Sunny prospects: Using power to achieve brightness

The layering concept using IPS e. max Ceram power materials

By Bastian Wagner, Germany

The most important factor when imitating the light-optical properties of natural dentition is brightness. It is important to be able to control this factor selectively during the production of the ceramic restoration. The new power materials in the IPS e. max Ceram range allow the dental technician to be the maestro of brightness.

The work routine in the dental laboratory and dental practice has changed a lot in recent years. Co-operation between dentist and dental technician has become multifaceted and complex. This enables the patient’s individual needs to be fulfilled on an even higher level. A prosthetic treatment plan is still an essential and fundamental factor. Contact with the patient is of great importance for the dental technician, in order to ensure a high-quality result. In addition, the dental technician should be a master of his/her craft and understand the anatomical, functional and esthetic factors of natural dentition.

Working with all-ceramic materials

Another important aspect for successful prosthetic treatment is the use of appropriate materials. In modern dentistry, permanently fixed restorations made entirely from all-ceramic material are highly relevant in the clinical routine. The ceramic layering materials and the multitude of frameworks materials available on the dental market offer a wide range of choice for a successful treatment concept – according to the different indications and the respective cases. However, due to the wide variety of products it is not always easy to select the best material. The dental technician’s job is to produce prosthetic restorations that have a long service life. Functional, biological and esthetic perfection should be adapted to the individual needs and requirements of the patient. For this, it is essential to become familiar with the material properties of the various different materials and know the specific features of the respective ceramic range. For example, it is advisable to make individual shade samples so that the light-optical properties of the ceramic material can be seen. The materials to be used should be ideally coordinated with one another in terms of biocompatibility, stability, esthetics, processing, chroma, brightness value and hue.

This article is an introduction into the new IPS e. max Ceram power materials. The new ceramic material’s indications and advantages will be presented using a patient case as an example.

The power concept

The well proven IPS e.max Ceram range has been extended with the Power Dentin and Power Incisal materials. The new power ceramic materials have a higher brightness value. The IPS e.max Ceram range now includes three different brightness values and small variations of opacity and chroma.

A comparison shows that the dentin materials have the lowest brightness value and that the new IPS e.max Ceram power materials enable the highest values to be achieved. In particular, a wider spectrum is available for creating a specific esthetic reproduction in a single-tooth restoration. The power materials are specifically designed for the following situations:

- Reproducible natural brightness on translucent frameworks.
- Controllable brightness
- Vibrant alternating layering to imitate natural teeth with a high brightness value
- Stable value in this layering thickness of the various steps.

The versatility of the enhanced ceramic range is shown through a patient case. In this case, the patient’s two upper anterior teeth were to be restored with ceramic veneers (Fig. 1). The plan was to esthetically improve both the tooth shade and shape. The natural teeth were prepared using a minimally invasive technique. This created space for the ceramic veneers.

Determining the shade

The shade range of the respective ceramic range is very important for determining the shade (hue), colour saturation (chroma) and colour brightness (value). The preoperative shade analysis showed a high brightness value in the body area of both teeth. The ceramic materials, which were selected through the shade determination, were set in an individual layering concept. Figs. 2 to 4 illustrate the importance of targeted shade analysis with photographic documentation.

The power ceramic materials are especially well suited for tooth shades with a high brightness value. They make the reconstruction of young or bleached teeth easier. The advance
tages of the power ceramic materials can be seen in this minimally invasive situation.

If the brightness value cannot be helped by the framework material, it is all the more important to use a high value ceramic. A “greyness” within the restoration is therefore prevented. A grey shimmer can occur, for example, when a translucent framework material is used or in situations where no framework is required.

Producing the veneers

In order to esthetically restore the anterior teeth, the veneers were individually built up on refractory dies (Figs 5 and 6). In this case, the prepared teeth have a slight discolouration, which needs to be masked by the ceramic layer. The high degree of reflection (value) made it possible to achieve the required brightness in a minimal layer thickness. Effect materials were used in the build-up to achieve a vibrant appearance.

This way, the natural light-optical characteristics were imitated (Figs 7 to 9). An alternating layering concept, using the Power Incisal and the conventional incisal ceramic materials from the IPS e.max Ceram range, gave the ceramic veneer a very high light-dynamic effect with relatively little effort (Fig. 10). The interaction of the different brightness values created a natural in-depth effect within a minimal layering thickness (Figs 11 to 13).

Conclusion

To create a harmonious shade reproduction of natural teeth, it is important to imitate the information obtained during shade analysis using the light-dynamic characteristics in the material. The most important characteristic is the brightness (value). If this is not implemented exactly, even a non-professional will see the ceramic restoration at a short speaking distance. If the value is too high, the restoration will appear to be too white; if the value is too low, the restoration will seem too grey.

It is important for the dental technician to be able to influence the brightness value of a veneer. This requires suitable ceramic materials and a patient-oriented working method. The new IPS e.max Ceram power materials are a big plus in everyday laboratory life when translucent framework materials are used and with minimally invasive restorations. The brightness value can even be altered at a later stage with these materials, e.g. if the try-in shows that the brightness has to be increased. This gives the dental technician a high degree of safety, because improvements are easy to achieve. A total remake of the veneer due to correction of the brightness can be avoided in many cases.

The power ceramic materials offer more safety in imitating the brightness value of natural dentition.

Fig. 7 & 8: Alternating the layers with the materials chosen during shade determination

Fig. 9: Prepared for the second firing

Fig. 10: The veneers with a high light dynamic on the model

Fig. 11 & 12: Veneers on the UR 1 and UL 1: The brightness value of the adjacent teeth has been reproduced exactly. There is a natural in-depth effect within a minimal layering thickness.

Fig. 13: Harmony in shade and shape: Both upper anteriors appear significantly stronger and have the desired lighter tooth shade.

Dental Technician Int’l Meeting

12 April 2019 in Dubai, UAE

By Dental Tribune MEA / CAPPmea

The Dental Technician International Meeting (DTIM) is the continuation and growth of CAPP’s Dental Technician Sessions during the last 11 years. These Dental Technician Sessions were accomplishments not only for dental laboratory owners and dental technicians but for the entire dental technology profession.

The DTIM will be held on the 12 April 2019 at the Madinat Jumeirah Conference Centre. Over 200 dental technicians, clinical dental technicians (CDTs), lab-owners, trade visitors and more are expected to attend.

The DTIM takes place in conjunction with the 14th CAD/CAM & Digital Dentistry Conference & Exhibition which will be attended by over 2,000 dental professionals.

Who Should Attend

– Dental technicians
– Clinical Dental Technicians (CDTs)
– Dental lab-owners

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Round table presentations with hands-on training with dental technicians.

Fig. 1: The veneers with a high light dynamic on the model

Fig. 13: Harmony in shade and shape: Both upper anteriors appear significantly stronger and have the desired lighter tooth shade.
Interview: “I try to bring dentists and technology together”

By Nathalie Schüller, DTI

3DIEMME provides guided surgery software developed for dentists, radiologists and dental technicians for the complete management of the digital dentistry workflow. The company’s offices, manufacturing facilities and training centre are located in Cantù, Italy. In this interview, CEO Alessandro Motroni talks about the program, training users and the possibilities the software offers.

Mr Motroni, your software analyses and replicates in 3-D complete parts of the body to operate on bone, soft tissue, muscles, and vascular parts. Can you tell me more about it?

We focus on dentistry because of the technology allowing us to mix printing and CAD/CAM, and put all the technology available together to plan the digital workflow. With the latest version of the software, we use the cloud to bring all the team members of the planning process (technicians, dentists, laboratories) together in the same loop through mobile technology as well, allowing the dentistry team to plan on a mobile phone or an iPad, share the project, chat on the same application and produce the surgical guides, models and results with the possibility of being continuously in touch with one another. It is therefore much easier compared with standard software versions for which you need to have a computer, and many dentists hate computers.

There is an issue of safety concerning putting personal information in the cloud. It is said to be secure and then one reads about hackers. How does the older generation feel about putting information in the cloud using your application?

They are open to it because it is much easier to use for them and they like to rely on somebody else to collect data from their patients and share this data with a technician through a secure connection via an web server, which has the highest security possible. The laboratory can prepare a draft of the project, share it with the dentist, who can request changes, and this can be done with only a couple of clicks by the dentist. Therefore, even if they are not used to new technologies, they can still collaborate with other members of the team and exploit the technology.

We also offer training of course.

You teach dentists how to use the software at the Lake Como Institute in Italy, for example. We started working with Dr Tiziano Testori 12 years ago. I am involved now in the courses offered at the Lake Como Institute, in teaching the aspects related to imaging and guided surgery. I try to bring dentists and technology together, by the latest version that we have developed to leverage the level of dentistry in digital dentistry.

How do you market your software?

We work directly with our customers or through companies. We have, for example, an implant company distributing our software, and CBCT and 3-D printing manufacturers and distributors using our system, and direct sales through the web and social networks. We no longer have sales persons visiting dentists’ offices. It does not make sense for us, the investment is too high. Our customer segment is dentists who already have an idea of how to use the technology available, and word of mouth brings us new customers as well.

It has become a new world, where access to the Internet is not limited by age or accessibility, and social networks.

Of course, you cannot go against evolution and technology, but considering the pace of development the Internet has fostered, the possibilities it creates, it is a wonder we can keep up. What will come next do you think?

It is quite mind-boggling. Of course, you cannot go against evolution and technology, but considering the pace of development the Internet has fostered, the possibilities it creates, it is a wonder we can keep up.

Thank you very much for the interview.
Dental Technician Int’l Meeting

Joint meeting with
14th CAD/CAM & Digital Dentistry Conference & Exhibition

Save the date
12 April 2019

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