What is the new generation of all-ceramics capable of doing?

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Like many other laboratories and practices, we have begun to use zirconium oxide for a large share of our all-ceramic restorations, as this class of materials offers not only high strength and attractive esthetics. Material manufacturers have tried to develop zirconia materials that incorporate varying degrees of translucency already in the past. So far, however, more translucency has always been associated with less strength. Building up blanks in different layers of shades presents an interesting approach, but ultimately does not correspond to the structure of the natural tooth. With the introduction of IPS e.max ZirCAD Prime from Ivoclar Vivadent, we asked ourselves whether the development of this material would provide a solution to the problem - combination of strength and esthetics we had encountered in the past.

**What's new**

We decided to have a go at the new IPS e.max ZirCAD Prime from Ivoclar Vivadent. According to the manufacturer, this material combines high strength with the superior esthetic qualities expected from high-quality ceramic materials. The key feature distinguishing IPS e.max ZirCAD Prime is its unique “gradient technology” (GT).

This process technology provides a number of advantages that are particularly relevant for use in dental applications:

1. High-translucent 3Y-TZP zirconia (650 MPa) for the initial area and high-strength 3Y-TZP zirconia (1200 MPa) for the replacement of dentin - combined in just one disc.
2. Continuous seamless progression of shade and translucency within the material due to a specially designed filler technology.
3. The microstructure achieved by “Cold Isostatic Pressing” (CIP) additionally optimizes the material’s translucency and ensures a very high accuracy of fit.

**On the test bench**

**First patient:** This patient presented with pain to our practice. A metal-ceramic restoration on tooth 45 to 47 was fractured. Replacement with an all-ceramic monolithic restoration appeared to be a valid alternative in this case. The basic advantage of all-ceramic restorations is that no subgingival preparation is necessary to correct the metal restoration margin. A major advantage of monolithic restorations is that they help minimize/prevent ceramic chipping. Figures 1a to 1g show the restoration procedure with a crown made of IPS e.max ZirCAD Prime.

**Our findings**

- Given the high strength of IPS e.max ZirCAD Prime, we felt assured that we could use this material with peace of mind - for the load-bearing region and for a case involving unflattering functional dynamics. The material is also suited for long-span bridges.
- With its decreasing chroma and increasing translucency in the incisal area, the material reproduces the tooth structure in a seamless flowing pattern, similar to the natural dentition.
- As with any material, a higher level of skill is needed to use this material compared to other available options.

**Restorative**

**First patient**

This patient presented with a crown made of IPS e.max ZirCAD Prime. In view of the limited space available for the new restoration and the functional dynamics of the patient, we decided to use a monolithic zirconium oxide restoration in spite of the tooth being in an exposed zone. Figures 1a to g show the restorative procedure with a crown made of IPS e.max ZirCAD Prime.

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**Fig. 1a:** Three-unit bridge milled from IPS e.max ZirCAD Prime.

**Fig. 1b:** The single restoration was milled from IPS e.max ZirCAD Prime.

**Fig. 1c:** The restoration showed a natural continuous progression of shade immediately after the sintering procedure, without any additional processing.

**Fig. 1d:** Customizations were applied using the staining technique and IPS Ivocolor materials.

**Fig. 1e:** An impressive result achieved by simple means.

**Fig. 1f:** Restorations made of IPS e.max ZirCAD Prime can be inserted using conventional or self-adhesive cementation techniques.

**Fig. 1g:** Replacements made of IPS e.max ZirCAD Prime can be inserted using conventional or self-adhesive cementation techniques.
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Combi touch: The all in one in prophylaxis

By Mectron S.P.A.

The combi touch combines ultrasound and air-polishing in one unit to provide a complete prophylaxis treatment from removal of supragingival and subgingival calculus to gentle removal of stain and biofilm and even implant cleaning.

Thanks to the ergonomic touch panel, allows to control every function as fast and intuitive as never before and at the same time clean and disinfect the device in literally no time.

The ultrasound unit, thanks to its “SOFT MODE” function, allows for ultra-gentle scaling, which reduces the insert’s oscillation amplitude, rendering its motion compatible with even the most sensitive of patients. While also guaranteeing optimal performance with prosthetics and extractions treatments thanks to the “pulse mode” function transforming the ultrasound oscillation to a new profile. The air-polishing unit allows for the use of different types of powder (supra or subgingival), depending on the desired treatment type.

The greatest advantage is the ability to manage the use of both powders on the same patient with a simple click. Furthermore, it is not necessary to change the air-polishing handpiece. Instead, simply insert any one of the 3 available spray nozzles with different orientation (90°, PERIO and the optional 90°), combi touch technology made it possible for the operator to decontaminate the oral cavity in an effective manner, with the advantage of being able to work in an ergonomic fashion, easily reaching all necessary sites.

The greatest advantage for the operator, therefore, is that the technology provides a complete set of tools for effective, fast and minimally invasive Non Surgical Periodontal Therapy, even in periodontal pockets deeper than 5 mm, thanks to the dedicated subgingival perio tips simply attached to the perio nozzle. Soft, flexible, and anatomically adjustable to the periodontal pocket, this tip gently removes bacterial biofilms from the periodontal and peri-implant pockets.

This combined technique allows the operator to obtain an excellent clinical result, with an advantage in the timing of the procedure much appreciated by patients.

Device maintenance is fast and simple, thanks to containers that can be removed without having to switch off the device, and an exclusive anti-tricking system for the powder. What’s more, it can either be hooked up to the office’s regular water system or used with a 500-ml external bottle.

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Fig. 2f: Self-adhesive cementation can be achieved with materials such as SpeedCEM Plus.

Fig. 2g: Full contour and stained, the IPS e.max ZirCAD Prime crown delivered an impressive result.

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