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#idscologne

## Winning back professional normality

### Technical review of IDS 2021

The International Dental Show (IDS) 2021 from 22 to 25 September has given the whole industry what it needs now. The participants are now taking stock, gaining an orientation and above all engaging in personal encounters again at last, albeit six months later than originally planned due to the pandemic.

"At IDS 2021, we have changed over from the crisis mode into the work mode," is how Mark Stephen Pace, Chairman of the VDDI (Association of the German Dental Industry, assessed the trade fair. "Because it was the ideal place for taking stock of the situation and for identifying future opportunities. Whereby a stronger focus is being placed on hygiene and infection control as a result of the COVID pandemic. And the dental industry is gaining momentum where digital innovations are concerned and is proving to be a pioneer for others."

The boost in research and development manifested itself at the International Dental Show in an extensive overview of state-of-the-art dentistry. The trade fair visitors were able to discover a host of attractive new products.

#### Dentists in a key medical position

In the course of the Corona pandemic, the focus of general attention lies more on the practice. Since for example periodontal prophylactic measures can have a positive effect on the overall health and particularly reduce the risk of severe cases of COVID-19.

In general, the core competence of the dental practice in the area of hygiene and infection control is even more important now than in the past. The components include among others high-performance suction systems for aerosol reduction, like those presented at IDS. The IDS visitors experienced a new possibility in the form of headphones that have special suction cannula attached to them. They suck up the potentially germ-laden aerosol cloud when it leaves the patient's mouth and reduce the aerosol formation in the room of the practice by up to 99.9%.

For the reduction of viruses that have already penetrated inside the patient, a survey by the Claud Bernhard Lyon University was presented at IDS. A mouthwash can reduce the risk of COVID-19 being transmitted by reducing the number of viruses in the mouth by 71% after just one rinse and helps the immune system fight off an infection.

In the classic area of domestic prophylaxis, several toothbrushes attracted special attention, for example sonic toothbrushes the heads of which are at a 10° angle thus facilitating the cleaning of areas of the mouth that are difficult to reach.



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### **Filling therapy becomes more comfortable**

The dental filling therapy is a further classic area - indeed a currently extremely dynamic area. For example, the IDS visitors found out more about thermoviscous composites. They are only flowable after heating and can then be sculpted straight away. After initially being implemented for the bulk fill technology for posterior teeth, there are in the meantime also variants for aesthetic front teeth restorations.

In general, fillings can be carried out directly more and more frequently; the borders to the indication for an indirect restoration are merging more and more. If prosthetic work has to be carried out, milling systems that take up very little space help the practice and the laboratory. However, nowadays they display a high degree of functionality. These include among others high-performance high-frequency spindles (for speed and precision), quick clamping devices (for conveniently changing between bracket systems with a constant precision level) and machining angles suitable for demanding tasks.

Generally speaking, the practice is increasing its manufacturing efficiency using new, automated processing strategies. Software releases presented at IDS are the prerequisite for this, in some cases in combination with new networks between different part workflows. In the practice this affects all indications and materials, especially in the areas "glass ceramic" and "preform".

Furthermore, attractive new products were presented in various special disciplines of dentistry.

### **Digital volume tomography: Highest resolution for the endo**

The digitalisation of treatment planning in endodontics is gaining momentum by analogy to the well-known backward-planning in implantology. This already begins with the 3D diagnostics. Digital volume tomographs with a special endo mode enable a particularly detailed illustration of the channel morphology.

With the widespread usage of digital techniques, backward planning will become a more and more routine process in implantology (i.e. intra-oral scanners, X-rays, CT and other imaging techniques, CAD). There are also many improvements in classic areas. For example, the regenerative plasma activation (bio-RAP) promotes the osseointegration. When a suitable device is implemented hydrocarbons can be removed from implant surfaces. This increases both the surface area available for bone-to-implant contact (BIC) and the hydrophilicity of the surface.

The bone augmentation process is made easier because only one instrument is needed to hold the flap instead of two (retractor and tweezers). And novel multilayer zirconium oxide with a particularly high light reflection produces a fresh appearance in the neck area in the field of implant prosthetics.

In orthodontics, classic occlusal testing (with articulating film or digitally-supported) assist in measuring the chewing force. A direct biofeedback from Bruxer splints helps patients avoid damage. Indirect bonding trays for orthodontic brackets, the positions of which can be planned digitally, can in the meantime be produced from

suitable plastics. Differentiated workflows based on digital technology with the participation of the laboratory and practice promote a more collaborative approach.

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#### **Aligner: Optimised power distribution, automated production**

In the field of aligner therapy, the IDS visitors were able to examine a new splint concept using transparent aligners that is available for a wide range of malocclusions: Two sheet thicknesses are used per treatment step to ensure forces are optimally transferred to the teeth. Soft and hard aligners are changed weekly, helping to gently reposition the teeth. Following a pre-agreed digital treatment plan, the provider delivers both the aligners and all patient information to the practice as a complete package.

More strongly automated CAD/CAM based manufacturing processes are now available for the aligner production in the dental technology laboratories (Volume: up to 1000 pieces per day). One has particularly solved the task of a reliable tracing of all work in the production process: Whereas this usually occurs via the allocation of a model (i.e. printed code) this now takes on the form of a permanent laser marking of the aligner itself, which is applied directly in the machine system. This way, the aligner can still be clearly assigned even after it has been separated from the model. For high production quantities, a robotic system can even be used to independently feed in and remove the prepared aligner sheets.

#### **Dental technology**

In the field of dental technology, digital and mixed analogue/digital workflows have established themselves. Which process is best for which laboratory in each individual case changes constantly. The differentiation of the possibilities offers great opportunities for increasingly more effective work processes.

Today, blanks with intrinsic colour gradients can be used for some cases that could previously only have convincingly been solved in an aesthetic manner using a full veneering. For example, they can be increasingly translucent towards the enamel and at the same time display high flexural strength. In this way, in extreme cases up to 14-unit bridges with two pontics can be inserted into the anterior or posterior region. And to achieve the highest degree of aesthetics, full veneering still remains to be an option.

For a universal indication of zirconium oxide in the prosthetics, the IDS visitors learned how the surfaces of oxide ceramics are turned into lithium disilicate surfaces - i.e. practically into glass ceramic. The transformation occurs by applying a thin layer using a conditioner. The zirconium oxide interior surfaces can then be easily glued like glass ceramics and the outer surfaces lend this special treatment an aesthetic glass ceramic look.

Aesthetics plays a major role in the digital total prosthetics. Because up until now printed or milled teeth lacked a certain aesthetic appeal. And anatomically layered prefabricated teeth always had to be elaborately cleaned, conditioned and required a basal adaption to the digitally constructed denture bases. This meant nothing came of the efficiency gain hoped for from the digitally-supported approach. At IDS the visitors saw a remedy: A prefabricated tooth optimised for open-system digital

total prosthetics. It can simply be taken out of the packet, and glued in.

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With so many digital processes and tools at hand it is difficult to always maintain the overview. However, with a new configurator for CAD/CAM machines, putting together the equipment for one's own laboratory is as simple as selecting the basic model and the extras when buying a car. The basis is the existing well-founded dental technology production know-how - the configurator takes care of the rest.

#### **Artificial intelligence: Possibly the next big thing**

At IDS 2021 there were signs that so-called artificial intelligence (AI) is going to be a future trend. One example here is the world's first two-slot scanner with RFID technology. In addition to the fast parallel digitalisation of two storage films at once, it offers various additional AI functions. One AI feature, for example, checks the orientation of intraoral X-ray images based on the anatomy displayed and corrects the orientation where required - a tangible facilitation! Because at the moment the assistant normally has to take care of this manually several times a day.

Furthermore, the main focus of current dental AI projects is the analysis of X-rays. Perspectively one is already thinking about using the existing software as platform technology. Here for example other imaging data or also clinical information about the patient would also be included. Long-term this way could lead from the diagnostics to the prognostics through to AI-support in taking therapy decisions.

As such, many techniques, current product innovations and future outlooks were to be found at IDS. It was worthwhile engaging in dialogue - what's more face-to-face again at last and at international level. For the professional orientation, for research and development and for the fine tuning of the many practices and laboratories, this IDS was indispensable, it was probably even the most important edition in many years.

The trade fair itself has further developed and with its hybrid format it offered the visitors attractive added value. Particularly the technology-savvy members of the dental family knew how to use the digital tools as an enhancement to the physical event in the halls - and as such took on a pioneer role for many other industries.

#### **About IDS**

IDS (International Dental Show) takes place in Cologne every two years and is organised by the GFDI Gesellschaft zur Förderung der Dental-Industrie mbH, the commercial enterprise of the Association of German Dental Manufacturers (VDDI), and staged by Koelnmesse GmbH, Cologne.

**The next edition of IDS will take place from 14 to 18 March 2023.**

#### **Note for editorial offices:**

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