## Laser-sintering for automated manufacture of dental crowns and bridges

One sector of the growing healthcare industry that is expanding particularly rapidly is the dental market and there are already automated processing centres producing dental restorations of the highest accuracy by laser-sintering EOS CobaltChrome SP2, a biocompatible and CE-certified material.

According to a survey by The Millennium Research Group, the European market for dental crowns and bridges is predicted to grow annually by an average rate of 8% until 2012. Almost half of the market for crowns and bridges is in Germany, and was valued at US$ 900 million in 2007.

Technological advancements in the field of dental care are contributing to this by employing production methods like laser-sintering to provide dental restorations that are simultaneously more affordable, more readily available and of high quality.

Until now, dental implants have traditionally been made out of metal via a casting process which enables a technician to produce 20 dental frames per day. One fully-automated laser-sintering machine can produce up to 450 parts for dental crowns and bridges within 24 hours, and of the same consistently high quality.

The time savings and the financial advantage that dental laboratories gain are huge. The messy tasks of deflasking and cleaning moulds are dispensed with, allowing the dental technician to concentrate on his or her core competence, namely the post-processing of the metal structure and its aesthetic upgrade – ceramic veneering.

The technological heart of dental e-Manufacturing, the EOSINT M 270 laser-sintering system, can produce dental implants by direct metal laser-sintering (DMLS) using a focused, solid-state laser. The machine is fed with CAD data to produce the most complex of geometries with excellent mechanical properties, surface quality and detail resolution.

Martin Bullemer of EOS commented, “I am convinced that cost control as well as flexible and rapid product cycles will determine the future of the dental industry. Manufacturing with laser-sintering offers both of these advantages."

The further development of dental CAD/CAM applications with new impression and intraoral scanners will make it possible to send high-quality data directly to the processing centre. The only thing missing would be a dental model for occlusion testing and post-processing, or a workpiece holder for use during veneering.

Such a model can be laser-sintered on a FORMIGA P 100 from PA 2200 powder, a top-quality plastic, on the basis of already available data. Consequently, laser-sintering provides a complete solution for the manufacture of dental implants.

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