More power, shorter curing times—does that make sense?

Dr Arnd Peschke
Liechtenstein

Currently in dentistry, there is an evident trend towards easier and faster applications, as well as shorter reaction and processing times. The curing time of high-power curing lights is evidence of this trend. Does the trend make sense?

Yes, depending on how users interpret this trend and how they benefit from it. For example, bluephase 20i offers a cordless, high-performance LED light that features an emission spectrum similar to halogen and a maximum light intensity of 2,000 mW/cm² (Fig. 1). The unique ‘poly-wave’ technology of the bluephase family allows consistent curing of all composites regardless of the initiator system used and offers, above all, a reliable restorative therapy owing to its high intensity. A positive side effect is that curing is achieved in a relatively short time (Fig. 2).

Bluephase 20i thus allows certain composites, such as Tetric EvoCeram and IPS Empress Direct, to be polymerised in just 5 seconds (Figs. 5–5). Other materials are polymerised in 10 seconds at most. It must be emphasised that the maximum capacity of bluephase 20i does not need to be applied in every situation; rather, the intensity of 2,000 mW/cm² offered by the Turbo programme should be viewed as a hidden reserve that can be used if needed in particular situations.

In order to prevent overheating the tissue, the Turbo programme is limited to 5 seconds. This is an additional measure to increase the reliability of the treatment. Should a user not be comfortable with the curing times of the Turbo programme because of concerns regarding polymerisation stress forming in the composite, he or she can use the High Power programme (1,200 mW/cm²), the Low Power programme (650 mW/cm²) or the Soft Start programme, which features a reduced intensity (at most 650 mW/cm²) for the first five seconds and then emits an intensity of 1,200 mW/cm² to ensure complete curing in the following 10 seconds (Figs. 6–9).

Particularly in the case of indirect restorations, bluephase 20i offers a more reliable penetration of the ceramic restoration and more confidence of thorough curing of the luting composite than weaker lights owing to its optional high intensity (Figs. 10–13).

Of course, nobody will plan for a shorter treatment time for their patients just because the application time of their new adhesive is 10 seconds shorter than that of the previous adhesive or because the curing time per composite increment is reduced from 40 to 10 seconds. However, the time-saving capacity of bluephase 20i is a factor worth considering in the case of indirect restorations, where up to 50 seconds of curing for each aspect and millimetre of ceramic

Fig. 1: Maximum intensity of 2,000 mW/cm² with the Turbo programme of the new bluephase 20i.

Fig. 2: Owing to the use of blue and violet LEDs, bluephase 20i emits a broad light spectrum of 380 to 515 nm similar to that of halogen lights. Bluephase 20i can therefore be used without clinical limitations and at any time, for all light initiators and materials. —Fig. 3: The amalgam restoration of tooth 25 needs to be replaced because of secondary caries. —Fig. 4: The completed Tetric EvoCeram restoration.

Fig. 5: The completed Tetric EvoCeram restoration.

Fig. 6: Four easy-to-use programmes: Turbo for maximum curing, High Power for fast polymerisation, Low Power for curing areas near the pulp and Soft Start for stress-reduced polymerisation. —Fig. 7: The anterior restorations need to be replaced because of secondary caries.

Fig. 8: The prepared teeth are restored separately using IPS Empress Direct. In order to keep the heat development close to the cavity in the anterior area but to ensure stress-reduced polymerisation, the Soft Start programme of bluephase 20i is used. —Fig. 9: The IPS Empress Direct restorations directly after the treatment.

Fig. 10: Tooth 26 after a root canal treatment and provisional sealing. The tooth is to be restored with an IPS e.max CAD HT inlay.

Fig. 11: A composite build-up was applied to the tooth, which has been prepared for image-taking for the fabrication of an IPS e.max CAD HT inlay in a way that maintains the tooth structure. —Fig. 12: Placement of the IPS e.max CAD HT inlay, with Optiladium in place. The composite margin is covered with Cavit Strip.

Fig. 13: The completed IPS e.max CAD HT restoration.
thickness may be saved compared with a halogen light.

Despite the impressive power of the Turbo programme, bluephase 20i is suitable for continuous operation, as the fan is virtually noiseless and does not require mains operation because of its powerful battery. Should the battery run low nonetheless, the battery-operated light can be transformed into a mains-operated unit immediately, by simply attaching the cable of the charging base to the bluephase 20i handpiece (Click & Cure option; Fig. 14).

Other, less obvious features complete the ergonomic and technically elaborate design of bluephase 20i. An example is the integrated movement sensor, which allows the unit to switch to the power-saving standby mode when not in use, switching automatically back into operation as soon as the user touches the unit.

The bluephase 20i sets the standard with its performance and handling; it can be compared to a car with a powerful engine and numerous, elaborate technical features that improve safety and comfort. Just as a powerful car needs to be handled responsibly, the high power of bluephase 20i should not be understood as an invitation to ‘speed’ permanently in the Turbo programme. Rather, it is intended as a means to ensure that the required resources are available if needed. The added performance therefore fulfils a purpose. It is up to the user to employ the versatility and the full potential of bluephase 20i according to specific needs, in order to improve efficiency in the practice routine.