Workflow
smartDenture

The integrated iCAM V5 smart solution

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Dental & Medical Solutions

Digital full denture prosthetics through smartDenture Workflow

Fabrication of complete dentures with ready-made teeth in the subtractive manufacturing process

The digital possibilities in dental technology are constantly evolving. This also applies to the fabrication of full dentures. The integrated smartDenture workflow makes the fabrication of a full denture much easier. This automated workflow offers all variations for the fabrication of complete dentures, not only with individually milled components, but also with the processing of the ready-made teeth stored in CAD. By loading a single stl file, an automated workflow is started, which includes both the upper side of the denture with pockets, as well as the possibility of functional design of the masticatory apparatus and the underside of the denture base.

The almost continuous machine production opens up many advantages for dental laboratories - especially in terms of time, costs and the replicability and fit of the full denture. The relatively short time is required to fabricate a full denture which reduces the manufacturing costs and allows a much more affordable solution for the patient.

The integrated iCAM V5 smart solution for:

1

Dentures with milled **composite dental arch**

2

Dentures with milled **single teeth or composite tooth blocks**

3

Dentures with **prefabricated teeth**

Differences between individually produced teeth and prefabricated teeth

Individually milled teeth	Ready-made teeth
Teeth can be modified in CAD	Can not be modified
Self-made from multilayer discs	Teeth must be purchased
Aesthetics and material sub-optimal	Aesthetics and material are mature
No huge stock	Tooth storage must be kept in stock
Function is milled as modeled in the CAD	Function is milled by machine
Working with single teeth, blocks and dental arches are possible	Working only with single teeth
Occlusion corrections are possible for every tooth	Occlusion of the posterior teeth can only be corrected in a block

The **smartDenture** **Workflow** with confection teeth

1. Set parameters in CAD software

Creating the pocket size to teeth, dental blocks and ready-made teeth confection teeth are defined in the CAD.

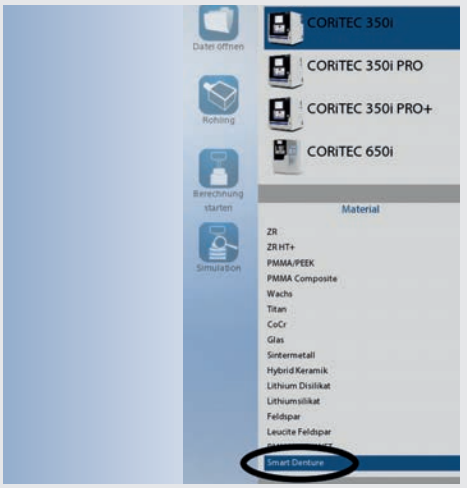
Two .stl files will be created:
Exocad: prostheticbase_cad.stl and prostheticmonoblock_cad.stl
3shape: .stl and Monoblock.stl

prostheticbase_cad.stl (exocad) or .stl (3shape)

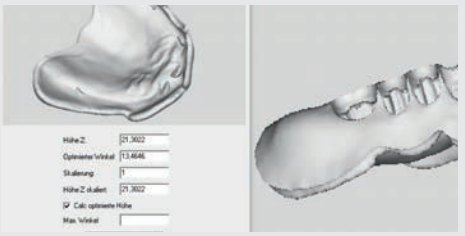
prostheticmonoblock_cad.stl (exocad) or Monoblock.stl (3shape)

The specified position from the CAD-software is imported 1:1 into the iCAM V5 smart software.

2. Set parameters in iCAM V5 smart software

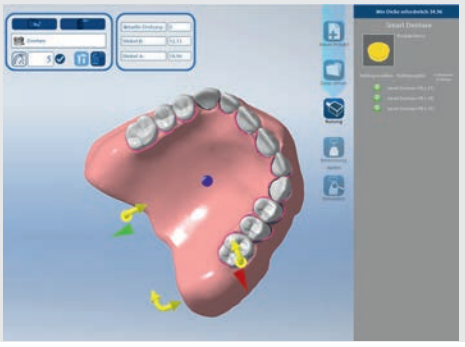


The stl-file is loaded into the iCAM V5 smart software (example exocad): **prostheticbase_cad.stl**



Subsequently, the corresponding machine (here CORiTEC 350i PRO) and **smartDenture** is selected as the material.

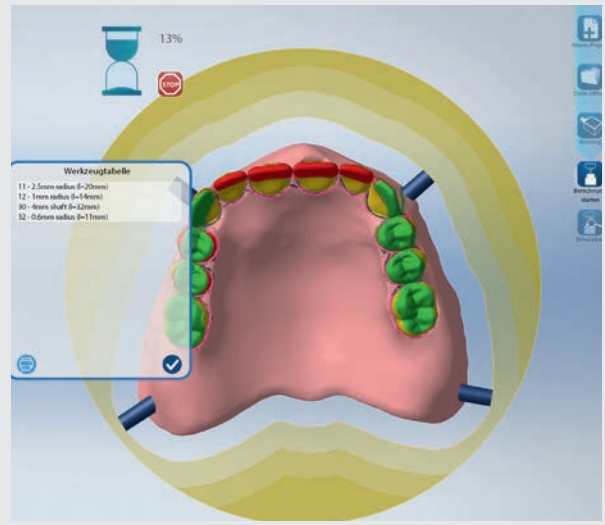
Now the preview window displays the loaded prostheticbase_cad.stl file.



After confirmation, the .stl is loaded and is displayed with teeth. Then the blank height of the blank must be selected. The denture is now displayed in the blank.

The digital brush function is used to mark all areas on the tooth surfaces that are to be reoccluded or rearticulated later. The retaining bars are then applied and the tool paths are calculated.

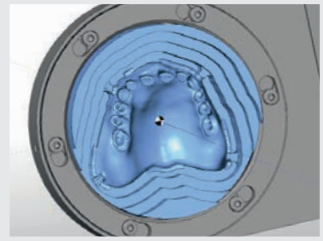
This results in 2 milling files:
An **.iso** and a **Part2.iso** file.



3. Milling of the denture base and insertion of the confection teeth

In the first step, the occlusal side of the denture base including the tooth pockets is produced using a CORiTEC milling machine. The .iso file is processed for this purpose. Then the blank with holder is released from the zero clamping system and removed from the machine. This allows the fabrication teeth to be inserted and fixed in the milled tooth pockets outside the machine.

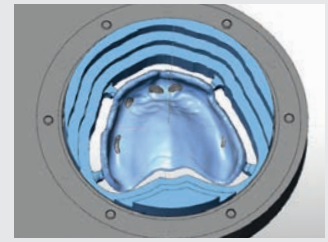
To fabricate the underside of the denture, the holder is clamped again in the milling machine by the zero-point clamping system for an exact fit and the Part2.iso file is started. In order to maintain the correct occlusion and articulation, the marked tooth areas are directly machined.



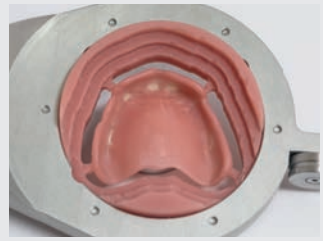
1. Initiated top of prosthesis

2. Milled top of denture

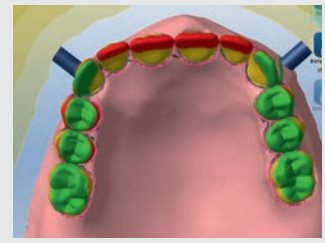
3. Insertion of the confection teeth



4. Initiated prosthesis underside



5. Milled underside of denture



6. Marked areas for correct occlusion and articulation

Result after cutting out and polish

Take advantage of the system‘s uniqueness!

The positions of the designed teeth (single/block/assembled) glued into the base after milling, always have deviations due to the gap dimension generated in the CAD-software. These are differences in occlusion (opening and closing of the jaws) and articulation (lateral movement of the jaws).

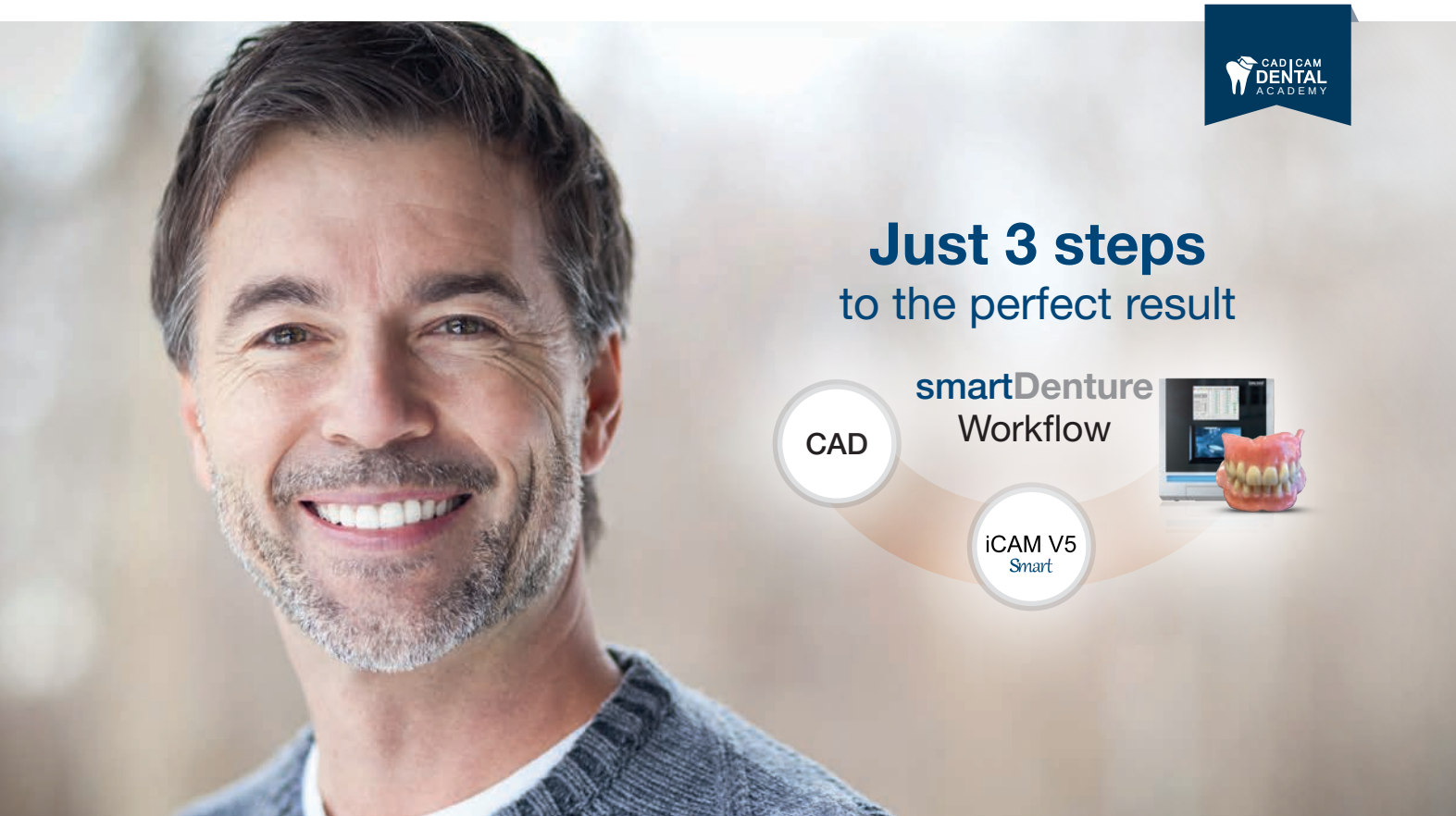
The solution: The smartDenture Workflow

By marking the interference areas with a brush in the iCAM V5 smart software, the early contacts are removed during the milling process, thus restoring the functionality of the prosthesis(s). This is **only possible through exact repositioning using the zero-point clamping system in the CORiTEC milling machines listed below.** Reocclusion/rearticulation is neither possible with additive manufacturing techniques nor with machines without a zero point clamping system or adequate systems.

CORiTEC milling systems including zero-point clamping system

CORiTEC 350i series

CORiTEC 650i series



ímes-icore®
Dental & Medical Solutions

imes-icore GmbH
Im Leibolzgraben 16
36132 Eiterfeld (Germany)

Fon +49 (0) 6672 - 898 228
Fax. +49 (0) 6672 - 898 222
info@imes-icore.com