EN-US

AMANNGIRRBACH

DNA GENERATION.

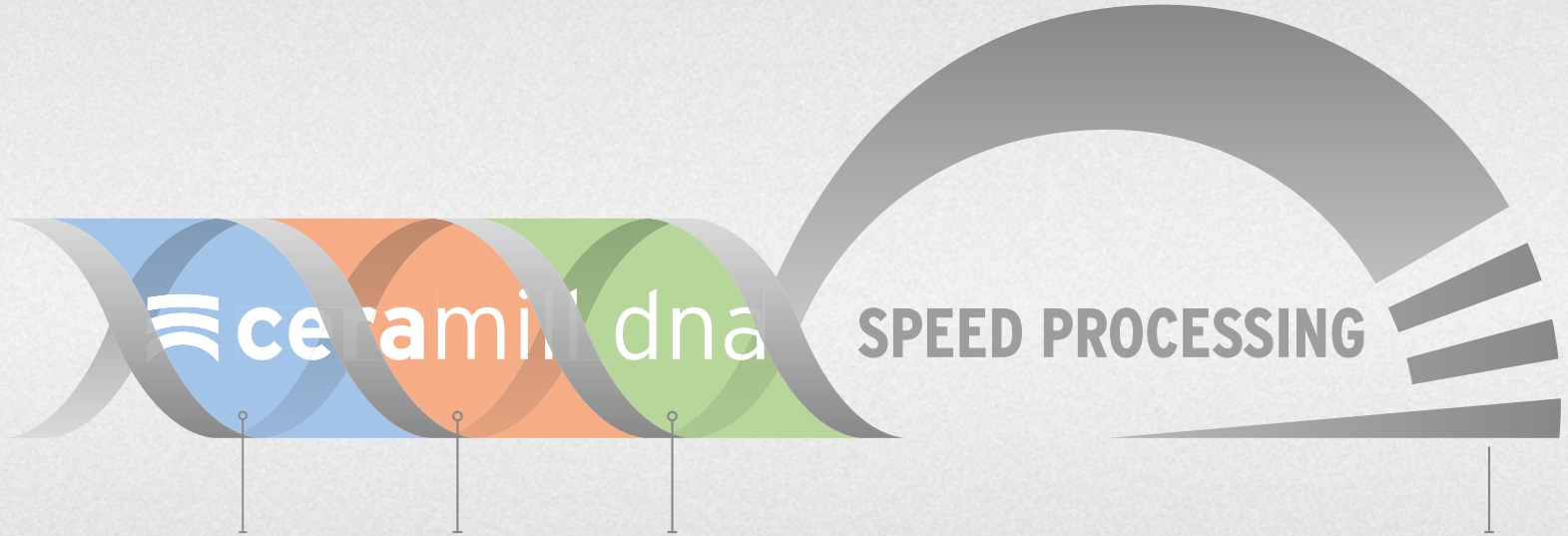
ceramill®

THE INHOUSE MOVEMENT®

DNA GENERATION.
POWER + DENTAL INTELLIGENCE = PERFORMANCE

Our milling machines are created fully in-house and exclusively at Amann Girrbach headquarters in Koblach, Austria. Based on decades of experience in CNC technology and strong development skills we have the expertise to develop and manufacture our machines in-house from scratch.

In-house development of all elementary components, and in particular the new control units, allows us to meticulously adapt and continually further develop our milling units to the specific requirements of dental technology. A distinctive profile emerges in terms of precision, speed and CAM processes, precisely adapted to the mechanical quality of dental materials – we call it the "Ceramill DNA."



HARDWARE

Powerful components (drive-construction, spindle, etc.)

CONTROL UNIT

100 % built IN-HOUSE – with integrated "dental intelligence"

PROCESSES

Highly efficient millling strategies enabled through perfect integration of hard- and software

TIME SAVING

up to 60 % for milling and grinding

ceramill® DNA GENERATION

THE RIGHT CHOICE FOR EVERYONE.

SPECIALIZED

ceramill® mikro

4X

Easy entry or efficient upgrading.

- MILLING

ceramill® mikro

5X

5-axis technology concentrated in minimum space.

- MILLING

ceramill® mikro ic

4X

The power pack for highly efficient wet processing.

- MILLING*
- GRINDING
- CARVING
- THRILLING

ALL-IN

ceramill® motion 2

5X

One for all – all in one.

- MILLING
- GRINDING
- CARVING
- THRILLING

* coming soon

ceramill® DNA GENERATION

EASY ENTRY OR EFFICIENT UPGRADING.

Ceramill Mikro is an extremely robust and compact 4-axis milling machine for dry processing blanks and single blocks such as zirconia, hybrid ceramics or dry millable composite materials. Equipped with high-performance components for permanent stability, economy and precision with low investment costs, the Mikro enables easy entry into CAD/CAM fabrication in-house in the laboratory or optimizes the efficiency and productivity of the laboratory routine. With the full range of conventional laboratory indications, Ceramill Mikro 4X paves the way to profitable in-house value creation, economy and accurately fitting framework quality without preparation or reworking.

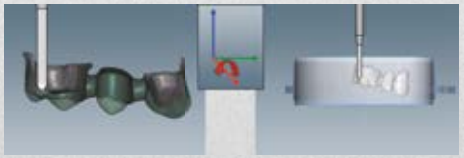
_High Performance milling due to DNA milling strategies

_Easy entry or efficient upgrading thanks to low investment costs and high amortisation

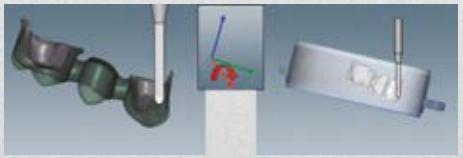
_Highly versatile due to 4-axis dry processing of blanks and hybrid ceramic blocks

_Precise and durable thanks to high-quality components and robust machine design

"INTELLIGENT" 4-AXIS PROCESSING



Lock the 4th axes to any desired position



Undercuts can be milled

High-frequency spindle
extremely robust and precise

6 tool spaces
with automatic tool changer

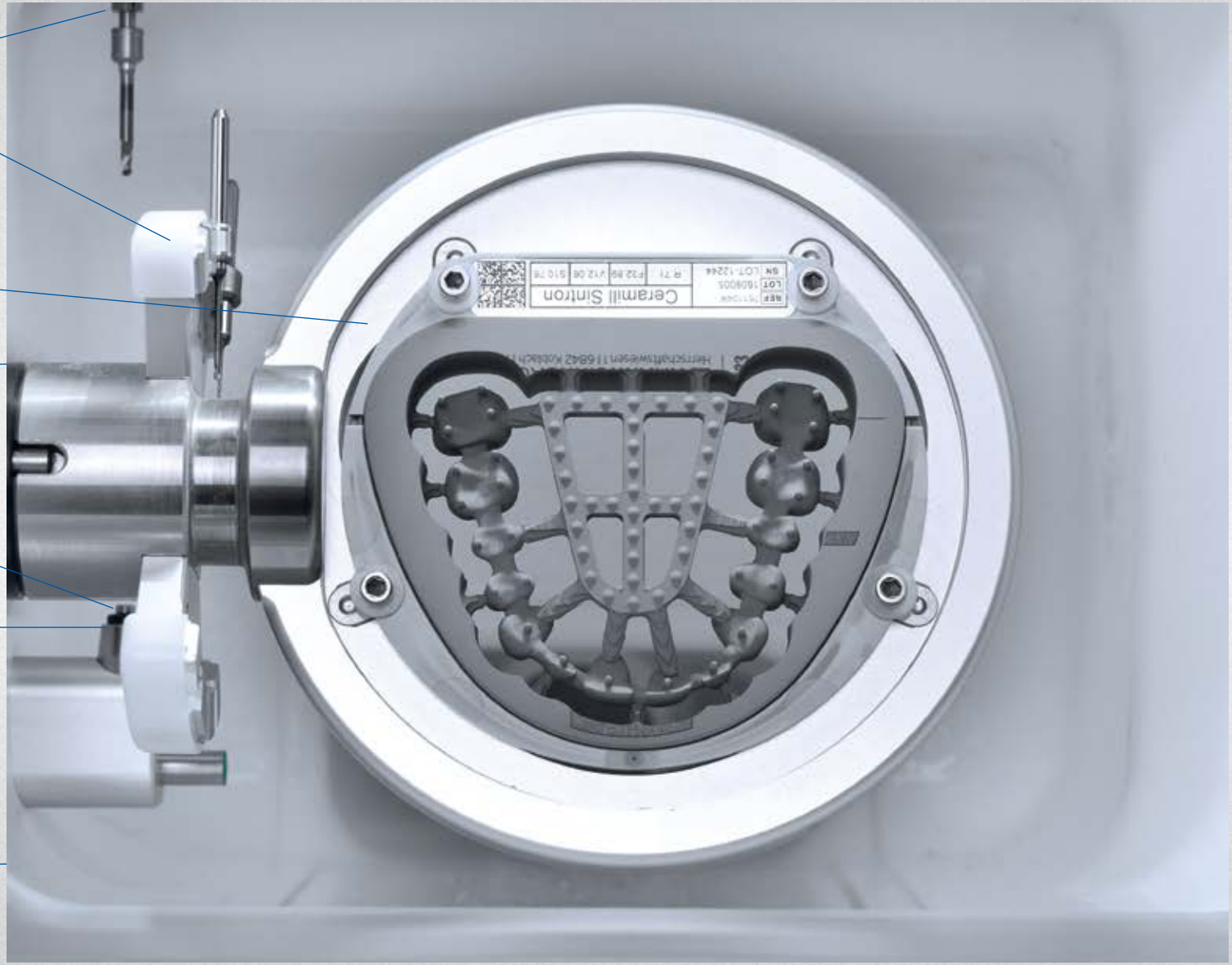
Blank holder
conversion in only a few steps

Interior lighting
for visual control of milling

Tool length measuring unit
incl. fracture check

Presence sensor
for milling tools

Connection for extraction protects the internal mechanism against contamination
optimum with Ceramill Airstream, but also for central extraction



ceramill® DNA GENERATION

5-AXIS TECHNOLOGY CONCENTRATED IN MINIMUM SPACE.

Splints, bars, implant bridges – the 5-axis unit Ceramill Mikro 5X not only masters conventional crown and bridge work but was also designed for fabricating more complex indications with dry millable materials. The high rigidity and stability of the machine are based on the compact construction design of the sister model Ceramill Mikro 4X, without having to forego the advantages of 5-axis technology. The result is absolutely low-vibration processing, which in combination with Ceramill control technology produces impressive precision on the blank. Fast processing times, maximum quality and a wide range of indications and materials make the Ceramill Mikro 5X a genuine winner in the laboratory in terms of productivity.

_High Performance milling due to DNA milling strategies

_Maximum range of indications in the 5-axis dry milling

_Space-saving, compact design with the latest 5-axis technology

_Fast, stable and efficient thanks to low-vibration monocoque design

_High-quality machine components guarantee constantly high precision and durability

Standard milling strategies

5-axis exterior processing
using Ceramill CAD/CAM

High-frequency spindle
extremely robust and precise

8 tool spaces
with automatic tool changer

Blank holder
conversion in only a few steps

Interior lighting
for visual control of milling

Tool length measuring unit
incl. fracture check

Presence sensor
for milling tools

Connection for extraction protects the internal mechanism against contamination
optimum with Ceramill Airstream, but also for central extraction

ceramill® DNA GENERATION

THE POWER PACK WITH THE "CARVING-MODE".

This compact 4-axis milling unit extends inhouse fabrication of conventional laboratory indications to include the option of wet grinding/milling. Titanium abutment blanks can also be processed with this unit in the same way as composites, hybrid and glass-ceramics. The monocoque design, the solidly designed axis system as well as powerful high-frequency spindles transfer the respective milling strategies precisely and at high feed speeds to the workpiece. This is particularly effective when grinding in the "Carving Mode". This innovative grinding process reduces the processing times of single blocks up to 60 %. With the new "Thrilling Mode", it is also possible to "thrill" block assemblies including the connection geometries from standard CAD blocks. This is yet another profitable in-house indication which finds its way back in the laboratory and expands the versatile Ceramill CAD/CAM portfolio.

_High Performance grinding, carving due to DNA milling/grinding strategies

_Solid design enables the highest degree of precision with maximum speed rates

_"Carving Mode" technology significantly reduces the processing times of single blocks

_Special holder design ensures easy handling and accuracy when processing hard materials (titanium, glass-ceramics etc.)

Grinding in the carving mode reduces processing times by up to 60 %

SPEED PROCESSING

Interior lighting
for visual control of milling

High-frequency spindle
highly precise, stable, quiet running

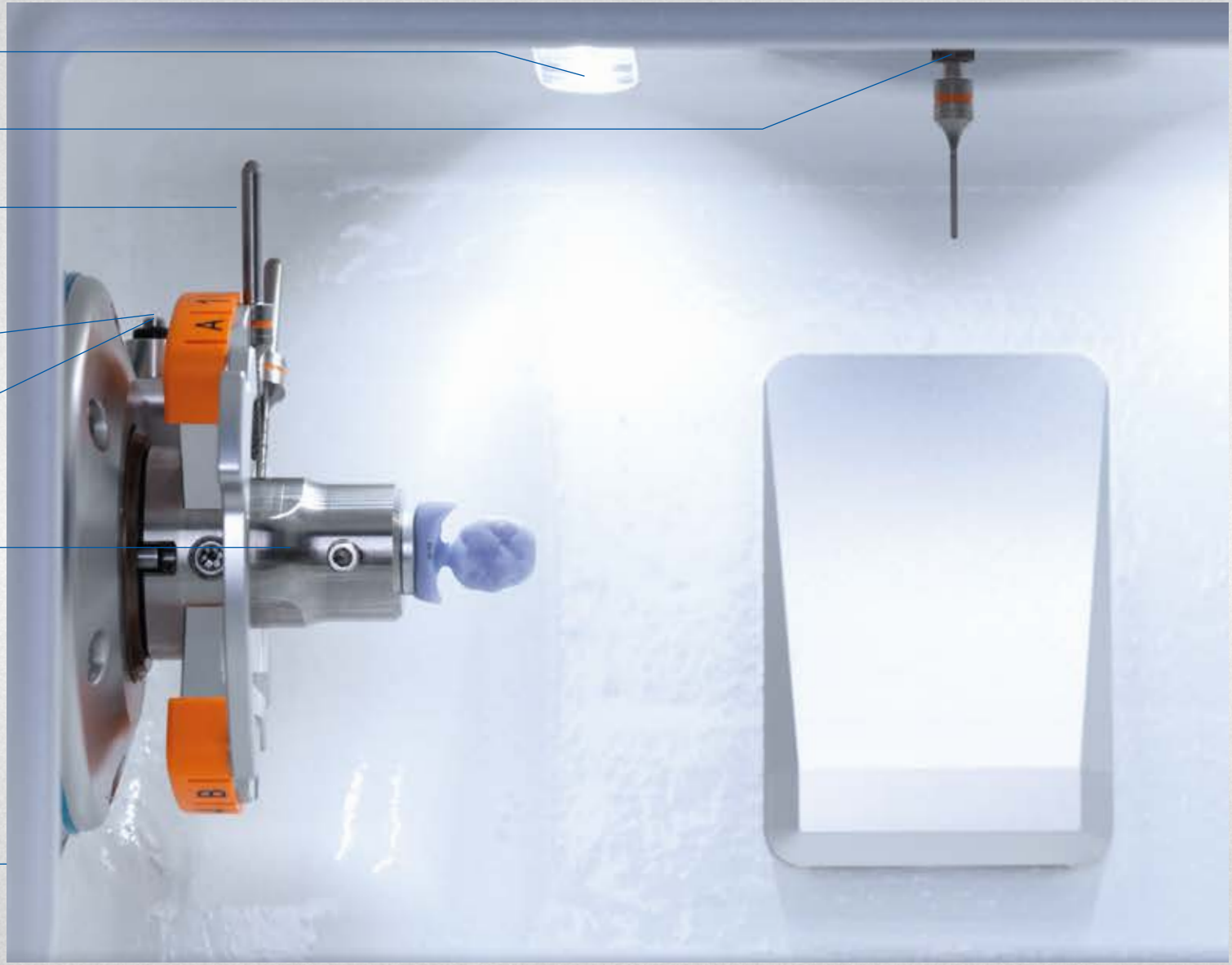
8 tool spaces
with automatic tool changer

Tool length measuring unit
incl. fracture check

Presence sensor
for milling tools

Blank holder
conversion in only a few steps

Coolant supply tank connection
large volume capacity ensures
long operating cycles



ceramill® DNA GENERATION

ONE FOR ALL - ALL IN ONE.

SPEED PROCESSING

The Ceramill Motion 2 is a benchmark in terms of the range of indications and materials in-house. The 5-axis milling unit combines wet and dry processing in one unit and enables the value-creation chain to be kept virtually completely in-house in the laboratory. The Ceramill Motion 2 can be used either as a purely dry or wet unit or in combined operation for an unlimited range of materials and indications. Equipped with the innovative control technology and robust machine concept from Amann Girrbach, the Ceramill Motion 2 is guaranteed to be future-proof, economic and precise. Furthermore, the innovative machining strategies for the rotational milling of Ti Preforms, the Carving Mode as well as the Thrilling Mode round off the versatility of the system.

_High Performance milling, grinding, carving due to DNA milling/grinding strategies

_Maximum range of materials and indications thanks to 5-axis wet and dry processing in one unit

_Innovative processing procedures ensure maximum ROI (e.g. rotational milling of titanium, processing of full dentures)

_Intelligent machine design guarantees optimum protection of all electronic components during wet operation

Carving of up to 3 unit bridges

Fabrication of one-piece/multi-piece abutments from hard block materials

ceramill® DNA GENERATION

High-frequency spindle
highly precise, stable, quiet running

Tool length measuring unit
incl. fracture check and calibration

Blank holder
exchangeable, depending
on material or indication

6 tool spaces
with automatic tool changer

Blank holder and wet/dry processing mode in only a few steps

Suction cup
for increased suction performance
and reduction of spray water

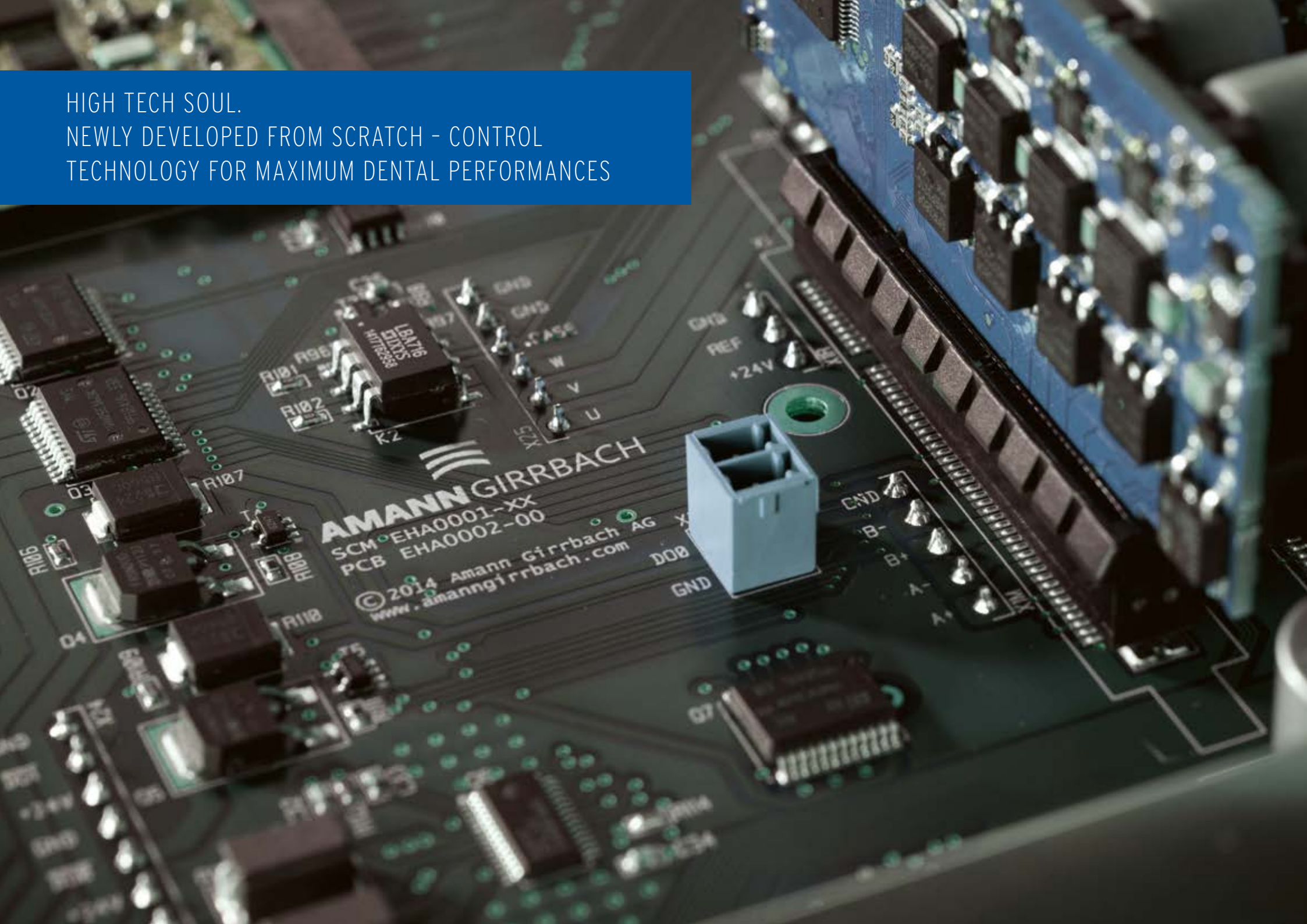
Coolant supply tank connection
large volume capacity ensures
long operating cycles

Standard milling strategies

5-axis exterior processing using Ceramill CAD/CAM

Easy change of the blank holder for conversion from milling to grinding

Ceramill Coolstream – integrated coolant preparation in the cart and connection for the Airstream extraction during dry processing



HIGH TECH SOUL.
NEWLY DEVELOPED FROM SCRATCH – CONTROL TECHNOLOGY FOR MAXIMUM DENTAL PERFORMANCES

CNC ≠ CNC. 35 YEARS OF EXPERIENCE IN MACHINE CONSTRUCTION – CONDENSED FOR DENTAL TECHNOLOGY.

CNC-controlled dental milling units are now mainly defined by a wide range of applications and a great scope of processable materials. The quality of a CNC unit, however, is not only defined by its equipment details and versatility from a dental technology aspect. Decisive for the long-term precision and stability of a CNC unit are the structural design and reduction of moveable parts to a minimum. The more compact and low-vibration of the construction, the greater the possibility of long-term smooth operation while maintaining the necessary precision.

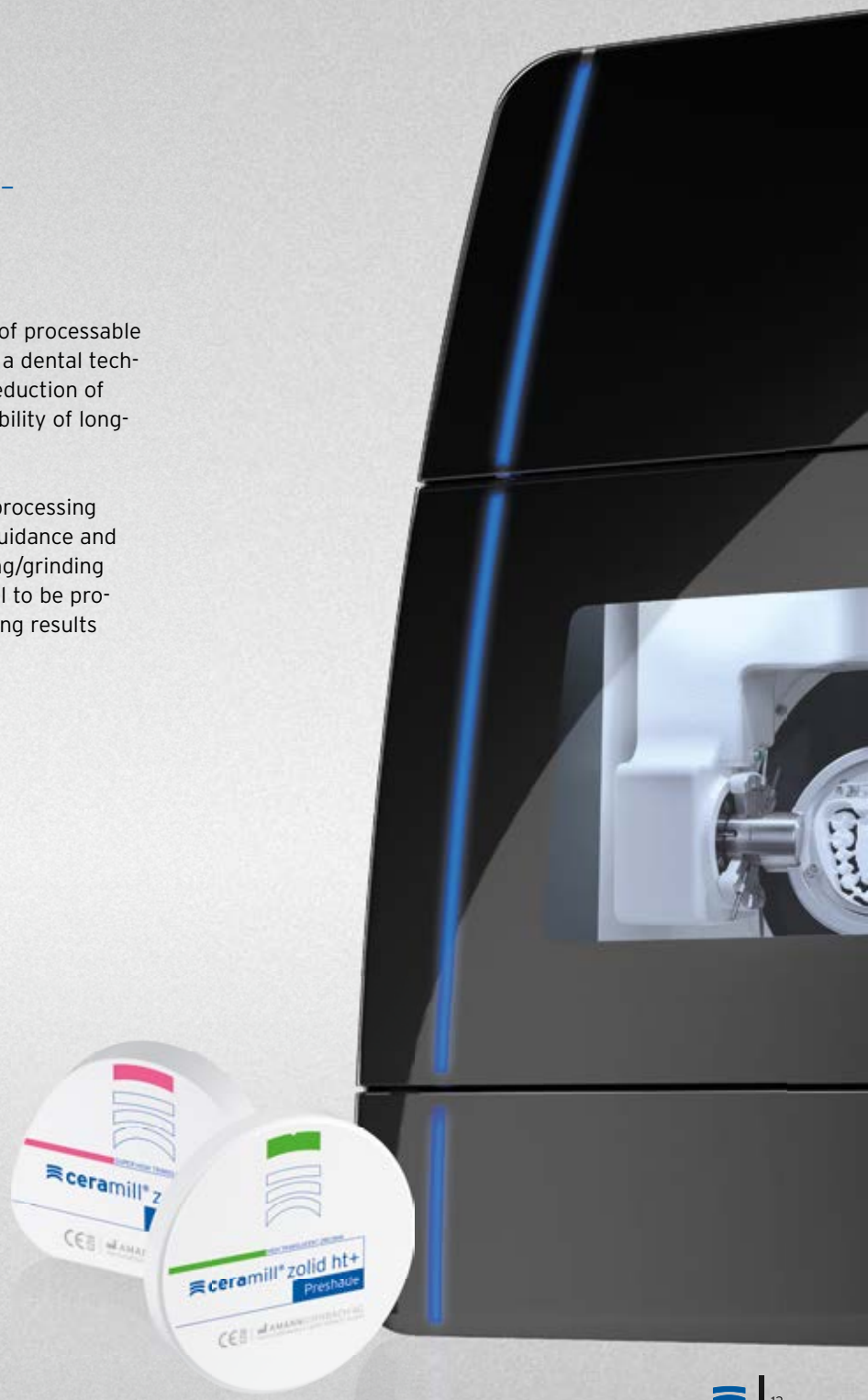
In addition to an intelligent design, which guarantees the stability and torsion resistance of the machine, the processing accuracy of desktop machines is decisively influenced by the quality of their construction components. Axis guidance and spindle thus contribute significantly to compensating for the forces and vibrations generated during the milling/grinding process. The components used in Ceramill CNC units are well above the load limit, independent of the material to be processed. In combination with the robust design, they ensure long-term process reliability and milling and grinding results of maximum precision.

_Monocoque (single-cast) design of every Ceramill unit chassis guarantees stability and torsion resistance

_Hermetically sealed milling area – electronic components are optimally protected

_Industrially precise axis guidance ensures mechanical rigidity due to minimum of moveable parts

_Interior space made from surface-coated casting for maximum protection – comparable with industrial CNC units

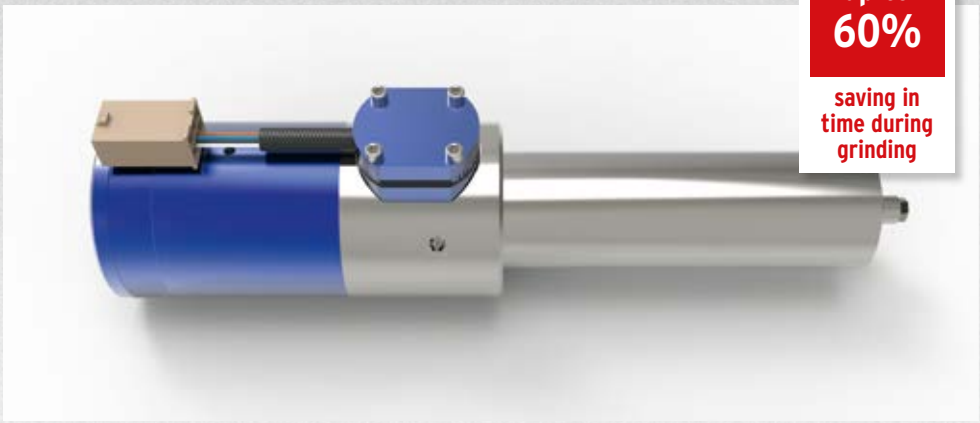


MILLING, GRINDING, **+ CARVING** – POWER AND INTELLIGENCE BUNDLED FOR ULTIMATE PERFORMANCE

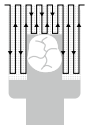
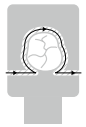
Our dry and wet units are equipped with quiet-running and powerful high performance spindles. Therefore maximum productivity can be achieved. Even material that is very hard to process, like hybrid ceramics or lithium disilicate, can now be processed with up to 100,000 rpm which makes them the most powerful component that can be used for desktop mills. The interplay of control, drive components, spindle and tools is of key importance, as a strong performance can only be achieved in combination with correspondingly designed milling strategies. Perfectly balanced, these parameters result in big savings of processing time maintaining the highest precision standard (HD milling).

The latest development resulting out of these enhancements as is a brand new processsing strategy we call "Carving Mode". Using "Carving Mode" can result in up to 60 % time savings.

_Hybrid bearing, high-performance, high-frequency spindle (100,000 rpm)
_Highly efficient processing of hybrid materials with the highest precision
_Reduction of grinding times up to 60 %
_Optimally protected against dust, chips and liquids



up to 60%
saving in time during grinding

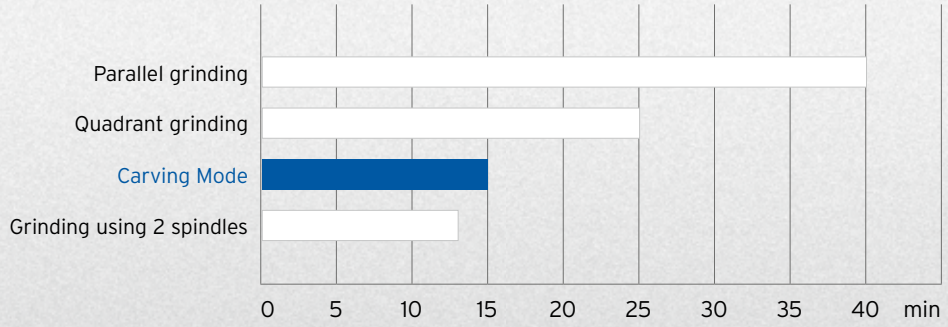
Time-consuming parallel grinding 	**Competitor (Ø performance)** Standard grinding strategies* Rpm: 30,000 Output: 250 W	**= Standard grinding** e.g. hybrid ceramics: Ø processing time = approx. 40 min.
Time-saving "Carving Mode" 	**Ceramill DNA generation** DNA milling/grinding strategies* Rpm: 100,000 Power: 750W	**= DNA performance carving** e.g. hybrid ceramics: Ø processing time = approx. 15 min.

* Average performance data of normal market desktop mills

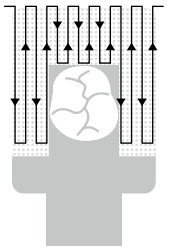
"CARVING" – THE QUICKEST METHOD IS USING A CURVE.

The "Carving Mode" – is based on the CNC technique of trochoidal milling, which Amann Girrbach transferred to the processing of dental hybrid and glass-ceramics using grinding tools. In contrast to conventional milling or grinding, the tool does not follow a linear, constant feed movement during trochoidal processing but moves over curved paths. The continuously rotating grinder moves towards the blank contour in a curved path. In this way excess material is completely separated, thus avoiding grinding down the blank to the actual geometry. Low machining forces and their uniform distributions over the entire tool length enable higher processing speeds, resulting in significantly shortened fabrication times with increased service life and component quality.

The procedure, unprecedented in dental CAD/CAM technology until now, results in a massive saving in time when fabricating single-tooth indications made from hybrid or glass-ceramic and corresponds to processing times using a twin spindle (approx. 15 min./crown).

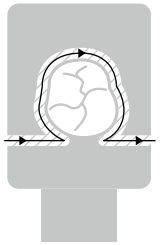


Parallel grinding
(Competitor A)



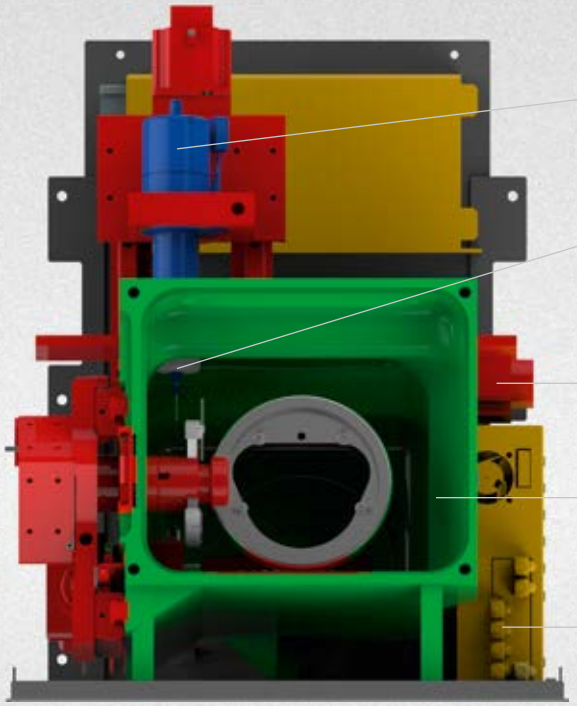
Quadrant grinding
(Competitor B)

"Carving Mode"



ceramill® DNA GENERATION

ceramill® mikro



Industrial CNC guidance unit – highly precise, torsion resistant / designed with a minimum of moveable parts

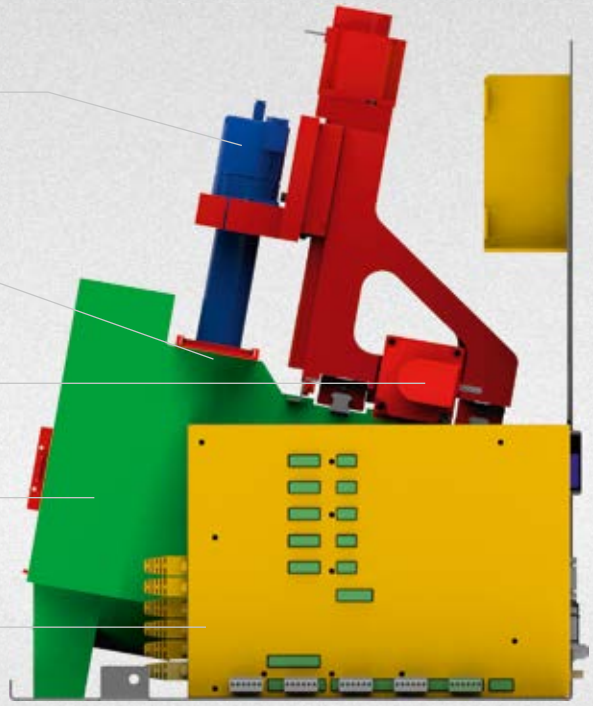
Highly precise, durable spindle with a concentricity of ≤ 1 µm

CNC axis system designed for high loading; short processes for long-term stability

Milling area separated from the control unit to avoid dust on electronic components

Electronic components installed in the housing

Very compact machine design
D/W/H: 18.31 x 20.28 x 23.03"

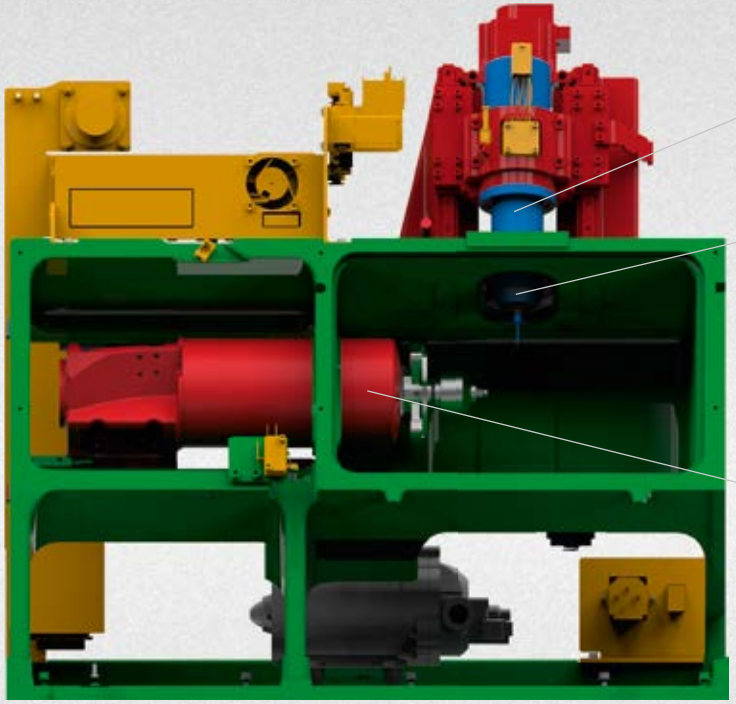


20.28"

18.31"

ceramill® DNA GENERATION

ceramill® mikro ic



22.83“

Industrial CNC guidance unit – highly precise, torsion resistant / designed with a minimum of moveable parts

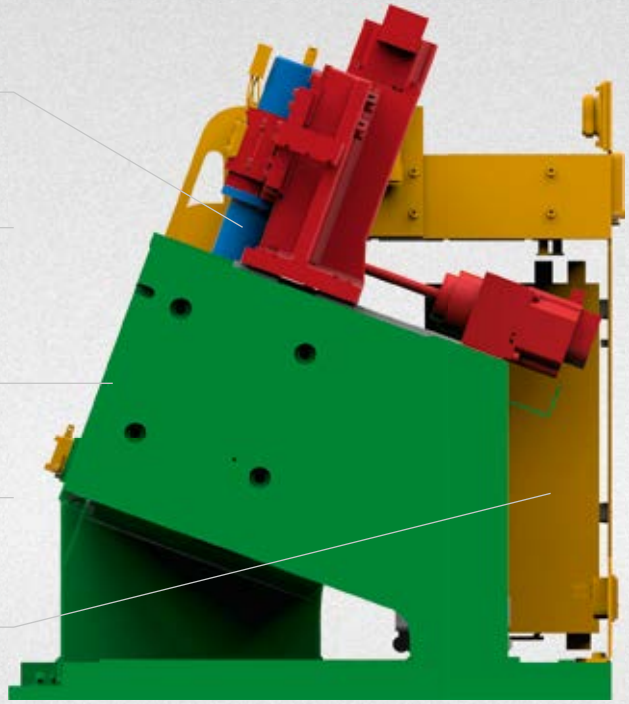
Powerful. Super-high frequenzy spindle with speeds up to 100,000 rpm

Milling area separated from the control unit to avoid dust on electronic components. Monocoque chassis guarantees absolute stability

Solid axis system enables high milling speeds with maximum precision

Electronic components installed in the housing

Very compact machine design
D/W/H: 18.31 x 22.83 x 23.03”



18.31“

ceramill® DNA GENERATION

OPEN FOR ALL.

Modular, flexible, versatile – the Plug & Play quick-change holder concept enables full exploitation of the material and indication potential of each Ceramill unit. In this way users have the option of flexibly and cost-effectively extending their milling unit to include new materials or adapting it to changing requirements. Handling is easy and uncomplicated thanks to effortless attachment of the blank holder to the connection bolts inside of the machine. The tool holder connected to the blank holder ensures that milling cutters or grinders for the respective material remain permanently in position.

Ceramill Material 71

Ceramill Material 98

Denture teeth
(full-denture prosthetics)

Denture wax
(full-denture prosthetics)

Glass-ceramic and hybrid blocks
(3-compartment)

Glass-ceramic and hybrid blocks
(12-compartment)

Adapter for glass-ceramic and
hybrid blocks (3-compartment)

Glass-ceramic and hybrid blocks
(1-compartment),
AG/UN Mandrell

Glass-ceramic and hybrid blocks
(3-compartment),
AG/UN Mandrell

Milling (1-compartment),
AG Mandrell

Milling (3-compartment),
AG Mandrell

BD-Load

Blockholder Milling
(9-compartment)

All Plug & Play quick-change holders at:
www.amanngirrbach.com

MILL IN THE LABORATORY – EASILY, QUICKLY AND PRECISELY.

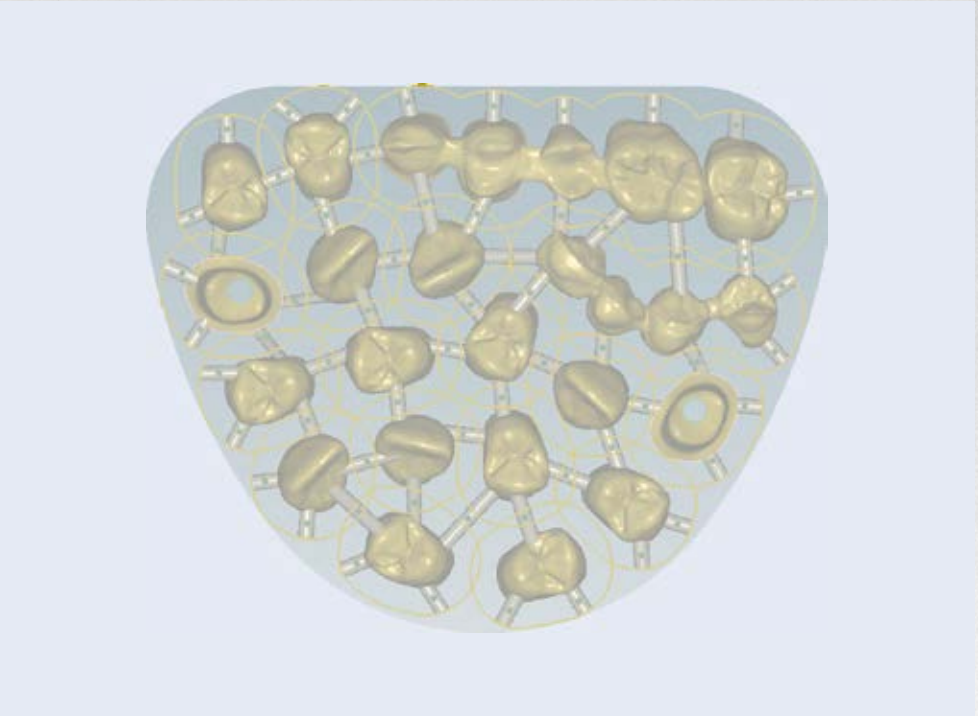
The automatic, clear user interface of the Ceramill Match 2 CAM software provides reliable, simple operation. Experience in CAM or milling is not required for use. Even users with little experience can easily and quickly create milling programs for fabricating crown and bridge frameworks using the interface. An ingenious Ceramill Match 2 collision control (and collision avoidance) guarantees a high degree of process reliability.

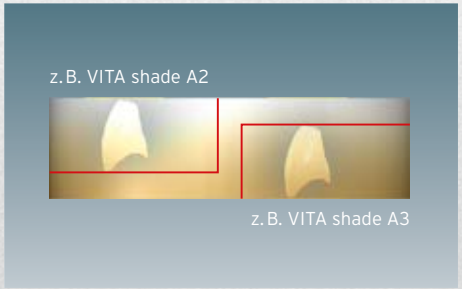
_Easy positioning and aligning of frameworks in the blank

_Easy changing of the position, size and alignment of connectors

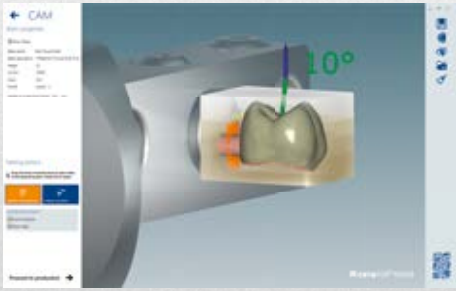
_Fast calculation of milling paths

_Sinter cushion in thermodynamically optimum design shape for accurately fitting sintering of long-span zirconia restorations

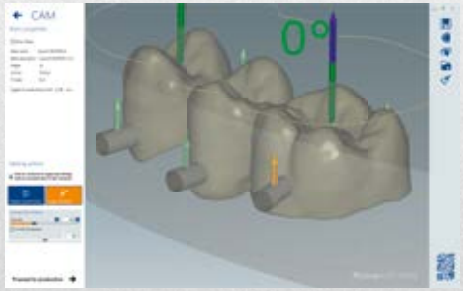




Intelligent nesting concept according to the VITA Classical shade guide



Processing of VITABLOCS® TriLuxe forte using rendered representation of the shade gradient



Easy positioning of the connectors on the frameworks

ceramill® DNA GENERATION

ENDLESS POSSIBILITIES

INDICATIONS	ceramill® mikro 4X 	ceramill® mikro 5X 	ceramill® mikro ic 	ceramill® motion 2 
Crown / bridge anatomically reduced	○	○	○	○
Crown / bridge fully anatomical	○	○	○	○
Implant bridge with gingiva section		○		○
Inlay / Onlay / Veneer	○	○	○	○
Overpress fully anatomical	○	○	○	○
Telescope	○	○	○	○
Attachment	○	○	○	○
Titanium abutment (customised)			○	○
Bridge on conical titanium bases		○		○
Multi-unit, screw-retained restoration on titanium bases		○		○
Bar on titanium base		○		○
Bite raising appliance		○		○
Eggshell temporary restoration	○	○	○	○
Full denture				○
Digital model fabrication				○

ceramill® DNA GENERATION

			ceramill® mikro 4X 	ceramill® mikro 5X 	ceramill® mikro ic 	ceramill® motion 2 
MATERIAL	**MATERIAL TYPE**	**PROCESSING WET/DRY**	Dry	Dry	Wet	Dry Wet
Ceramill Sintron	CoCr sinter metal	~	○	○		○
Zirconia	Zirconia	💧* ~	○	○	○*	○
Ceramill Wax	Milling wax	💧 ~	○	○		○
Ceramill A-Cast	Acrylic, transparent	💧 ~	○	○		○
Ceramill A-Temp	Acrylic, PMMA stained	💧 ~	○	○	○	○
Ceramill A-Splint	Splints-acrylic, PMMA	💧 ~		○		○
Ceramill M-Plast	Model plastic	~		○		○
Ceramill PEEK	Polyetheretherketone	~	○	○		○
Ceramill D-Wax	Prosthetic wax	💧				○
Ceramill D-Set	Denture tooth blanks	💧				○
VITA SUPRINITY® PC	Lithium silicate ceramic, zirconium-oxide reinforced	💧			○	○
VITA ENAMIC®	Hybrid ceramic	💧			○	○
VITABLOCS® Mark II / TriLuxe forte	Glass-ceramic	💧			○	○
IPS e.max CAD, Ivoclar Vivadent	Lithium disilicate ceramic	💧			○	○

* coming soon

ceramill® DNA GENERATION

TECHNICAL DATA

	ceramill® mikro 4X	ceramill® mikro 5X	ceramill® mikro ic	ceramill® motion 2
Dimensions D/W/H (inch)	18.31 x 20.28 x 23.03	18.31 x 20.28 x 23.03	8.31 x 22.83 x 23.03	23.43 x 20.87 x 30.71
Weight	50 kg	50 kg	70 kg	78 kg
Electrical connection value	100-230V 50/60 Hz	100-230V 50/60 Hz	100-230V 50/60 Hz	100-230V 50/60 Hz
Output (W)	250	250	750	750
Motor speed (rpm)	60,000 min^{-1}	60,000 min^{-1}	100,000 min^{-1}	100,000 min^{-1}
Compressed air	6 bar 50 L/min	6 bar 50 L/min	6 bar 50 L/min	6 bar 50 L/min
Torque (Ncm)	4	4	9.2	9.2
Chuck (Ø inch)	0.12	0.12	0.12	0.12
Axes	4	5	4	5
Extraction	prepared	prepared		prepared
Coolant water tank			prepared	prepared

MILLING AND GRINDING TOOLS FOR CERAMILL CAD/CAM

CNC milling and grinding tools are essential components in processing dental materials. The quality, geometry, coating and number of blades of tools contribute greatly to the surface quality, detail definition and precision of a restoration. Based on this, we meticulously match our milling and grinding tools to the material-specific milling strategies, design parameters and, of course, the material itself. This way, we not only guarantee perfect framework quality but also optimum service lives as well as smooth, efficient milling and grinding processes.

An overview, including ordering information about all Ceramill CAD/CAM milling and grinding tools can be found at:
www.amanngirrbach.com

ORDERING INFORMATION

Ceramill Mikro 4X

179300N	Ceramill Mikro 4X

Ceramill Mikro 5X

179330N	Ceramill Mikro 5X

Ceramill Mikro IC

179600N	Ceramill Mikro IC
178640	Ceramill Coolstream

Ceramill Motion 2 5X

179250NS	Ceramill Motion 2
178640	Ceramill Coolstream

AMANNGIRRBACH

AUSTRIA (HEADQUARTERS)
Amann Girrbach AG
Koblach, Austria
Fon +43 5523 62333-105
austria@amanngirrbach.com

GERMANY
Amann Girrbach GmbH
Pforzheim, Germany
Fon +49 7231 957-100
germany@amanngirrbach.com

NORTH AMERICA
Amann Girrbach North America, LP
Charlotte, NC, U.S.A.
Fon +1 704 837 1404
america@amanngirrbach.com

BRASIL
Amann Girrbach Brasil LTDA
Curitiba, Brasil
Fon +55 41 3287 0897
brasil@amanngirrbach.com

ASIA
Amann Girrbach Asia PTE LTD.
Singapore, Asia
Fon +65 6592 5190
singapore@amanngirrbach.com

CHINA
Amann Girrbach China Co., Ltd.
Beijing, China
Fon +86 10 8886 6064
china@amanngirrbach.com

WWW.AMANNGIRRBACH.COM

917944N EN-US 2019 01