

digital

international magazine of digital dentistry



opinion

Is digital dentistry the solution to the sustainability dilemma?

case report

Comprehensive dental rehabilitation with a digital workflow

industry news

Digital workflow for dental offices and laboratories—where are we now?

KATANA™ Zirconia FOR TRUE-TO-LIFE RESTORATIONS



Kuraray Noritake Dental Inc. offers five types of dental zirconia that fully meet the needs of any dental technician. But the line-up doesn't stop there. We have also developed specialised products for polishing, staining, glazing and porcelain veneering, based on a wealth of experience. Our dental zirconia and ceramics ranges are well-aligned and designed to complement each other for streamlined procedures leading to brilliant treatment outcomes.



FULL PORCELAIN LAYERING

FOR ULTIMATE AESTHETICS

Full porcelain layering on a classical framework remains the most aesthetic way of finishing zirconia restorations. By adding different layers of porcelain, ceramists are able to imitate the natural internal colour structure of a tooth precisely, creating a piece of art that truly matches the appearance of the adjacent teeth. The complete family of CERABIEN™ ZR line-up of internal stains, layering powders, external stains and even PRESS shade base stains is designed for this approach.



CEMENT WITH CONFIDENCE

PREDICTABLE PROCEDURE

Reliable luting material designed to work predictably with the zirconia of your choice is essential in the dental practice but also in every laboratory. It is an excellent choice for cementing zirconia to an implant abutment or titanium base, or to bond restorations to frameworks.



Magda Wojtkiewicz

Managing Editor



IDS 2023—simply the best!

After the turbulence of the COVID-19 pandemic, the dental industry is back on form! The best proof of this was the global meeting of the dental community at the largest trade show and dental business summit—the International Dental Show (IDS). Despite the many economic and political issues presently facing the world, IDS 2023 achieved pre-pandemic attendance levels—120,000 visitors—and massive participation by clinicians, members of the dental team, educators, manufacturers and distributors while showcasing a vast variety of products and equipment.

Koelnmesse in Cologne in Germany was the centre of the dental universe for tens of thousands of participants during a full week in March, often with a crush of people trying to pass through the crowded aisles for a glimpse of new products and technology. The halls were full of visitors watching hands-on demonstrations and presentations delivered by clinicians, laboratory technicians, dental hygienists and industry partners representing 1,788 exhibitors from 60 countries.

Like pre-pandemic editions of IDS, seeing everything that one might wish to see in the multiple halls was impossible. One thing was abundantly clear: there was a major emphasis on innovation and digital solutions focusing

on the expanding world of 3D printing, design software, CAD/CAM chairside devices, materials with excellent physical and aesthetic properties, cloud solutions and artificial intelligence (AI) technology. The innovations presented at IDS were stunning, and the number of new digital solutions on display was almost beyond imagination!

Naturally, the overall feedback from the exhibitors was very positive. Fred Freedman, vice president of member services at the Dental Trade Alliance and president of International Dental Manufacturers, stated: “IDS is the largest and best international dental meeting in the world. The 2023 IDS can be summed up in one sound bite: IDS is back. With the enormous crowds and thousands of international distributors and visitors, this is a must for all US manufacturers and companies looking for new international business.”

The success of this year’s IDS allows us to look to the future development of the dental industry with great optimism.

Sincerely,

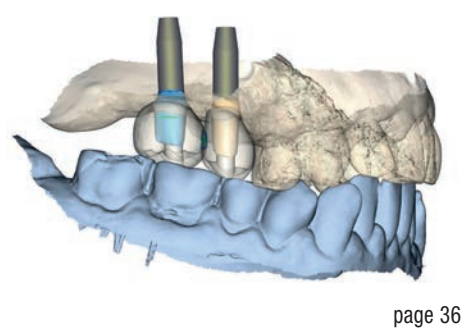
Magda Wojtkiewicz
Managing Editor



page 06



page 22



page 36

Cover image courtesy of EduardTanga/Shutterstock.com



editorial

IDS 2023—simply **the best!** 03

news

Dentsply Sirona, FDI and Smile Train **deliver first-ever** global protocols for **digital cleft treatment** 06

opinion

Artificial intelligence in dentistry 08

Researchers use **generative artificial intelligence** to **design** realistic dental crowns 14

AI may assist in dental implant surgery, **localising mandibular canals** 16

Is **digital dentistry** the solution to the **sustainability dilemma?** 18

Net-zero emissions in dentistry—achievable goal or greenwashing? 20

interview

Aspen Dental's **digital denture transformation** 22

“It is the **combination of the many improvements in detail** that are advancing **implant dentistry today**” 26

case report

Modern workflow of immediate zirconia implant surgery utilising **dynamic navigation**: case studies and benefit analysis 30

Screw-retained restoration of a maxillary first molar and second premolar 36

Comprehensive dental rehabilitation with a **digital workflow**: A case study 40

Digitally planned highly aesthetic restorations 46

Chairside fabrication of a nano-ceramic hybrid composite endocrown for a severely damaged molar after endodontic treatment 52

industry report

Digital workflow for dental offices and laboratories—**where are we now?** 60

manufacturer news 64

practice management

Could placing **attachment over authenticity** be the reason behind dental burn-out? 68

meetings

International events 72

about the publisher

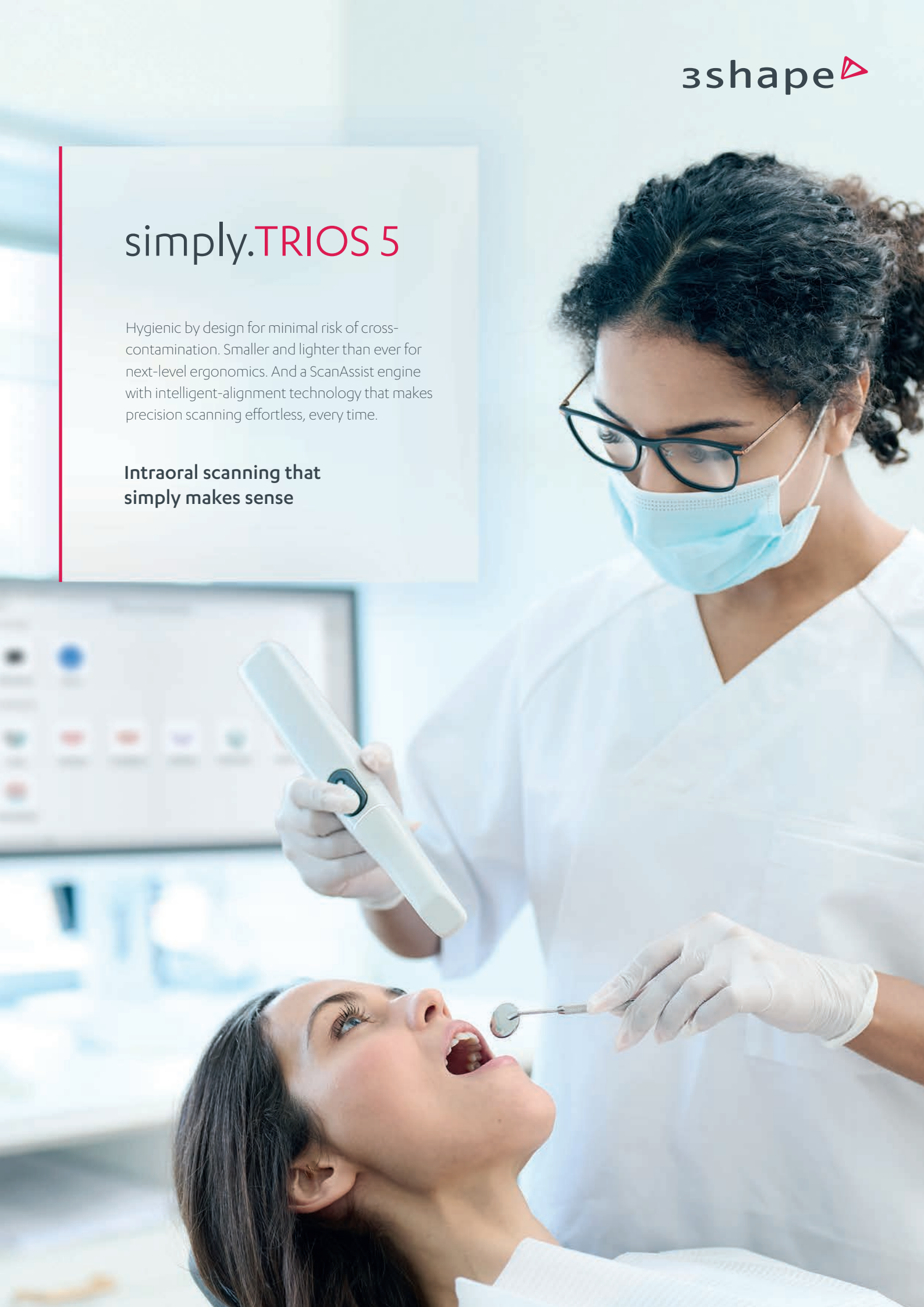
submission guidelines 73

international imprint 74

simply. **TRIOS 5**

Hygienic by design for minimal risk of cross-contamination. Smaller and lighter than ever for next-level ergonomics. And a ScanAssist engine with intelligent-alignment technology that makes precision scanning effortless, every time.

**Intraoral scanning that
simply makes sense**





As part of its sustainability strategy, “BEYOND: Taking action for a brighter world”, Dentsply Sirona entered a three-way partnership with Smile Train and FDI World Dental Federation in 2022 to improve the quality of and access to oral healthcare, specifically cleft care, globally. (Image: © Dentsply Sirona)

Dentsply Sirona, FDI and Smile Train deliver first-ever global protocols for digital cleft treatment

By Dental Tribune International

Dentsply Sirona, the world’s largest manufacturer of professional dental products and technologies, in partnership with Smile Train, the world’s largest cleft-focused organisation, and FDI World Dental Federation, the global voice of the dental profession, have recently announced a major milestone in the push to advance global cleft care. Together, they have developed the first global standard protocols for digitalised cleft treatment. The protocols are expected to improve the accuracy and efficacy of current treatments significantly by providing dental professionals with a comprehensive digital clinical approach across all stages of care.

The workflows outlined in the protocols contain a wealth of information to guide dental practitioners in their work and enable best practice. The protocols encompass treatment in the case of pre-surgical infant orthopaedics, mixed dentition, permanent dentition and oral rehabilitation. Each option features a remote monitoring and oral health component.

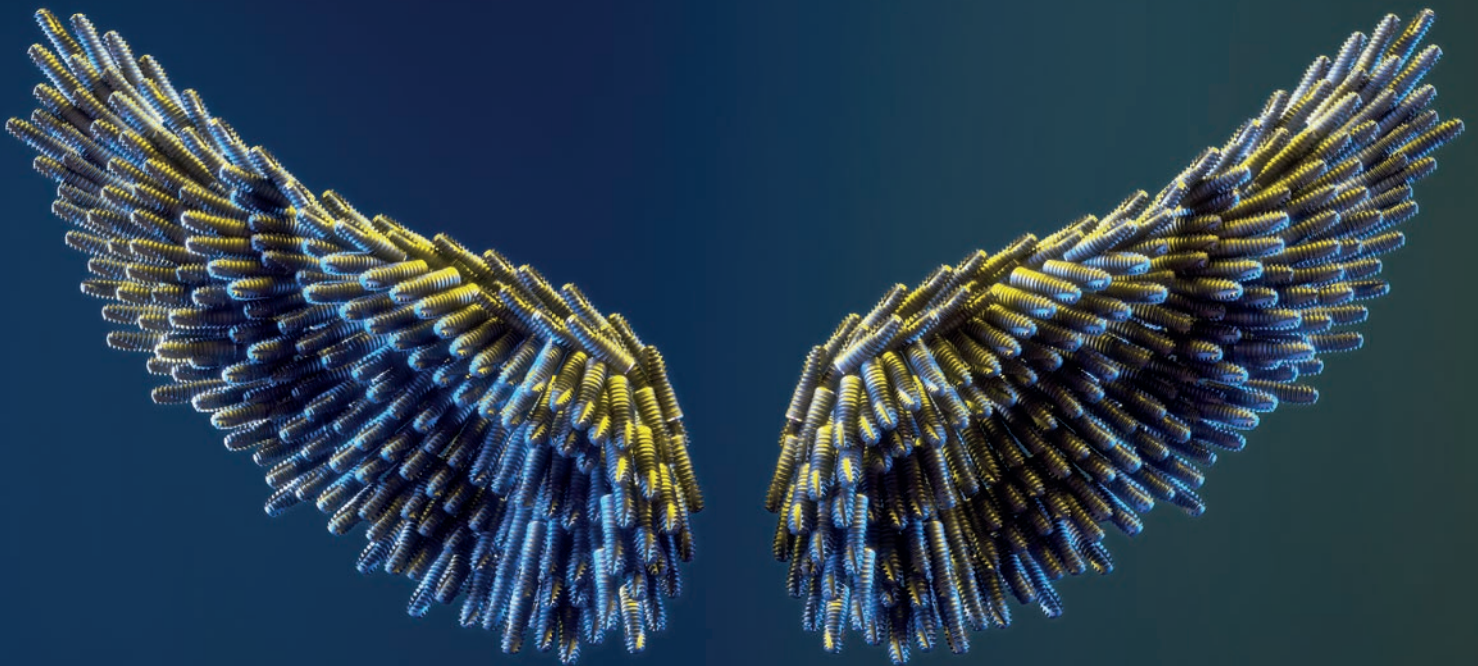
“These protocols will help bring health and opportunity to countless children worldwide,” FDI President Prof. Ihsane Ben Yahya said in a press release. “It took an incredible amount of research and effort to put these workflows together,” she continued.

To aid application of the available information and details, an interactive tool was created that will help dental professionals navigate through the different stages of care.

“The new protocols set the bar for the evolution of digital cleft care, leveraging technology that will ensure access to high-quality care for marginalised communities, and reduce the burden of care for the cleft community,” commented Susannah Schaefer, president and CEO of Smile Train.

In addition, the three organisations have developed a clinical education course that aims to provide cleft professionals worldwide with additional in-depth training on digital cleft care protocols and to support them as they integrate digital technologies into their treatment plans.

The partnership builds on an ongoing global partnership between Dentsply Sirona and Smile Train, which funded more than 730 cleft surgeries in the first year of collaboration. “Together with Smile Train and FDI, we are working to advance the future of cleft care and go BEYOND for children with clefts worldwide,” added Erania Brackett, chief marketing officer and head of sustainability at Dentsply Sirona. “The launch of these new global protocols is an enormous step forward on that journey, integrating high-quality digital, more sustainable technologies and workflows into cleft care.”



Go further with DS OmniTaper™ implant system

Take your greatness to new heights. DS OmniTaper™ implant system is an intuitive, dependable and scalable solution, allowing you to go further and do more for your patients.

- Pre-mounted TempBase for immediate restorations and efficient workflows
- OsseoSpeed® surface for more bone, more rapidly
- Conical EV connection and harmonized prosthetics for streamlined efficiency

To learn more about the newest member of the EV Implant Family
- visit dentsplysirona.com/ds-omnitaper or talk to your representative.



Follow Dentsply Sirona for
the latest in implant dentistry



dentsplysirona.com/implants



Artificial intelligence in dentistry

Dr Miguel Stanley, Portugal

For those who have been paying attention to the latest news in the technology space, you will most certainly have noticed that OpenAI recently launched ChatGPT, a new artificial intelligence (AI) chatbot. It is amazing to see how this technology works and how quickly it can do incredibly complex tasks and have virtually all the information that is online at your disposal in a matter of seconds. I had to test it multiple times and try to force it to make a mistake on the information that I wanted, but this machine learning technology is really powerful.

For example, I asked it to write me a song around a specific theme and asked for the chords I liked best, and in less than 10 seconds, I had a song that I could easily play on the guitar. I even asked it to write this article quoting articles and giving examples of application of AI in medicine, and the result was quite complete, but naturally as the applications of AI in dentistry are still few and of little relevance, naturally there was little information it could combine and use in an intelligent way. As such, the result was somewhat interesting, but not what I was looking for. That is not to say that in a year or two when the bot can obtain more information online, and there are more cases and documentation, the technology will not be able to be even better.

If ChatGPT is asked things for which a great deal of information is already available, the responses are simply amazing, and the scary thing is that the bot is still learning. It learns with every question and with every answer. It is going to revolutionise the way we search for information and the way we learn, and certainly many jobs are at risk with this technology. As a rule, I am not a person who is afraid of technologies, but if we look at the automobile industry, which used to rely almost entirely on people, all tasks are now mainly done using robots. The work of cashiers at the supermarket can also already be 100% automated. There are already platforms for lawyers and legal articles written by AI programs and translated almost instantly. It is all quite impressive.

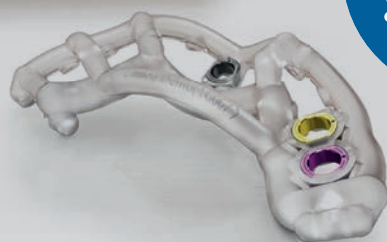
Our dental business has three main components:

- diagnosis and treatment plan;
- execution of treatment; and
- daily management of the clinic.

Of course, I am simplifying here. We all know that it is far more detailed and that there are many more factors at play than these, but I think that these are the main areas in the day-to-day running of a modern dental prac-

TRULY CONICAL PRECISION

CONOLOG[®]
SYSTEM



Fully
guided!

CONOLOG[®] PROGRESSIVE-LINE conical performance^{1,2} at bone level

Precise conical connection

- long conus for reduced micromovements
- superior positional stability in comparison to other conical systems^{1,2}
- easy positioning with excellent tactile feedback
- integrated platform switching supporting the preservation of crestal bone

[1] Semper-Hogg, W, Kraft, S, Stiller, S et al. Analytical and experimental position stability of the abutment in different dental implant systems with a conical implant-abutment connection Clin Oral Invest (2013) 17: 1017
[2] Semper Hogg W, Zulauf K, Mehrhof J, Nelson K. The influence of torque tightening on the position stability of the abutment in conical implant-abutment connections. Int J Prosthodont 2015;28:538-41

CONOLOG (R) is a registered trade mark of Camlog Biotechnologies GmbH. It may however not be registered in all markets.



VISIT OUR
WEBSITE!

 biohorizons
camlog