

EXCLUSIVE INTERVIEW WITH

## Dr. Pascal Magne

CLINICAL REPORT

**To See and to Interpret -**  
the Unitary Restoration

BY DR. SANTIAGO COFRÉ

CASE REPORT - PART 2.

**Use of Modified  
Polyetheretherketone in  
Implant Prosthodontics:**

A Metal-Free and Stress Bearing  
Alternative for Fixed Implant Supported  
Prosthesis.

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LABLINE ACADEMY

**Restorative Dentistry**

A Clinical Shade Matching Case Report

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## THE CUTTING-EDGE LABORATORY

FULL DENTURE MADE 100% WITH ZIRKONZAHN'S  
DIGITAL WORKFLOW

*The case described in this article demonstrates an innovative and fully digital working method for the fabrication of full dentures. Digitalisation has an important role to play in the promotion of one's dental laboratory and even though the resources to be invested in the digitalisation process may appear substantial in the short term, the digital revolution brings indeed great benefits in the long-term, both for the dental technician and the dentist, but primarily for the patient.*

*The digital workflow ensures greater efficiency, safety and predictability in the fabrication of restorations, considerably increasing the quality offered by the dental laboratory. Digital acquisition of patient-specific data, transferred 1:1 into the design software, enables the manufacture of precise, 100% individual restorations, as the work is designed entirely on the virtual patient, accessible at all times. On the one hand, the digital workflow permits the reduction of test stages that a patient needs to undergo at the dental practice, resulting in less patient anxiety and improved patient-dentist relationship. On the other hand, CAD/CAM technology allows the dental technician to reduce his work time by milling restorations in-house, increase the quality of the product supplied in terms of greater precision, gain complete control over the work steps and eliminate physical barriers by simplifying data exchange within the treatment team and the practice.*

*The case described on the following pages was the object of an Individual Training course organised in the framework of "Die Zirkonzahn Schule" (the Zirkonzahn School). The aim of the Individual Training is to assist dentists and dental technicians in manufacturing cases using Zirkonzahn's complete workflow including the company's integrated hardware, software and components. Zirkonzahn's digital workflow was conceived by dental technicians specifically for dental technicians, with the aim of facilitating the laboratory's daily work by providing simplified instruments that are perfectly integrated with each other following the logic of the dental technician work.*

### CASE MADE BY:

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*The case was made during the  
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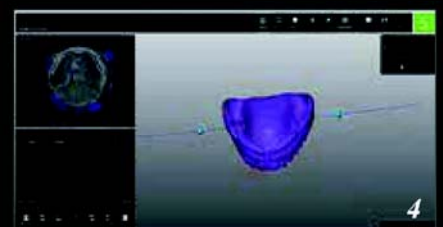
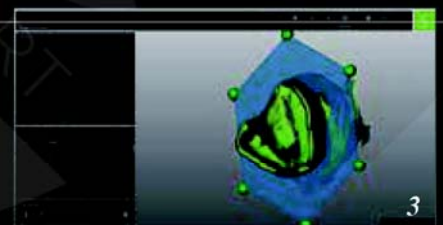
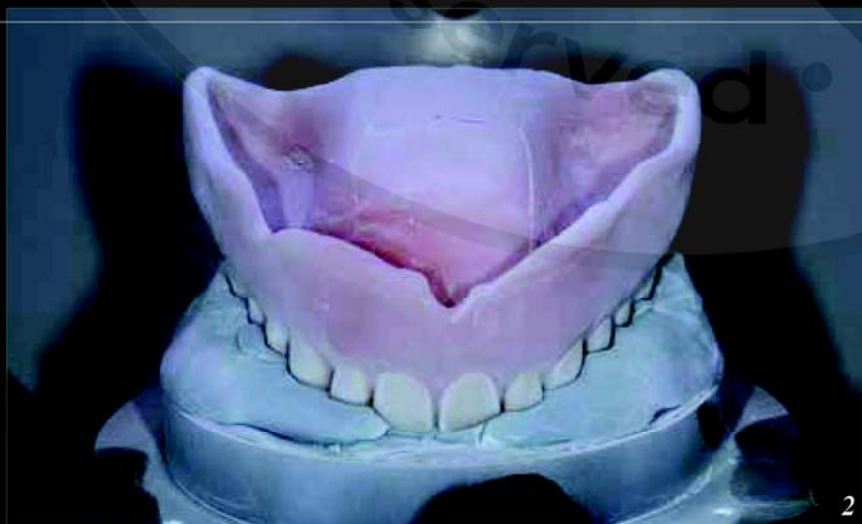
*DT Harpreet Ram,  
Education Center Brunico,  
South Tyrol, Italy*



## THE DIGITAL WORKFLOW FROM A TO Z

*Baseline situation: an edentulous female patient required replacement of the existing full denture (Fig. 1). The main challenge for the treatment team was to fabricate the denture using Zirkonzahn's complete digital workflow.*

*The job began with the duplication of the existing dentures, which was performed with the "Scan and Match" function in the new Zirkonzahn's S900 ARTI scanner (Figs. 2–4).*







The file obtained from the scans was imported into the Zirkonzahn.Nesting software for the subsequent calculation of the CNC file and milled in Temp Basic resin in Zirkonzahn's M1 Wet Heavy Metal milling unit (Figs. 5 and 6).



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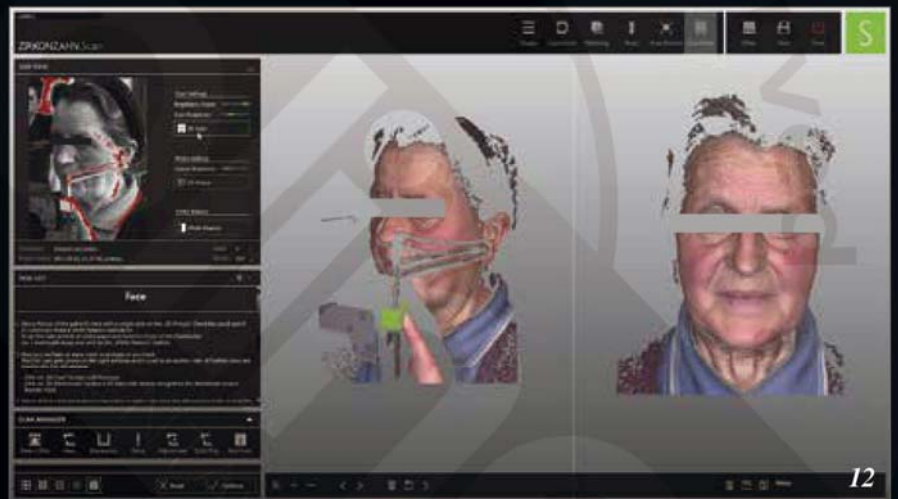
The dentist relined the duplicates by filling the space between the retracted gingiva and the duplicated denture with a zinc oxide-eugenol paste. Then, the new gingival situation was recorded: the impression was scanned with the "Scan Impression" function of the S900 ARTI scanner, which permits faster impression scans through the third integrated camera. Thanks to the digitalisation of the duplicates, the vertical dimension and the centric relationship of the upper and lower jaws could be reproduced (Figs. 7 and 8).



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The exact transfer of patient specific data into the Software (in this case, Zirkonzahn Software) is the most important work step in the digital workflow. Once the patient has taken her natural position in space (Natural Head Position), her individual reference planes such as midline and occlusal plane (Plaster Plane) were identified using the PlaneFinder®. By means of the Face Hunter 3D facial scanner, the patient's face was scanned in 3D in order to digitally relate all acquired data (Figs. 9–12).



All recorded data (impression, 3D face scan, Plaster Plane and Natural Head Position) were then integrated into the virtual PSI Articulator. From this moment on, each step of the work was performed on the digital patient (Fig. 13).



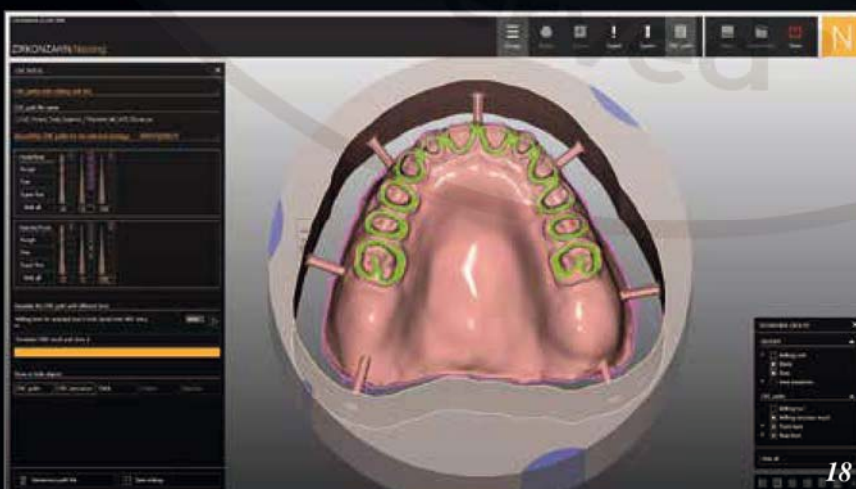




The project was imported into the Zirkonzahn.Modifier software, which automatically positions the teeth according to the Plaster Plane previously set in the scanning software. The dental technician could then accurately mount the teeth based on the face scans and mark the gingival border for the gingiva Design (Figs. 14–16).



Zirkonzahn.Modifier separated the teeth from the dies, so that the dental technician did not need to create two separate projects and could proceed with the simultaneous milling of both teeth and bases (Fig. 17).



Once the project was transferred into the Zirkonzahn.Nesting software, the calculation of the CNC file started, displaying a preview of the milling paths. In this case, the “High Quality” milling mode was selected, which mills using the finest milling bur (0.3) for a more detailed result. The dentures were milled separately in Denture Gingiva (resin for the gingiva) and in Multistratum® Flexible (resin for the crowns) using the M1 Wet Heavy Metal milling unit (Figs. 18 and 19).

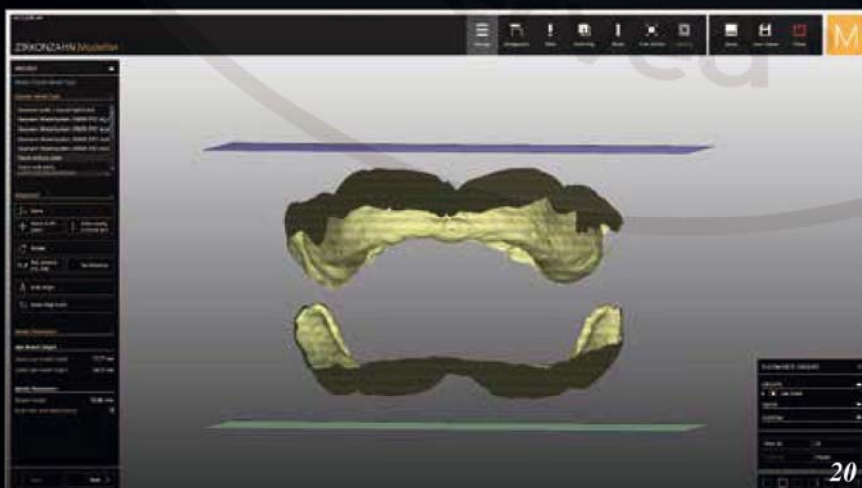


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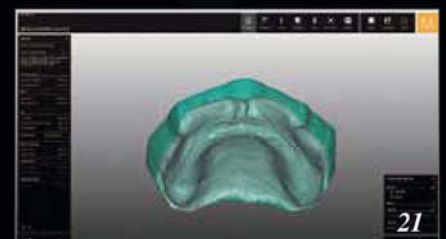
## LET'S TEST THE ACCURACY OF THE DIGITAL WORK IN THE ANALOGIC WORLD

*The resin restorations could have been layered with composite and delivered directly to the patient. However, to verify the accuracy of the final result in the physical articulator before delivery to the dentist, the workflow conceived by Zirkozahn involves a further work step consisting in the transferal of digital data to the analogic world. The following pages focus on the milling of the models and the JawPositioner, a pattern for correctly positioning the patient's maxilla in the physical articulator.*

*The Zirkozahn.Modellier design software is equipped with a software module for the creation of models (CAD/CAM Model Maker software module). The scans of the duplicates initially relined by the dentist were transferred to such module and the software automatically created the model base (Figs. 20 and 21).*



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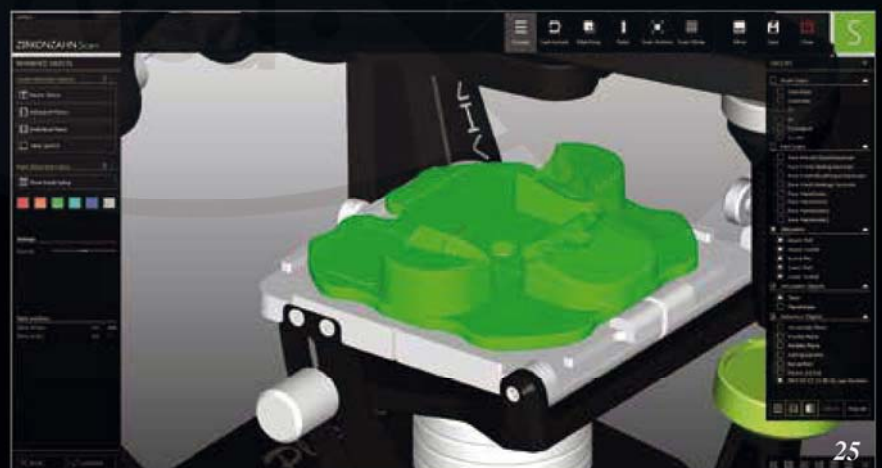
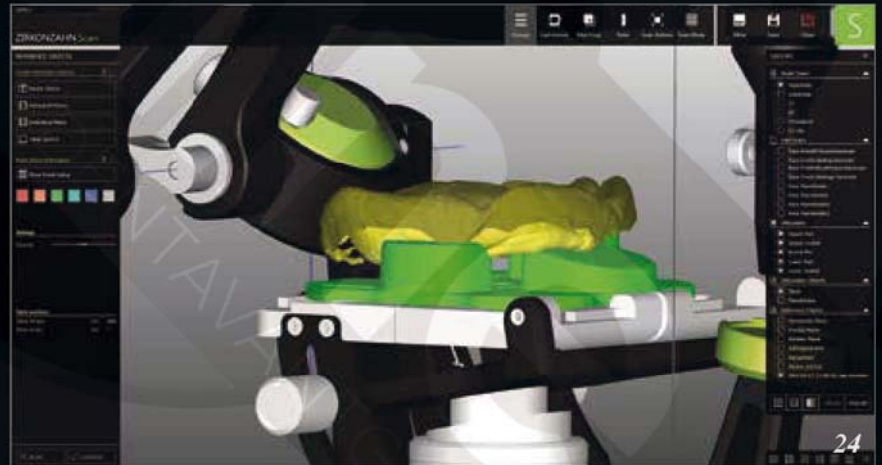




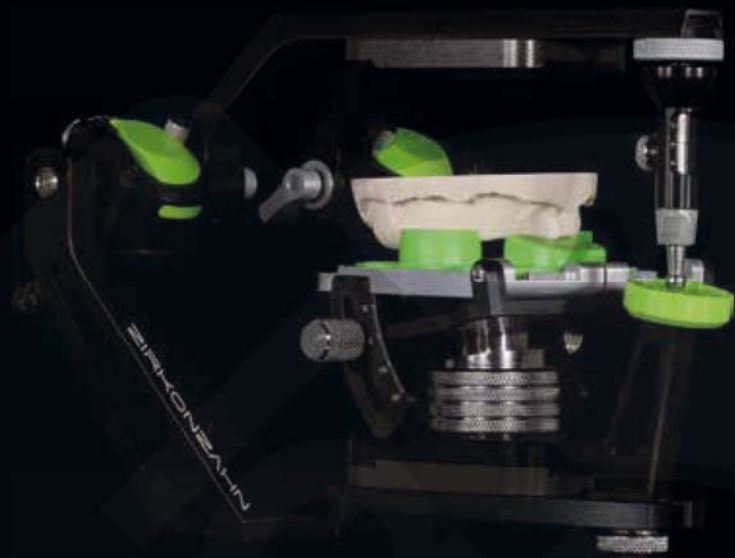
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*The upper and lower models were milled with CAD/CAM in a very short time thanks to the new 6T PMMA milling Bur (Fig. 22).*

*In the Zirkonzahn.Scan software, the virtual articulator positioned the maxilla according to the individual patient planes initially recorded with the PlaneFinder®. In order to correctly position the maxillary model onto the physical articulator, it was necessary to use the JawPositioner pattern, where the impression of the jaw is stamped out (Figs. 23–25).*







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The milled JawPositioner was placed into the physical articulator on top of the PlanePositioner®, a platform that reproduces the patient's individual occlusion plane. In this way, it was possible to correctly position the CAD/CAM-milled maxillary model in the physical articulator (Fig. 26).



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After fixing the maxillary model with plaster onto the articulator, a bite was milled to reproduce the bite height and to be able to fix the lower model in the correct position (Fig. 27).

At this point, the two dentures were inserted on the models to check the articulation, then layered with composites (Fig. 28) and delivered to the patient (on following page).



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Zirkonzahn®



## FULL DENTURE MADE WITH DENTURE GINGIVA AND MULTISTRATUM® FLEXIBLE RESINS

MADE 100 % WITH CAD/CAM



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