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ZAHNTECHNIK WIRTSCHAFT LABOR

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INT. DENTAL TRIBUNE · 30 JAHRE OEMUS MEDIA & 20 JAHRE

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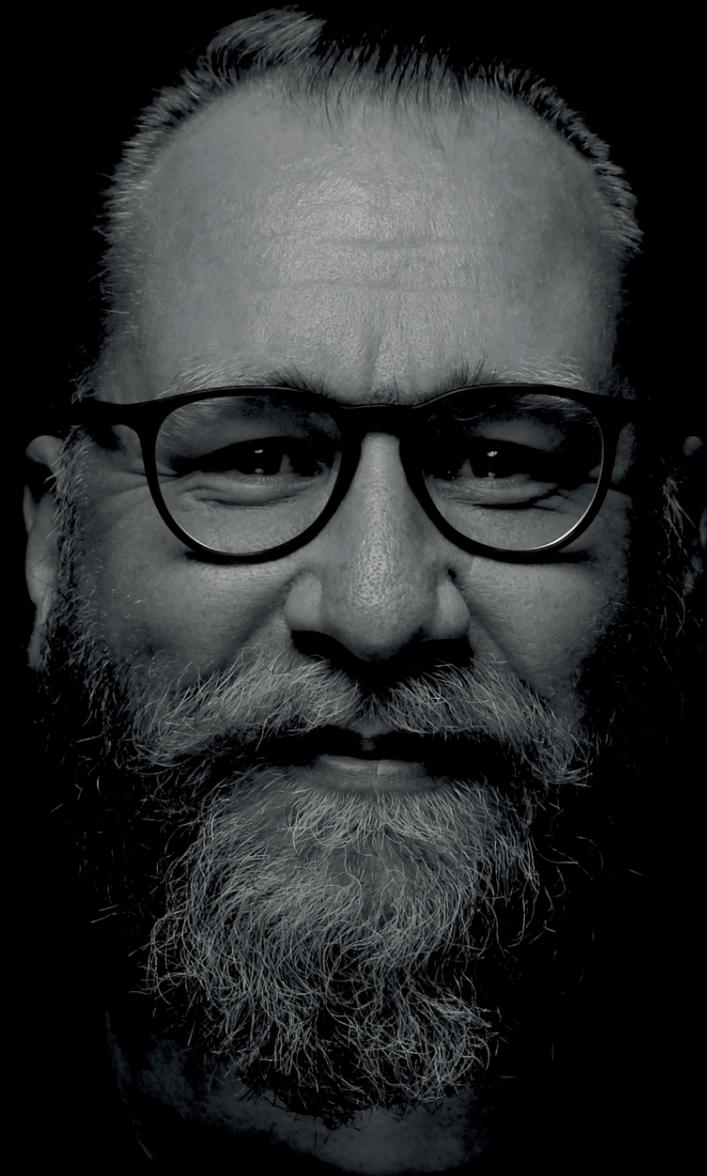
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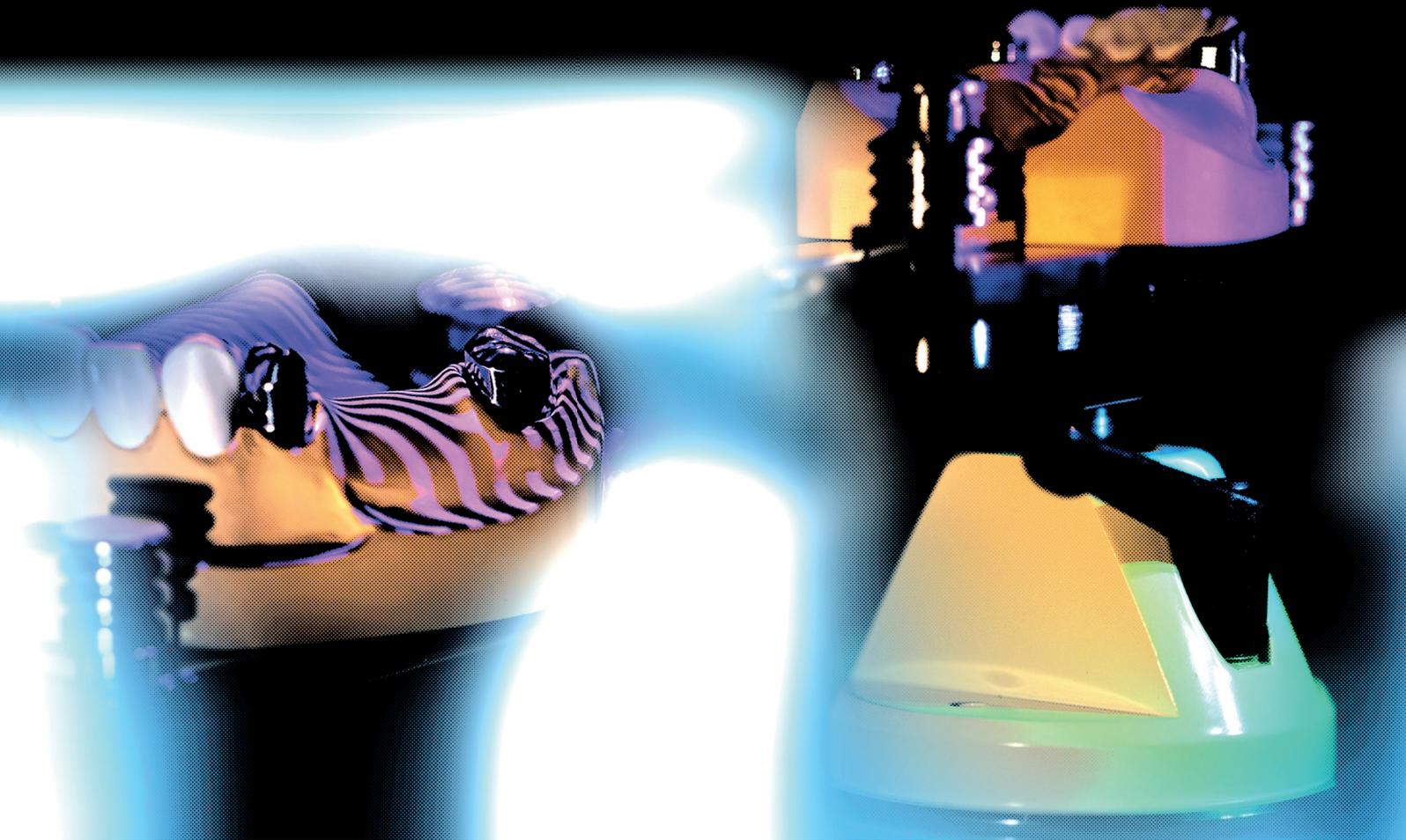
„The Nordic Way"

Telescope standards in digital workflow

An article by MDT Lars Schäfer

oemus

Lars Schäfer

MDT, AxioDent

MDT Lars Schäfer has been working as a speaker on digital telescopic prostheses since 2014 and imparts his knowledge to dental technicians from all over the world (such as India, England, Austria and Scandinavia) with his "Full Metal Telescope" program. The focus of these courses is not only the safe production of superstructures, but also the efficient use of materials, with a clear indication of economic success through the correct use of modern technologies.
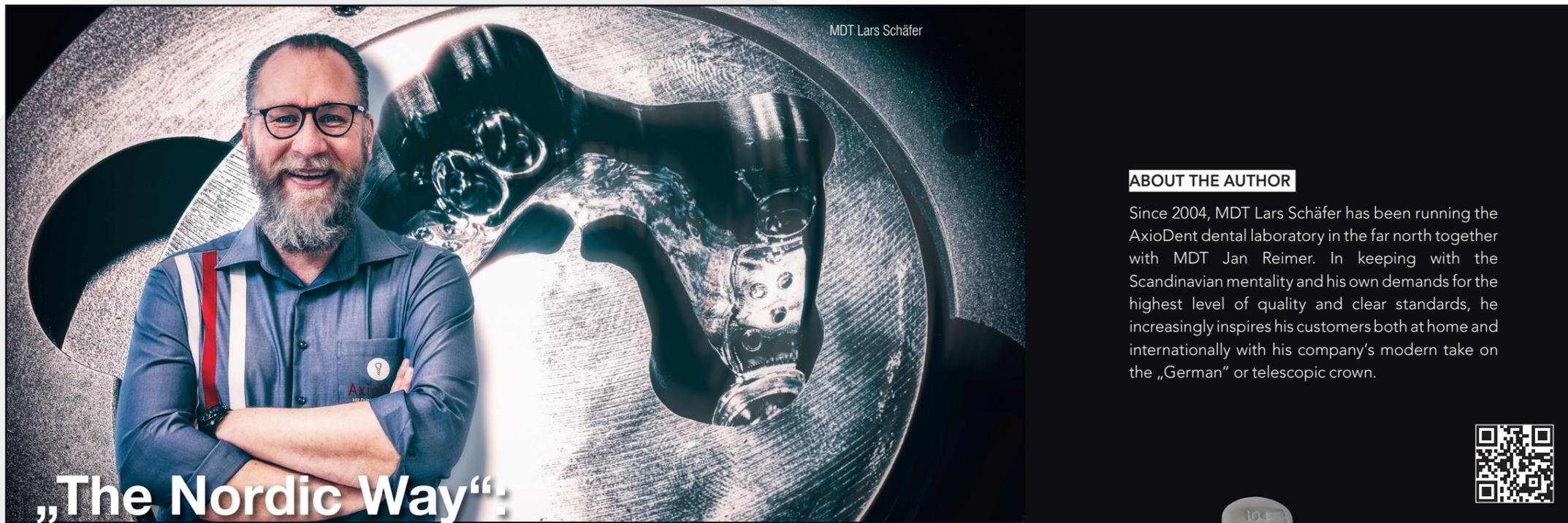
MDT Lars Schäfer

ABOUT THE AUTHOR

Since 2004, MDT Lars Schäfer has been running the AxioDent dental laboratory in the far north together with MDT Jan Reimer. In keeping with the Scandinavian mentality and his own demands for the highest level of quality and clear standards, he increasingly inspires his customers both at home and internationally with his company's modern take on the „German" or telescopic crown.

Despite digital manufacturing allowing the simultaneous milling of primary and secondary parts in one blank we should always use an overprint as a verification of accuracy.

„The Nordic Way“:

Telescope standards in digital workflow

An article by MDT Lars Schäfer

DIGITAL TELESCOPE TECHNOLOGY /// New digital technologies and traditional craftsmanship offer fantastic possibilities in the production of telescope-supported superstructures. Decades of experience in manual production are complemented by new digital possibilities that have now achieved a level of process reliability that has never been achieved before for consistently high-quality prostheses.

Reliable repeatability in the milling processes is a prerequisite for long-term, reproducible results and must be taken into account when selecting system components. The individual work steps of the efficient telescopic workflow, in conjunction with the modern options in the control software of the milling systems, offer the user permanent guidance throughout the process.

While the impression is often taken in the usual way after preparation, the primary telescopes are designed in the CAD software after the scan. In modern milling machines, the precise milling of primary parts is available as a regulated workflow and can be manufactured by the user with significantly greater process reliability than production using casting technology. To transfer the bite conditions, digital JIGs are milled for transfer after the prebite has been taken and can immediately be placed precisely on the primary crowns and the alveolar ridge. The JIGs serve both as a transfer aid and for checking the bite or registering the patient situation on the later working documents and are also taken as a mold. In combination with the printing technology,

individual trays with a ready-made connection for receiving the face bow joint are produced after an impression has been taken, making processes in the practice and in the dental laboratory much easier.

After the master model has been produced and the upper jaw has been correctly positioned using the face bow, the upper and lower jaws are precisely articulated using the finely adjusted JIGs. With the telescopic transfer holder, the primary parts can be precisely transferred in their individual position for the milling model. The holder was also manufactured and milled by ZTM Lars Schäfer himself, as the transmission keys available on the market are not sufficiently stable and are often deformed in the hand milling device and are then responsible for misalignments. There is currently no alternative to the classic production of a milling model in order to be able to react correctly to possible divergences.

Fig. 1: From analog to digital. **Fig. 2:** Primary crowns with a system. **Fig. 3:** Transmission JIG. **Fig. 4:** Custom spoon printed. **Fig. 5:** Articulation with JIG. **Fig. 6:** Transfer of primary crowns.
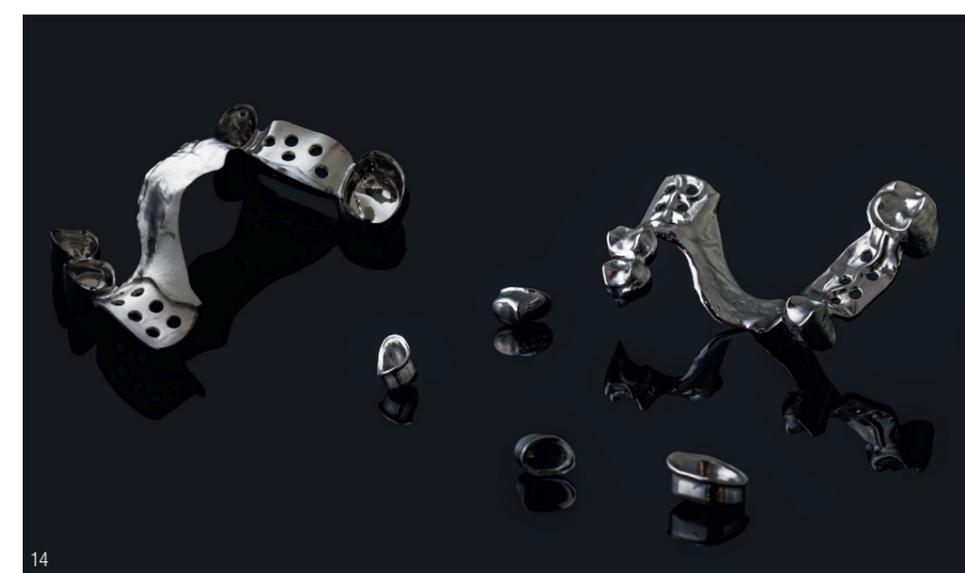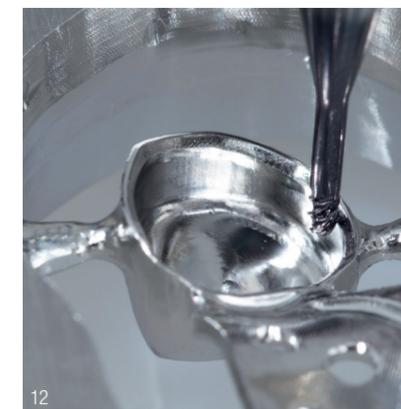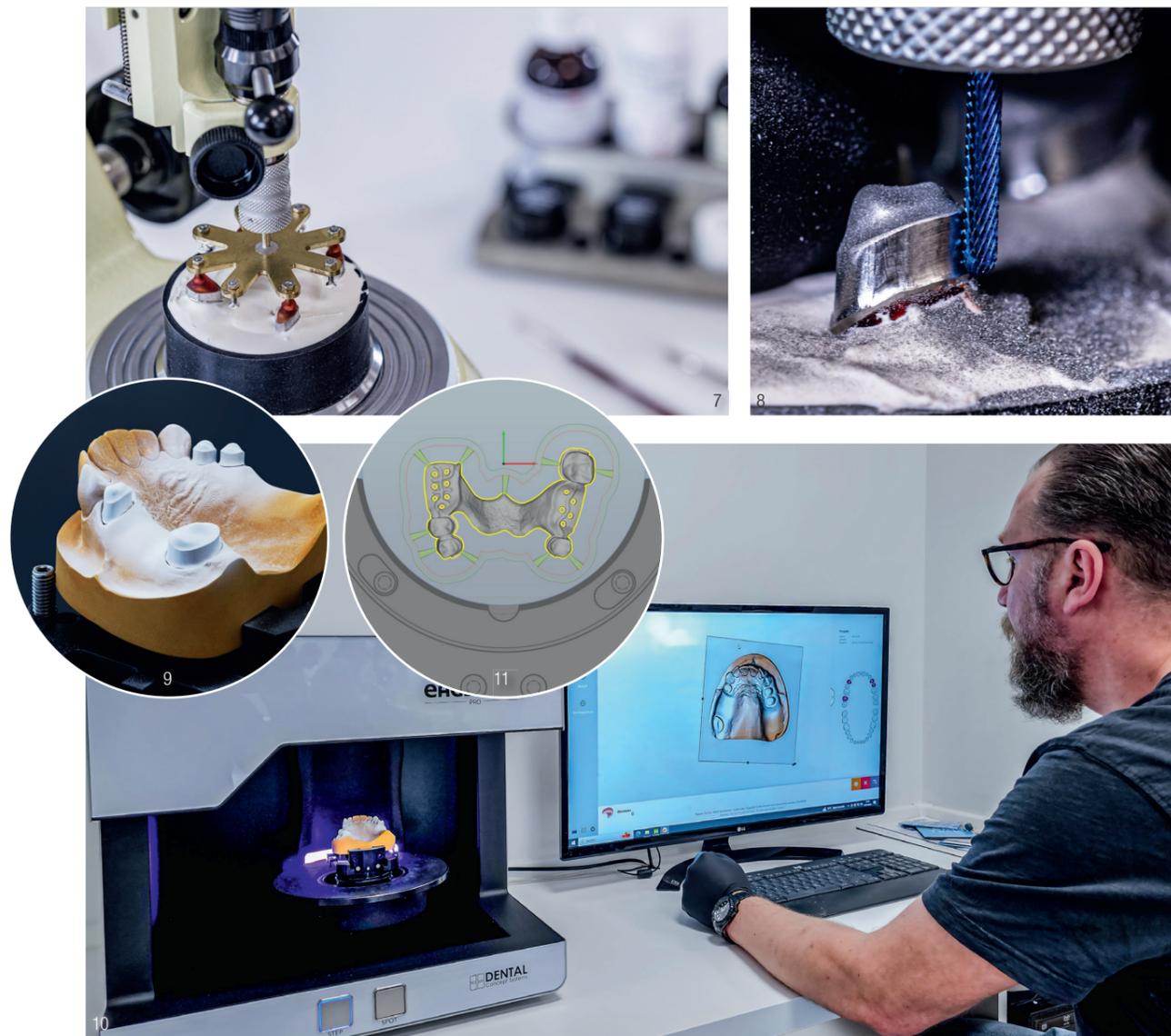
Fig. 7: Milling model.
Fig. 8: Milling of the primary crowns.
Fig. 9: Digitize.
Fig.10: Scan.
Fig.11: Calculation of the milling paths.
Fig. 12: The fine milling (fitting) of the secondary crowns in the machine.
Fig. 13 und 14: The final work.

MATERIALS AND SYSTEMS:

Spoon plastic – Optiprint Tray, Dentona
Alloy – Eisenhammer Supra,
Dental Concept Systems
Plasters – SHERA
Facebows and articulators –
Amann Girrbach
Telescopic transfer holder – Fjordstars
CAD-Software – exocad
CAM-Software – ExpertCAM by Hyperdent
Milling system – DC1, Dental Concept Systems
Scanning software – DentalScan by SmartOptics
Scan spray – White Rabbit,
Dental Concept Systems
Scanner – Eagle Eye PRO und Mini Eagle,
Dental Concept Systems
CAM tools – Blue Line,
Dental Concept Systems
Parallel milling cutter – BlueLine, bredent
Brush plastic – PiKuPlast, bredent
Parallel milling device – BF2, bredent

Even though the new digital manufacturing options make it possible to mill primary and secondary parts in one blank at the same time, checking by taking an overprint should never be omitted.

To mill the primary crowns, special parallel milling cutters are used, which have the same properties as the milling tools in the milling system. CAM data, CAD tools and hand tools therefore use identical geometries. In order to be able to optically scan the finished milled primary crowns on the model in high resolution, the surface must be finely matted. Choosing the right scanning spray is essential!

Modern strip light scanners not only have an enormous advantage in precision, but also offer the laboratory a large time saving compared to tactile scanning. With its properties, the scanner is the most important point in being able to produce precisely fitting secondary structures. Design, optics, scanning software and usability must be perfectly coordinated.

After design, the work is handed over to the CAM software. All important information about the material, the tools and all the fit parameters are stored in the CAM templates. The main milling, the fine milling (fitting) of the cavities and the final separation of the retaining pins can be inserted individually.

During the fitting process, expansions can be set in 2 μm increments. Thanks to the perfectly coordinated work steps, the finish of the telescopes can only be adjusted by polishing the primary and secondary crowns. The previous milling steps enable the dental technician to save valuable time in the manufacturing process.

Conclusion

Modern dental technology enables the dental laboratory not only to produce aesthetically and technically sophisticated dentures, but also to be economically positioned for the future. Although the treatment processes and workflow in the dental laboratory are not always the same and different ways of providing patient care can be found in different countries, the new digital options can be mastered by users with a wide variety of requirements. However, the high complexity of extensive restorations is difficult to control if you try to put together the system components yourself. If you want to achieve your goal safely and effectively, you should always have an experienced system provider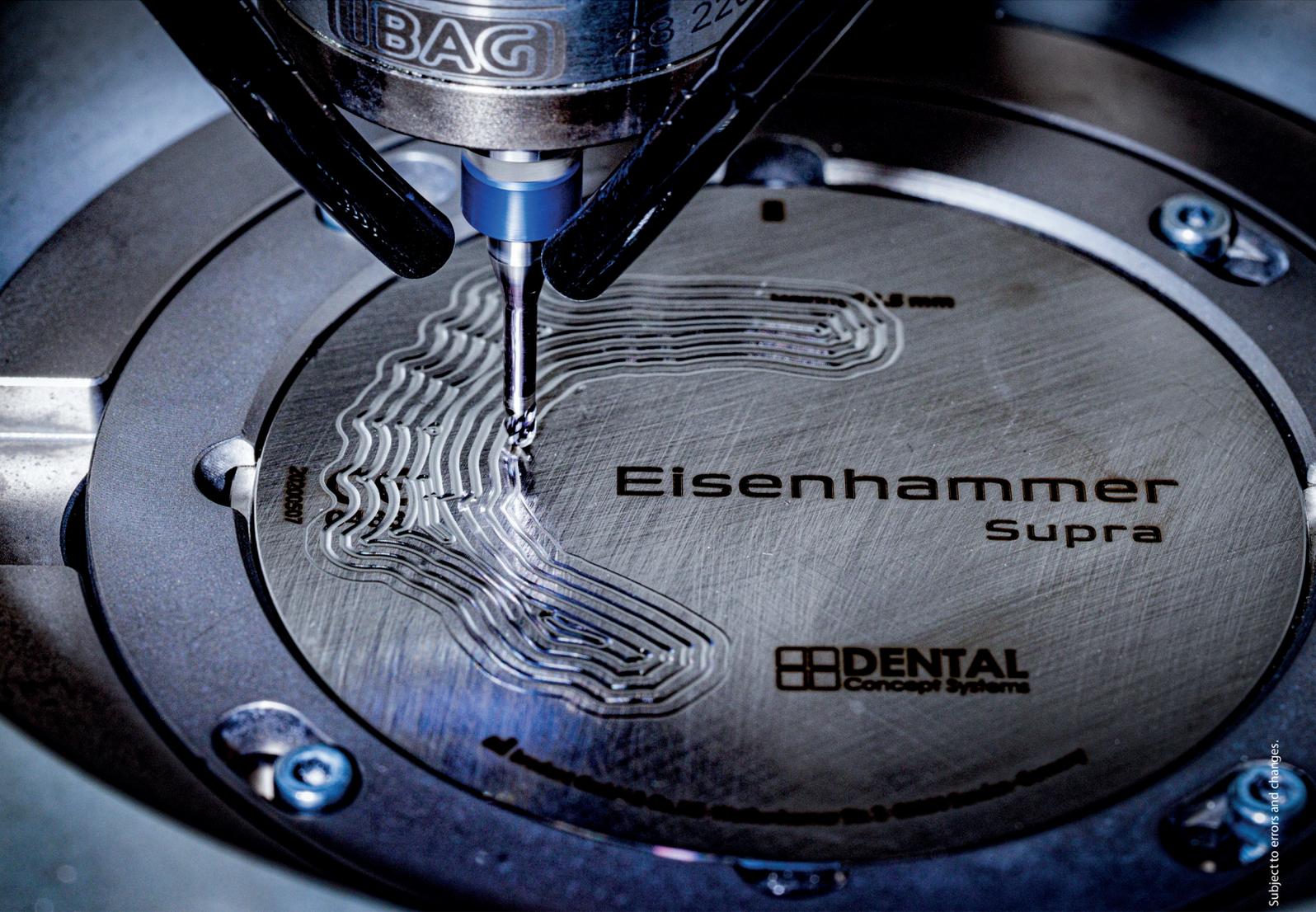 from the dental industry at your side who can demonstrate their expertise through the large number of self-manufactured devices, components, software, milling tools and materials and who has a strong field service and support . Likewise, a long-term partnership with such a system provider is a prerequisite for sustainable success and should be carefully examined, especially when considering a major investment.

All photos: © MDT Lars Schäfer

INFORMATION ///

MDT Lars Schäfer
AxioDent Zahntechnische Werkstätte
GmbH & Co. KG
www.axio-dent.de