Minimizing risks using conventional and digital shade determination, shade communication and shade control

(3-part series)

The technological revolution from conventional to digital technology is gathering increasing momentum in a number of industries. At the same time, customer expectations are also growing, both in terms of greater individuality and quality, and also with regard to faster treatments at a less expensive price. As these expectations apply to many areas of our lives, it is natural to expect that a guide should also be available for the area of cosmetic dentistry that guarantees individual, esthetic and superior quality tooth shade reproduction.

The keystones to prosthetic success

Shade determination, shade communication, shade reproduction and shade control are the four keystones of an efficient, standardized process chain in the fabrication of high-quality dental restorations. This structured and standardized approach guarantees the best possible treatment of the patient’s needs by the dental surgeon and dental technician. Shade determination is the basis here for all subsequent steps, and so must be performed thoroughly and accurately.

The issue of tooth shade is one of considerable importance to the patient. This is due to the fact that for patients, shade is one of the few tangible points of reference that they have when it comes to evaluating restorative treatment.

VITA: setting shade standards for 50 years

Those involved in shade taking have a variety of determination systems at their disposal for unique shade description. It has been over 50 years since VITA Zahnfabrik introduced the VITAPAN classical shade guide. This original A1-D4 shade guide is considered the standard internationally in tooth shade determination and classifies tooth shades as A1-A4 (reddish – brownish), B1-B4 (reddish – yellowish), C1-C4 (grayish shades) and D2-D4 (reddish – gray).

In a further step towards individual determination of the tooth shade, VITA developed the SYSTEM 3D-MASTER, which was the first tool to illustrate the tooth color space in a structured and comprehensive fashion. This approach is based on the fact that naturally-occurring tooth shades can be determined in a systematic fashion by selecting tooth lightness, chroma and hue. Naturally-occurring tooth shades vary most strongly in terms of degrees of lightness and as a result, incorrect determination is most clearly visible here. The 3D-MASTER SYSTEM uses this information and classifies the 29 sample teeth into 5 levels of lightness, 3 levels of chroma and 2 hues. With the VITA Linearguide 3D-Master, this approach has been perfected – the person taking the shade can determine the tooth shade precisely and methodically in just two steps (1. Lightness, 2. Chroma and hue).

Digital dental shade taking – fast and precise

Fast and objective results for tooth shade measurement are prerequisite for an effi-
cient digital workflow. VITA developed a digital shade-taking device because, in conventional shade determination, external influences and the individual perception of color of the person taking the shade can have a significant impact on the process chain, right from the start of the reproduction process.

The digital shade-taking device VITA Easyshade was launched in 2004, and has been continually improved since then. Now in its third generation, today’s VITA Easyshade Advance allows the user to determine tooth shades objectively in a matter of seconds. The high measuring accuracy is based on spectrophotometric technology, which ensures that tooth shades can be determined regardless of ambient lighting or reflection. The measurement results are specified in VITA classical A1–D4, VITA SYSTEM 3D-MASTER and in VITABLOCS shades. It can be used to measure and verify both natural dentition and ceramic restorations, allowing the user to implement their own quality management process.

An additional tool is the VITA ShadeAssist communication software that can be combined with VITA Easyshade Advance to optimize the process chain.

In the coming issues, we will be reporting on the areas of “Conventional and digital shade communication” and “Shade reproduction and control”.

VITA Zahnfabrik H. Rauter GmbH & Co. KG

Headquartered in Bad Säckingen/Germany, VITA Zahnfabrik H. Rauter GmbH & Co. KG has been developing, producing and marketing innovative solutions for dental prosthetics according to consistently high quality standards for over 85 years, and has been known from the very beginning as a pioneer and worldwide trendsetter. The VITA shade standard, for instance, is recognised internationally in the dental branch as a shade reference system. Users in 120 different countries benefit from the comprehensive range of products and services provided by VITA Zahnfabrik. These include analogue and digital tooth shade determination systems, acrylic and ceramic teeth, veneering and framework materials for conventional and computer-aided manufacturing procedures, dental equipment as well as a wide range of service and training facilities.

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Fig. 2 VITA classical A1 - D4 VITA Bleached Shades