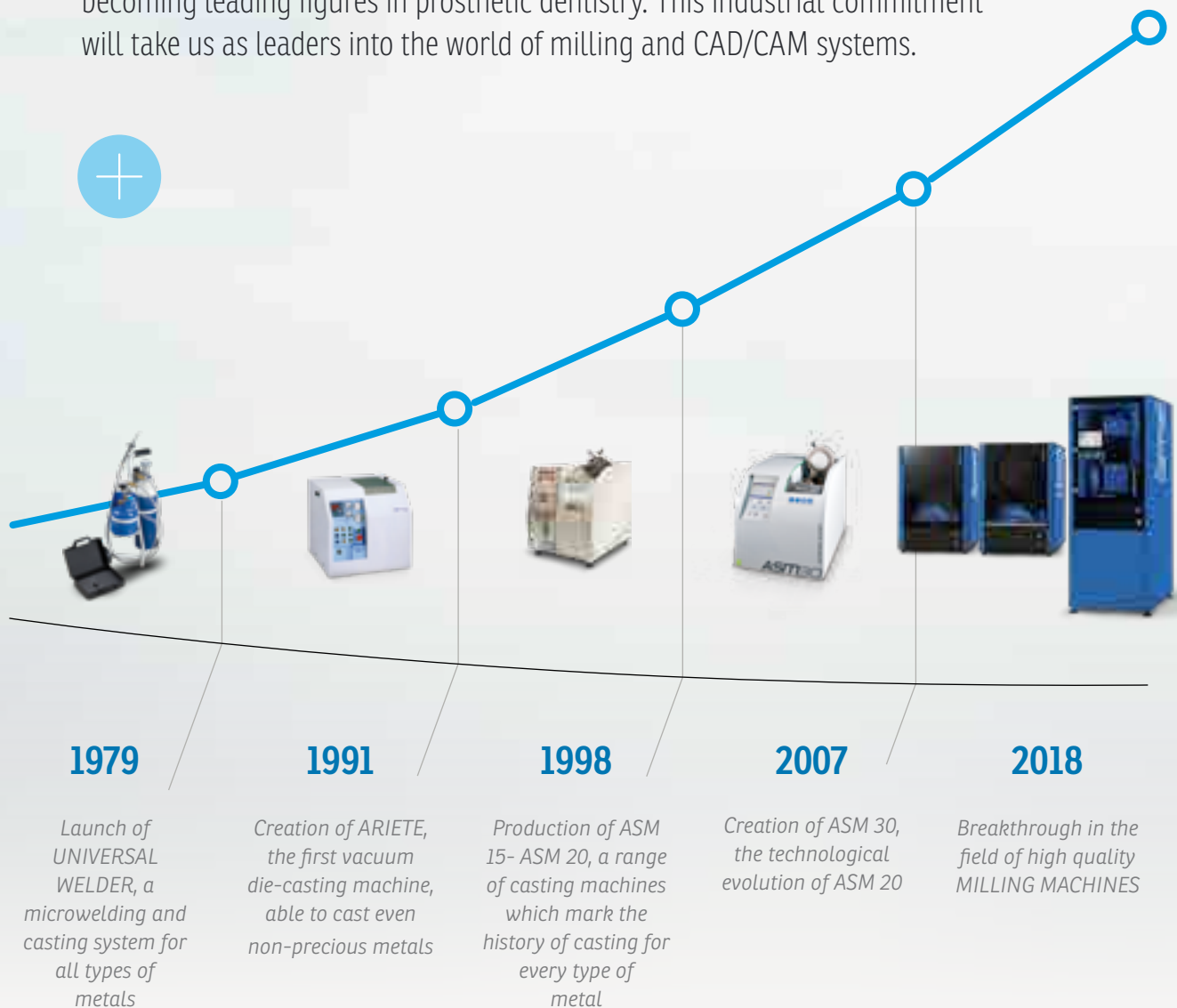
## Speaking the digital language

"THE DIGITAL WORLD" is thus becoming a "professional common ground" which paves the way to new, progressively integrated cooperative relations.



# Tecno-Gaz and the dental laboratory 4.0 evolution

We have been developing technologies and methods for about 40 years, thus becoming leading figures in prosthetic dentistry. This industrial commitment will take us as leaders into the world of milling and CAD/CAM systems.



## Forerunners of technological change.

The *laboratory* which becomes a digital unit requires consultancy for the selection of the best systems for work organisation; however, every choice must be made with a view to future professional developments.



## The route that we want to follow with our customers

In Tecno-Gaz, first we want to be consultants, and then partners; therefore, we have organised a project named **Academy**. A consultancy course which we guarantee to our customers as a sign of the cooperation culture which we are implementing in this project. **Academy** involves a specific programme articulated in 4 main points.

1

### Pre-sales information activities

The purchase of a milling machine requires an organisational review of the working approach; therefore it is very important to know all the aspects involved in this new project. Tecno-Gaz arranges specific meetings held by specialists, who will be able to give complete information to potential customers, in order to let them know all the aspects connected with the digital workflow process. This activity will also be personalised according to the needs of every single potential customer, who will have the chance to receive information and proposals tailored to his/her needs.



2

### Shipment – installation – training

The shipment and delivery of any Tecno-Gaz Axya product are very important. The milling machine is delivered by qualified personnel who carry out the correct installation and commissioning of the device. A theoretical/practical training is subsequently arranged, with initial tutoring in the practical use of the device.



3

### Post-sales services

- Technical support and tutoring with the possibility to access multilevel services.
- Possibility to request 2<sup>nd</sup> level training.
- Possibility to benefit from supplementary services in case of machine downtime.



4

### Personalised financial and commercial proposals

Every sales proposal is tailored to the customer's needs.

# Materials and prosthetic works



As known, the prosthetic works can be produced with many materials, each with particular characteristics which make it suitable for particular purposes. The selection of a milling machine as the final element of the digital workflow must be carried out according to the type of products to be made, and therefore the materials to be used. Generally speaking, the machines with wet lubrication can work with any material, therefore are more versatile; however, many facilities and laboratories have specific needs, according to which the easier and more convenient machines with air lubrication can also represent an optimal solution.

1

## All-ceramic and lithium silicate materials

Crowns and fixed veneers on stumps and implants, bridges up to 3 units, onlays, personalised abutments

2

## Hybrid ceramics

Hybrid ceramics: fixed crowns on stumps and implants (NO LAVA), inlays and onlays

3

## Composites

Inlays and onlays



Dry milling



Wet milling





Materials like zirconium oxide are preferably milled with the dry technique, but their dusts can damage the moving parts. Therefore, the machine is equipped with protection dust-proof bellows on all the axes. The connection to the central suction system prevents dust dispersion in the environment.



Milling hard materials like titanium and Cr-Co requires lubrication; the machine is equipped with two filters and a collection basin with a continuous recirculation pump. The liquid level is shown on the tablet PC.

## PMMA



Temporary crowns on stumps and implants, temporary bridges



## Zirconia



Fixed crowns on stumps and implants, bridges, personalised abutments



## Metals



Fixed crowns on stumps and implants, bridges on stumps and implants, personalised abutments, bars and Toronto bridges



# Milling machines Tecno-Gaz Axya



Choose your milling machine.  
Create your digital workflow

AXYA  
*Delta5*



AXYA  
*Sigma5*



An open workflow which can grow with you.



Perfect integration with your customers thanks to open, universal environments and standards

Digital workflow control

Choose your milling machine according to your production needs

Make your products with the maximum repeatability and long-lasting quality

## AXYA *Delta6*



## AXYA *Gamma5*



**The first thing to consider when evaluating a product is the design philosophy applied by the manufacturer.**

This concept is the basis of the whole qualitative line which is subsequently followed for every manufactured product. For the creation of the Sigma5 – Delta5 – Delta6 – Gamma5 lines of milling machines, Tecno-Gaz aimed at simple, practical and innovative concepts; all these characteristics reflect every structural detail of this extraordinary range of products.

# Quality that you can see

Quality is not an optional

## Granite frame

Maximum stability for heavy workloads



## Jäger spindle

Maximum quality at high and low working speeds



## Optical lines

Continuous precision control at 1 micron resolution

## Recirculating balls

High efficiency mechanisms not requiring lubrication



**Superior characteristics** in the whole range.



## Jäger spindle

German market leading manufacturer: *quality guarantee, performances and durability for optimal milling both at low speed (e.g. alloys, Cr-Co and titanium), and at high speed (e.g. ceramics). Wet cooling with external unit supplied.*



## 5-axis CNC on every model

In modern implantology, which requires implant placement at an optimal position and angle, milling can only be carried out on 5 axes. A segment (representing an implant) is defined in space by the 3 Cartesian coordinates, plus 2 inclination axes. The 5 axes are also useful in traditional production, since they allow the prosthetic element to be positioned in the blank at an optimal angle, thus minimising the required thickness. Result: *higher speed and lower consumption of materials and tools.*



# Winning design philosophy

How should the most important machine in your laboratory be built?



*User friendly interface with possibility of management through an App for tablets and smartphones.*



THE PROFESSIONAL CONCEPT

For any dental laboratory, the milling machine is the productive centre, the main source of revenue and service and, as a matter of fact, the most important element.

Solid construction, durability, precision and efficiency are the essential features on which Tecno-Gaz has built all its range of products.

The most extraordinary thing that Tecno-Gaz did was to build all the products according to the same structural logic, sparing no efforts even on entry level machines; this is immediately evident at a glance.



## The linear axes are moved by ground recirculating ball screws.

The linear axes are moved by preloaded ground recirculating ball screws, directly controlled by a brushless motor with feedback, to guarantee precision and durability. The screws are permanently lubricated.



## Linear optical lines on the X, Y, Z axes

Readings and automatic corrections of the tool are performed 1000 times per second at a resolution of only 1 micron (0.001 mm). Thanks to this important precaution, the machine always works with maximum precision, even in the case of wear problems or other conditions which might alter the normal axis operation.

**1 $\mu$**  | 1micron = 0,001 mm

## HD BRUSHLESS MOTORS

### Brushless motors with very high resolution (0.05 microns).

All the machines use brushless motors with very high resolution encoders (17 - 20 bits), ensuring an outstanding surface texture of the prosthetic work.



### Granite supports on all 3 Cartesian axes.

A device as a milling machine, which must offer high precision production and be extremely productive with a 60,000 rpm rotation, must be solid, resistant and extra powerful with regard to the actual work strain.

For this reason, all Tecno-Gaz milling machines can rely on a structural logic which allowed us to manufacture very solid products, built to last



### Consistent quality in time and lower maintenance









The transmission of internal mechanical controls of the equipment is always direct, without gear transmissions or drive belt. These solutions have been implemented to avoid ordinary maintenance, machine downtimes, calibration or interference problems, and to reduce noise levels.

# Axya Sigma5

## Entry level high performance machine

Sigma5 is the entry level milling machine from Tecno-Gaz; it is simple to use and specially developed for dental laboratories or surgeries approaching CAD/CAM technology.

Precision	● ● ● ● ●
Repeatability	● ● ● ● ●
Machinable materials	● ● ● ○ ○
Production volumes	● ● ● ○ ○

Prosthetic products which can be made with Sigma5	Materials usable with Sigma5
 <p><b>Prosthetic products which can be made with Sigma5</b> Crowns, abutments, screw-retained bridges, models, attachments, etc.</p>	 <ul style="list-style-type: none"> <li>• All the pre-sintered metals + soft materials and silicates, as well as thermoplastic materials can be milled.</li> <li>• Soft materials such as wax, PMMA, PEEK, resins, composites, zirconium oxide, aluminium, etc.</li> <li>• Hard materials such as ceramics, lithium disilicate, etc.</li> </ul>  <div>  Zirconia   Polymethyl-methacrylate   All-ceramics and Lithium silicates   Hybrid   Composites         </div>



### Movements on 2 rotation axes

Movements on 2 rotation axes with brushless motors and low backlash planetary gearboxes. No belt transmissions.



### Movement on 3 Cartesian axes

Movement on 3 Cartesian axes by means of ground ball screws, directly controlled by brushless motors and encoder for continuous position control.



### Implant surgery

Preparation of surgical templates by overlapping information regarding teeth and soft tissues on bone anatomy captured with CBCT.

# Sigma5

Numerically controlled desktop milling machine with 5-axis continuous interpolation



## 9 tools with automatic tool changer

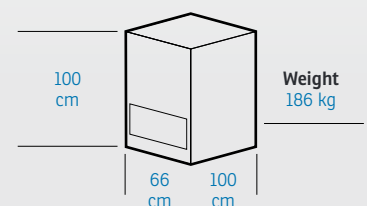
9 tools with automatic tool changer, using measurement and control technology by means of a very high precision sensor.



**Jäger spindle**  
Maximum power:  
0.5 kW at  
60,000 rpm



## Dimensions



# Axya Delta5

## Precision and versatility

Delta5 is the medium level milling machine from Tecno-Gaz developed for dental laboratories or dental clinics wanting to take maximum advantage of CAD/CAM technology and obtain a high ROI. Simple to use, numerically controlled worktop milling machine with 5-axis continuous interpolation.

Precision	● ● ● ● ●
Repeatability	● ● ● ● ●
Machinable materials	● ● ● ● ○
Production volumes	● ● ● ○ ○

Prosthetic products which can be made with Delta5	Materials usable with Delta5
 <p><b>Prosthetic products which can be made with Delta5</b> Crowns, bridges, hybrid abutments, models, attachments, veneers, etc.</p>	 <ul style="list-style-type: none"> <li>• All the pre-sintered metals + soft materials and silicates, as well as thermoplastic materials can be milled.</li> <li>• Wax, PMMA, different resins, composite, pre-sintered zirconium dioxide and aluminium oxide, etc.</li> </ul>  <div>  Zirconia   Polymethyl-methacrylate   All-ceramics and Lithium silicates   Hybrid   Composites   Metals Cr/Co, Ti         </div>



### Movements on 2 rotation axes

Movements on 2 rotation axes with brushless motors and low backlash planetary gearboxes. No belt transmissions.



### Movement on 3 Cartesian axes

Movement on 3 Cartesian axes by means of ground ball screws, directly controlled by brushless motors and encoders for continuous position control.



### Implant surgery

Preparation of surgical templates by overlapping information regarding teeth and soft tissues on bone anatomy captured with CBCT.

# Delta5

Numerically controlled worktop milling machine with 5-axis continuous interpolation for dry and wet milling



#### 16 tools with automatic tool changer

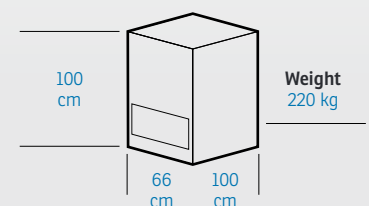
16 tools with automatic tool changer, using measurement and control technology by means of a very high precision sensor.



**Jäger spindle**  
Maximum power:  
1 kW at  
60,000 rpm



#### Dimensions















# Axya Delta6

## Precision and versatility

Delta6 is a solution showing very high performances with a compact structure which can be easily adapted to any working context. It has been specifically developed for the dental laboratory sector comprising many relatively small laboratories. It is an extremely versatile machine: it can mill any kind of prosthetic work from any kind of material. Thanks to the 5-axis continuous interpolation, it can produce personalised abutments and undercuts, create excellent surface finishes and reduce manual finishing times.

Precision	● ● ● ● ●
Repeatability	● ● ● ● ●
Machinable materials	● ● ● ● ●
Production volumes	● ● ● ● ○

Prosthetic products which can be made with Delta6	Materials usable with Delta6
 <p><b>Prosthetic products which can be made with Delta6</b> Crowns, abutments, bridges, screw-retained bridges, models, attachments, inlays, veneers, connection bars, etc.</p>	     <p>Wax, PMMA, different resins, composite, pre-sintered zirconium dioxide and aluminium oxide, hydroxyapatite, titanium (grades 2 and 5), Cr-Co, etc.</p> <div>  Zirconia   Polymethyl-methacrylate   All-ceramics and Lithium silicates   Hybrid   Composites   Metals Cr/Co, Ti         </div>



### Precision and durability

Movement provided by ground recirculating ball screws with backlash compensation.



### 18 tools with automatic tool changer

18 tools with automatic tool changer using ATC technology, which allows the machine to compensate for the inevitable tool wear during milling in real time.



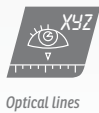
### Linear optical lines on the X, Y, Z axes

Optical lines (precision  $\pm 1 \mu = 0.001$  mm) on the X, Y, Z axes and absolute optical encoders on the 2 rotation axes (precision 0.00012 rad) to guarantee lasting precision.



# Delta6

Numerically controlled worktop milling machine with 5-axis continuous interpolation for dry and wet milling



#### 18 tools with automatic tool changer

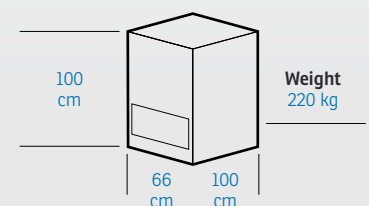
18 tools with automatic tool changer, using measurement and control technology by means of a very high precision sensor.



**Jäger spindle**  
Maximum power:  
**3.1 kW**  
at 60,000 rpm



#### Dimensions















# Axya Gamma5

## Maximum quality for high volumes

Gamma5 has been specifically developed for the dental laboratory sector comprising many relatively small laboratories. It is a universal machine: it can mill any kind of prosthetic work from any kind of material. Thanks to the 5-axis continuous interpolation, it can produce personalised abutments and undercuts, create excellent surface finishes and reduce manual finishing times.

Precision	● ● ● ● ●
Repeatability	● ● ● ● ●
Machinable materials	● ● ● ● ●
Production volumes	● ● ● ● ●

Prosthetic products which can be made with Gamma5	Materials usable with Gamma5
 <p><b>Prosthetic products which can be made with Gamma5</b></p> <p>Crowns, abutments, bridges, screw-retained bridges, models, attachments, inlays, veneers, connection bars, etc.</p>	     <p>Wax, PMMA, different resins, composite, pre-sintered zirconium dioxide and aluminium oxide, hydroxyapatite, titanium (grades 2 and 5), Cr-Co, etc.</p> <div>  Zirconia            Polymethyl-methacrylate            All-ceramics and Lithium silicates            Hybrid            Composites            Metals Cr/Co, Ti         </div>



### Precision and durability

Movement provided by ground recirculating ball screws with backlash compensation.



### 20 tools with automatic tool changer

20 tools with automatic tool changer using ATC technology, which allows the machine to compensate for the inevitable tool wear during milling in real time.

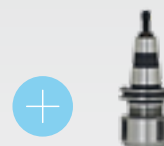
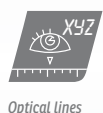


### Linear optical lines on the X, Y, Z axes

Optical lines (precision  $\pm 1 \mu = 0.001$  mm) on the X, Y, Z axes and absolute optical encoders on the 2 rotation axes (precision 0.00012 rad) to guarantee lasting precision.

# Gamma5

Universal milling machine for dental laboratory. 5-axis continuous interpolation for dry and wet milling



## Cone change

20-position standard tool changer with duplicate management capabilities.

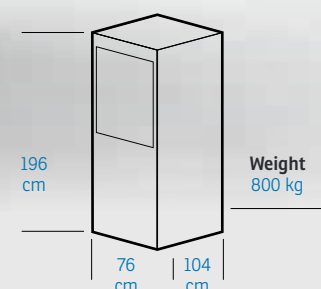


## Jäger spindle

Maximum power:  
2.2 kW at 50,000 rpm



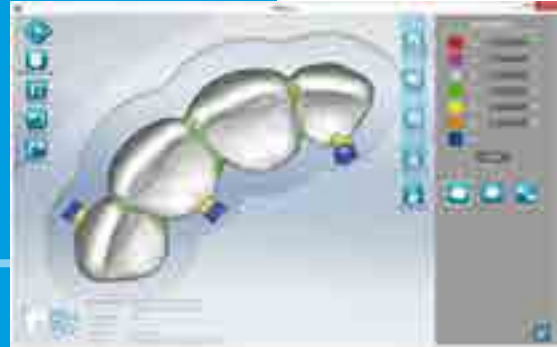
## Dimensions



# CAM software



Open standards.  
Cost saving and flexibility.



Software



The technology used is based on an open system which does not require yearly fixed fees for upgrades, royalties and any types of financial burdens.



## Technology works for you.

Millbox Dental (OEM version), supplied with the machine and perfectly integrated with the main dental CAD systems, is very simple to use. With a simple click, it carries out thickness optimisation, automatic positioning in the blank (even used), support pin suggestion, collision detection, etc., and includes the milling strategies for all common dental materials.



Management with a desktop or tablet PC (external) in Windows™ environment.



# Services and support

At the service of your productivity.



6

**Support 6 days a week**

On Sunday by appointment

8.00

**Non-stop service**

12 hours a day

20.00

## Maximum customer support

- **Customer service 6 days a week from 8 a.m. to 8 p.m. through Ticket service** (on Sunday by appointment)

- Production service during machine downtime. In case of machine downtimes, the production can continue at milling centres
- Pre-sales training (*Academy project*)
- Support for information on which product is more suitable for the customer's needs
- On-site installation and training.



## Give your investment a greater value in time

Post-sales training (*Academy project*)

2<sup>nd</sup> level training (*Academy project*)

Subscription to 1<sup>st</sup> level technical support

Subscription to 2<sup>nd</sup> level technical support

Subscription to 3<sup>rd</sup> level technical support

## Academy project



The Academy project is the package of high value training services for Tecno-Gaz digital workflow. High profile trainers are able to teach the operators in the use of the most advanced technologies, in order to achieve the maximum quality and profit throughout the investment lifecycle.

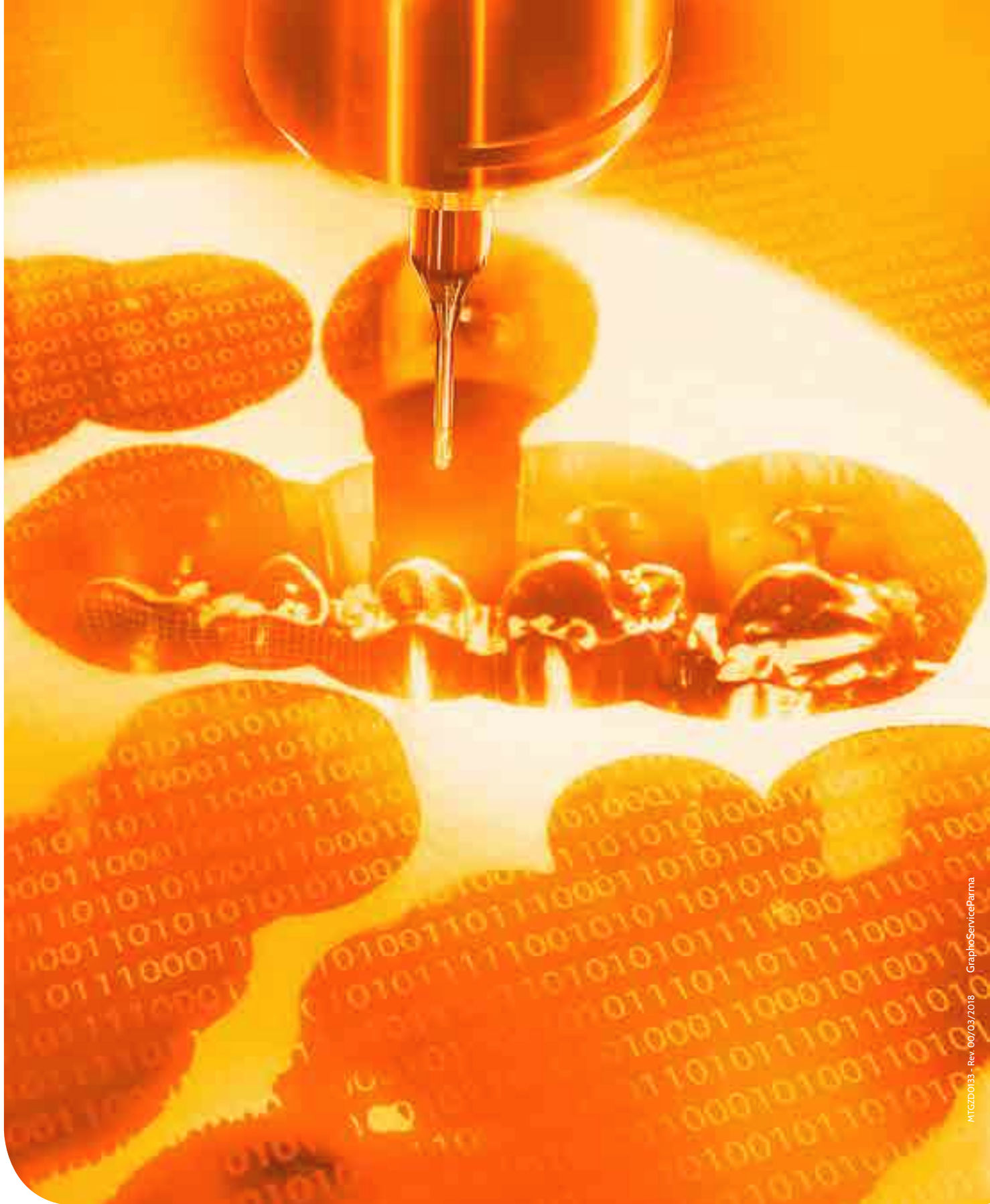
## TECHNICAL FEATURES COMPARATIVE TABLE

Feature	Sigma 5	Delta5	Delta6	Gamma5
<b>Dimensions</b>	660 (W) x 1.000 (P) x 950 (D) mm	660 (W) x 1.000 (P) x 950 (D) mm	660 (W) x 1.000 (P) x 950 (D) mm	760 (W) x 1.960 (H) x 1.040 (D) mm
<b>Weight</b>	186 kg	220 kg	220 kg	800 Kg
<b>Tool changer</b>	Automatic	Automatic	Automatic	Automatic
<b>Number of tools installed</b>	9	16	18	20 positions, cone change
<b>Spindle</b>	Jäger, 0,5 Kw, 60.000	Jäger, 1 Kw, 60.000	Jäger, 3,1 Kw, 60.000	Jäger, 2,1 Kw, 10-50.000
<b>Axis rotation angle</b>	A = 30° C = 360°	A = 30° C = 360°	A = 30° C = 360°	A = 30° C = 360°
<b>Blank</b>	Ø = 98,5 mm with rim	Ø = 98,5 mm with rim	Ø = 98,5 mm with rim	Ø = 98,5 mm with shoulder
	Width 10-30 mm	Width 10-30 mm	Width 10-30 mm	
<b>Tool diameter (shaft)</b>	3 or 4 mm	4 or 6 mm	4 or 6 mm	from 2 to 10 mm
<b>Tool length</b>	37 – 50 mm	37+50 mm	37+50 mm	up to 60 mm
<b>Tool measurement precision</b>	± 0,001 mm (1 µ)	± 0,001 mm (1 µ)	± 0,001 mm (1 µ)	± 0,001 mm (1 µ)
<b>Tool failure detection</b>	Automatic	Automatic	Automatic	Automatic
<b>Power supply (single phase)</b>	220+240 V; 50+60 Hz	220+240 V; 50+60 Hz	220+240 V; 50+60 Hz	220+240 V; 50+60 Hz
<b>Compressed air</b>	7 atm (ext.) - 50 L/min	7 atm (ext.) - 80 L/min	7 atm (ext.) - 80 L/min	7 atm (ext.) - 120 L/min
<b>Motors</b>	Brushless with encoder	Brushless with encoder	Brushless with encoder	Brushless with encoder
<b>Noise level</b>	<60 dB	<60 dB	<60 dB	<60 dB
<b>Linear axis resolution</b>	± 0,00005 mm (0.05 µ)	± 0,00005 mm (0.05 µ)	± 0,00005 mm (0.05 µ)	± 0,00005 mm (0.05 µ)
<b>Rotation axis resolution</b>	± 0,0008 rad	± 0,0008 rad	± 0,0008 rad	± 0,0008 rad
<b>ATC</b>	N/A	N/A	N/A	Optional
<b>Tool duplicate management</b>	Optional	Optional	Optional	Optional
<b>Suction management (external)</b>	Automatic	Automatic	Automatic	Prepared

The range of Tecno-Gaz milling machines has been designed to meet all the requirements, ranging from in-house production in dental surgeries and clinics to dental laboratories of all sizes. Every model has been designed to become an essential element of the digital flow and to add the maximum value to time, profitability and professionalism.







**Tecno-Gaz S.p.A.**

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Fully paid-up share cap € 280.000 i.v. C.F. and P.IVA/VAT IT00570950345

Economic and Administrative Index PR 138927 Company registration No. PR 10061

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Tecno-Gaz Spa.

[www.tecnogaz.com](http://www.tecnogaz.com)



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