Familiar and yet completely different

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

By Dentsply Sirona

Every day, Master Dental Technician Werner Gotsch faces the question of what materials can help him keep his laboratory in Marktleuthen, Bavaria – 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, aesthetic, precise fittings, 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.

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

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 aesthetic and durable restorations. Their process-related variability and aesthetic 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 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 they, specifically?

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 mean it cannot be improved further. I myself am not a materials scientist. 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 aesthetics. Celtra® Press forms no reaction layer on its surface, that is, at the interface with the investment material. This means that your divested structures are the same as the one you invested in. That sound very enthusiastic. 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 spine. So here is another one of those points that provide real added value to my laboratory – saving me time in spraying, separating and finishing.

All in all, Dentsply Sirona has succeeded in introducing a new pressable ceramic system that combines excellent processing characteristics with high strength and great aesthetics. This reduces my lab time, I get a broader range of indications, and the optical properties facilitate restorations whose appearance is 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. How would you describe successful dental technology today?

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 characterised by their passion for perfect restorations -- and by their business acumen."
In matters of aesthetics, dental techni-
cuan David Zweifel would be a dif-
cult man to surpass in a hurry. In this
experience, the laboratory
managers and materials spe-
cialists from St. Gallen explain how ex-
tremely thin walls can be created with
CAD/CAM composite blocs are already
proving to be the new magic bullet in
everyday work.

Mr Zweifel, what must the
dentist deliver in your opinion?

D. Zweifel: The best dental ma-
terial is still the natural tooth, wouldn’t
you say? Ideally, a state-of-the-art material
would offer properties as close to dentine as possible, both in
terms of abrasion resistance as well as gloss retention and durabil-
ity. At the same, the restoration should provide a harmonious match to
the patient’s teeth and be gentle on the opposing tooth. What good is a sta-
ble connection if the problem is only transferred to the other jaw?

Fortunately, materials research has re-
ognised that a material with a low modulus of elasticity dampens mas-
tacatory forces much better than the traditional hard as steel restorations
of the 80s and 90s. If you like, we are presently experiencing a renais-
sance of highly flexible composite solutions.

Does that mean that the com-
posite all-rounders will soon be
vanishing ceramic completely
from the laboratory?

It is true to say that Reinforced Com-
poite CAD/CAM blocs are presently
the rage. Dentists are already aware
of the advantages of this versatile material from classical filling ther-
apy. Nowadays, final inlays, onlays, fully anatomical crowns and veneers can be fabricated quickly and easily from composite using the classical CEREC manufacturing process. The
submicron milling and grinding blocs are fast becoming an all-purpose an-
swer in everyday lab routines.

During grinding, a modern compos-
itive material is far better material
than ceramic and is easier to shape. Subsequent corrections in shape or
can be realised easily by the
clinician in his/her own practice, which of course also meets the needs
dentists. Overall, the accuracy of fit of acrylic crowns is extremely high
and the flexible material fits more
harmoniously into the rows of teeth than brittle ceramic:

How about sculptability?

Which margin thicknesses are
possible with state-of-
the-art composites?

For example, I was able to play the role of "midwife" for the
inventive BRAILLIANT Crios submicron hybrid composite material of Swiss dental specialist COLTENE and was closely
involved in its development. Dur-
ing the lengthy fine tuning process, I
myself must have ground hundreds of units. What impressed me most of
all the walls of the fabricated pieces were perfectly stable every time.

If you take a biocompatible look at the margin accuracy, you can see that
even tapered restoration margins of only 0.1 mm thickness can be ground
perfectly without becoming crag-
ged. Failing or even cracks are truly a thing of the past. There is hardly a
material which offers so much op-
portunity for accurate work a verita-
ble delight for the Swiss soul.

Why is it that many dentists
are still wary of CAD/CAM
composite blocs?

Well, many dentists are not fully
aware, or only vaguely, of the pro-
gress composites have made during the past ten years. They still remem-
ber the days of earlier milling mate-
rals which were launched with con-
scious ambition but not full trust
and claimed to be the ultimate solution. Alone in 2008, I had to process guar-
tee cases for roughly CHF 10,000
of poorly conceived hybrid acrylics where the shortcomings had not been
properly thought out at the time. It is therefore quite obvious that cli-
icians who want to me with such
revisions do not want to hear about these "hybrid ceramics"!

In such cases, considerable powers
of persuasion are required to show
what dentists CAD/CAM com-
poite blocs can achieve these
days. Bonding is the same as for any other
filling. If I want to create a proper
monoluse, then I must always attach a
rown adhesive with a bonding
system that fits the tooth substance,
core build up or abutment respec-
tively: then I will end up with a good,
long-lasting solution.

How do you convince customers who are resistant
to advice of the benefits of the
ewest restoration methods?

Those concerned need to experi-
ence the high quality themselves, then
they quickly become aware of the
high-quality solutions I can of-
f. Recently, a patient who was very
particular about shade and shaping,
the patient had to wait for her anterior
tooth in the mandible to be made. Unfor-
tunately, she had little time due to
the upcoming holidays. I made the
following proposal to the treating
dentist:

"I will grind two crowns as long-term temporary restorations now for re-

cementing."

A BRAILLIANT Crios milling bloc in
VITA shade A2 was used. The result
was a continuous smooth coloura-
tion from top to bottom without any discoloration and a good match to the
overall picture of the mouth. Af-
s seven weeks, the patient was no
longer interested in any other type of
treatment. Currently, I have again
fabricated a partial crown with the
flexible CEREC/CAM composite blocs. After the try-in, the patient admit-
ted not being able to detect anything
new in the mouth when exploring
with the tongue. The high wear com-
fort of the restorations convinces even the most outspoken sceptics.

How much time do you save
when processing real CAD/
CAM composite blocs?

In my experience, I would say, actually go to 50 % faster
when all is said and done – and with a result that is far more aesthetic
than before. The entire firing pro-
cess is eliminated and polishing is
unbelievably quick. As the name
implies, BRAILLIANT Crios blocs have an
innate: fine satin gloss, e.g. they
require little in terms of process-
ing. As a rule, I would recommend a two-step approach to beginners: first
coarse grinding and then the use of
the two special fine grinders.

Using the "Fine/ Fine" grinding mode of my CEREC MC.L, the
crown turns out even more beautiful than with the fast mode.

Doesn’t increasing digitisation
and the permanent use of CAD/CAM in everyday lab
practices rob dental

ticians of their creativity?

Not at all, CAD/CAM technology is an excellent support for
daily work. Whereas I used to have to tediously apply wax, I can now support
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denture was made at the IDS years ago, I thought of
it as part of their development right from the
beginning. At the time, I said to my wife that the amortisation costs
would certainly not stop me, or, in the
words of the Swiss Railways: “I am
amourishing the train now and I am
not going to wait until it arrives in
Geneva.” Reservations about the ini-
itial outlay proved entirely unjusti-
ied in retrospect. I had already easily
surpassed the break-even point after
only half the calculated time.

In other words:

Modernisation pays off...

Absolutely! It never hurts to expand one’s service portfolio! Unfortunate-
ly, these days people too often look at the price first. The daily battle
against the “Deep-Food” mental-
ity also affects us in the laboratories, but one should not be much more
expensive than a steel denture with

And if I can mill two crowns from a 314 CAD/CAM
composite bloc instead of one, then the
material costs are completely different.
Those using to check the
umb sums should simply make sure to
use the right numbers.

And last but not least, how do you view the future of
dental laboratories?

If you project the present advances in materials research into the future,
then dental materials will become even more accurate and reliable
with regard to the special propor-
tions of human teeth. Meanwhile, the high performance composites keep
offering better quality and more
attractive shades, but who knows,
we may be end up growing bio-
regenerative materials in our own
laboratories. The dental technician
as craftsman and artist will definitely
not be redundant!

I also have an abundance of ideas for other
product innovations among other things, I personally would find
in a CAD/CAM block a highly attractive proposition for the
future, where I could always be aware of what one is comparing.
For example, I recently had to make an
affordable proposal for a patient on social benefits. He did not wear
smiles and refused a gold-silici-
urum bridge for cost reasons. Finally, I
ground a titanium framework and veneered it with composite blocs.

After grinding the crowns and bond-
ing everything, the appearance was
sensational - nearly like real ceramic, but in contrast, the dentures were
reimbursed without any problems by
the health insurer. A "high qual-
ity long-term temporary restora-
tion" position enamel, dentine and
incisal layer were all finished by use
grinding crowns or inlays. In the long
term, I look forward to being sur-
prised by the works of art created by our Swiss dental special-
als as well as specialists from around
the world.

When the time has come, I will defi-
nitely be there; readily waiting at the
"railway station"...