Additive manufacturing beyond CAD/CAM

DENTSPLY Implants: New production technology for manufacturing world-class digital solutions

Fig. 1. ATLANTIS ISUS Bridge produced using additive manufacturing technique. The framework is designed with an optimised surface for ceramic or composite layering technique. (Courtesy of Nexus Dental Laboratory, Harrogate, UK)

Fig. 2. Angulated screw access, available for ATLANTIS ISUS bridge and hybrid, allows for angulation of the screw channel up to 30 degrees.

The new production technology, called additive manufacturing, is a metal 3-D printing technique that provides new possibilities for advanced geometries. ATLANTIS ISUS additive manufacturing of implant suprastructures takes another step beyond CAD/CAM. The result is an ultimate design for the ATLANTIS ISUS bridges and hybrids in cobalt-chrome for all major implant systems.

State-of-the-art production

After design approval of the ATLANTIS ISUS bridge or hybrid, the suprastructure will be sliced into a multitude of layers. Each layer will be traced by a laser beam in a bed of powder. Before each passing of the laser, the machine adds a new layer of powder. This fusing process creates a highly detailed and solid suprastructure.

The suprastructure is heat treated, removing internal stresses in the material. In addition, all screw seating and implant/abutment connections are milled after the heat treatment to ensure high precision. The milling strategy for ATLANTIS ISUS implant suprastructures is optimised to produce a precise and passive fit.

Laboratory efficiency

When ordering a suprastructure produced with additive manufacturing, customers benefit from the same order entry, design approval, delivery performance and accuracy as they are used to.

In addition, suprastructures will be delivered with more advanced geometries and an optimised surface. The surface is sandblasted and ready for veneering with ceramic or composite materials, which eliminates the dental laboratory time needed before veneering of the suprastructure.

‘Our laboratory efficiency is improved. Since suprastructures are delivered sandblasted and ready for veneering, there is no need for final adjustments’—Proteket, a dental laboratory from Oslo, Norway.

Factory of the Future award to DENTSPLY Implants

DENTSPLY Implants in Hasselt, Belgium, where SIMPLANT guides and ATLANTIS ISUS implant suprastructures are produced, won the Factory of the Future Award 2015.

Under Horizon 2020, the European Framework Program for Research and Innovation for 2014–2020, continues to work with the concept of Factories of the Future. The Factory of the Future multi-annual roadmap for the years 2014–2020 sets a vision and outlines routes towards high added value manufacturing technologies for the factories of the future, which will be clean, high performing, environmentally friendly and socially sustainable. The priorities have been agreed upon within the wider community of stakeholders across Europe after extensive public consultation.

The award shows that DENTSPLY Implants are in line with the European Framework Program for Research and Innovation when it comes to the future of manufacturing and development.

Note: Not available for the North-American market.

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44 | CAD/CAM 2015