FAMILIAR AND YET COMPLETELY DIFFERENT

Interview with Ztm. Werner Gotsch
Interview with Werner Gotsch about Celtra Press, the new zirconia-reinforced lithium silicate ceramic by Dentsply Sirona Prosthetics

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Every day, Master Dental Technician Werner Gotsch faces the question of what materials can help him keep his laboratory in Marktleuthen, Bavaria – not far from the Czech border – healthy and economically viable. Moreover, his customers, who include dentists from all over the country, expect more of him than just “standard quality.” What they do expect is individual, esthetic, exactly fitting restorations made from materials whose quality is beyond reproach. Werner Gotsch had the opportunity to accompany the development of the new zirconia-reinforced lithium silicate ceramic, Celtra Press. In this interview, he tells us what sets this material apart. ...
… Given the demand that Werner Gotsch faces for highest-quality restorations, he tends to be generally open-minded when it comes to new products. However, he also tends to be highly critical; no dental technician today can afford re-making restorations several times due to material defects. For example, Gotsch had been a committed IPS e.max Press user from the very beginning, as this material offers important advantages. Its excellent physical properties and the extensive range of available shades almost guarantee a successful result. Especially fully contoured pressed objects have become well established thanks to their high stability, even though the esthetics of this type of restoration must by definition be limited compared to a built-up crown.

In mid-October of 2016, Dentsply Sirona Prosthetics in Hanau, Germany launched a new pressable-ceramic system, Celtra Press, a zirconia-reinforced lithium silicate. Dentsply Sirona Prosthetics has presented a number of system features developed to ensure that this system enjoys a unique selling point in the market. Since Werner Gotsch had already supported several manufacturers in their product development efforts in his capacity as Master Dental Technician, he was asked early on to help bring Celtra Press to market together with the development team. Countless material tests and coordination meetings with developers and product managers followed. Dentsply Sirona Prosthetics believes that this type of intensive cooperation between practitioners and the industry results in products that offer real benefits for users. To learn whether this statement stands up to the exacting demands of a sophisticated user, we conducted an interview with Werner Gotsch.

Mr. Gotsch, what prompted you to get personally involved in the development of the Celtra Press pressable ceramic material?

Werner Gotsch: To answer this question I have to back up a bit, because there is a fundamental issue we need to clarify first. I am talking about the general role of pressable ceramics. To me, these materials have the greatest potential – along with zirconia – when it comes to creating highly esthetic and durable restorations. Their process-related variability and esthetic properties have now made pressable ceramics indispensable in the dental laboratory. However, despite all the advantages of the material and the associated procedures, all systems on the market also have certain shortcomings. So when Dentsply Sirona Prosthetics approached me with a request to get involved in the development of a new system that does not have the known disadvantages of existing systems, I agreed immediately.

It is probably not really that fair to talk about the disadvantages of other products. Let us talk about the outstanding characteristics of Celtra Press instead. So what are those, specifically?

Gotsch: I want to make one thing clear: there are very good pressable-ceramic systems on the market. But if something is already good, that does not at all mean it cannot be improved further. I myself am not a materials scientist. I am sure that Dr. Markus Vollmann, who heads the Ceramic R&D department at Dentsply Sirona Prosthetics, can provide you with the necessary details. (See Table 1.) I can only describe my impressions, which I collected in an intensive testing phase and communicated to the company. In simple terms, one could say that the main advantages are precision of fit and esthetics. Celtra Press forms no reaction layer on its surface, that is, at the interface with the investment material. This is impressive and of course has a positive impact on the fit and the precision of...
**02 & 03** Divesting Celtra Press is very simple. No acid treatment is required. Sandblasting just as with first-generation pressable ceramics (Empress/Cerco/Finesse), is quite sufficient. The investment compound that is part of the system prevents the formation of a reaction layer. Pressing tests have confirmed the excellent flowability of the material. Figure 3 is from a very early stage of development and shows that the 2-cm spirals (2 and 1 mm in diameter) were completely filled.

**04** Celtra Press creates an absolutely homogeneous structure even with very bulky objects (5 mm).

**05a** Surface of a conventional pressable ceramic with the typical “orange peel” surface.

**05b** The surface of the Celtra Press object shows no “orange peel” texture.
06a & b Situations such as this one are always a cause for concern when using transparent framework materials – a recurrent problem in daily practice. Discolorations on prepared teeth influence the shade of the subsequent restorations; the material selected should counterbalance those shade differences to the maximum extent possible. The prepared teeth show the extent of discoloration. The definitive restoration was to have consisted of zirconia-based all-ceramic crowns. For experimental purposes, however, a cut-back Celtra Press framework was made. These pictures, too, were taken at an early stage of developing the different shades.

06c - e It was evident at the try-in that the discolored prepared teeth were masked very well by the Celtra Press copings. Another thing that was interesting to watch was how Celtra Press transmits light: The reddish color of the gingiva radiates into the cervical area of the frameworks. With the veneered experimental Celtra Press crowns in situ, nothing is left to see of the discoloration of the maxillary left central. Note that the crowns have merely been inserted, not cemented.
the pressed structures. The reason for this is the special investment compound, a completely new development that is part of the Celtra Press system and that prevents the formation of a reaction layer onCeltra Press objects. This means that the objects can be easily divested using nothing but glass beads and that, moreover, the objects will fit after divesting without major finishing efforts. Which saves considerable time.

You were talking about esthetics. How does Celtra Press measure up in this regard?

Gotsch: The level of esthetics that I achieve with e.max is already pretty impressive. Now I was given a material, Celtra Press, that claims to be a further improvement on this esthetic result. My honest opinion? I thought that was just another one of those typical marketing claims. But then I found that Celtra Press ingots truly offer great shade fidelity. With many pressable ceramics, the result deviates from the initially selected Vita classical shade, so the objects need to be adjusted by ornate staining to obtain the right shade. With Celtra Press you get the exact shade after pressing that you selected in the first place. In practice, that saves me an incredible amount of extra work. Add to this the material’s pronounced opalescence, which ensures that the shade of the adjacent teeth is “taken over” – downright absorbed,
if you want to put it that way. This results in extremely high-quality esthetic results – without time-consuming reworks.

Are there any other aspects that you would like to highlight?

Gotsch: Let me remind you that I am not a materials scientist. But in a close cooperation with a research and development department you do end up learning one thing or another. For example, there is the high strength of Celtra Press that results from the fact that the lithium silicate is reinforced with zirconia. This ensures a strength of more than 500 MPa. And this is why it is possible to produce bridges up to the second premolar with this material. The material is very stable at the edges, and the marginal accuracy is very high. Moreover, I have never before encountered a pressing material that flows as well as Celtra Press does – which makes it possible to press even larger objects with only one sprue. So here is another one of those points that provide real added value to my laboratory, saving me time in sprueing, separating and finishing.

All in all, Dentsply Sirona Prosthetics has succeeded in introducing a new pressable ceramic system that combines excellent processing characteristics with high strength and great esthetics. This reduces my lab time, I get a broader range of indications, and the optical properties facilitate restorations...
whose appearance is in no way inferior to the natural teeth. Another advantage that I see is that the IPS e.max muffle system can be used for Celtra Press and that the material can be processed using all commercially available pressing furnaces. Therefore, no additional capital investment is required in the laboratory.

That sounds very enthusiastic. – But allow me to ask a general question: How would you describe successful dental technology today?

Gotsch: I would cite a phrase I often use at the end of my lectures or one of my workshops, a phrase that is more relevant today than ever: "Successful dental technicians are characterized by their passion for perfect restorations – and by their business acumen."

Is there anything else that you have on your mind and that you would like to share with our readers?

Gotsch: Oh yes. I would like to thank my dentists and patients at this point for giving me an opportunity to try in new shade pattern in the form of phantom restorations to allow me to study the shade effect directly in situ and observe it under various light sources. This opportunity was valuable to me because I was able to give Dentsply Sirona Prosthetics my feedback on how and where the shade could benefit from a slight readjustment. The only place where you can check whether a restoration looks truly natural is in the patient’s mouth.

Thank you so much, Mr. Gotsch, for this interview.

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**TABLE 1 – TECHNICAL SPECIFICATIONS FOR CELTRA PRESS**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTE (25-500 °C)</td>
<td>$9.7 \times 10^{-6}/K^1$</td>
</tr>
<tr>
<td>Softening point EW</td>
<td>820 °C</td>
</tr>
<tr>
<td>Glass transition temperature Tg</td>
<td>560 °C</td>
</tr>
<tr>
<td>Flexural strength after power firing</td>
<td>&gt; 500 MPa</td>
</tr>
<tr>
<td>Chemical solubility</td>
<td>&lt; 30 µg/cm²</td>
</tr>
</tbody>
</table>

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At the end of September, Dr Dietmar Krampe (left) of Dentsply Sirona Prosthetics and Werner Gotsch, the Celtra Press beta tester (as well as Dan Krammer, editor-in-chief of dental dialogue; not in the picture) met in Marktleuthen for this interview.