PRODWAYS TECHNOLOGIES

3D PRINTING IN **DIGITAL DENTISTRY**

DISCOVER HOW 3D PRINTING REVOLUTIONIZED DENTISTRY

In the digital age, the dental world has modernized production to overcome the growing challenges of innovation and productivity. Dental labs, production centers and mutualized organizations with an industrial mindset seek the manufacturing tools most suitable to their performance needs to meet the dual requirements of quality and profitability.

With new disruptive 3D printing technologies being developped, delivering unique levels of precision, accuracy and productivity for customized solutions, the dental industry is now revolutionizing its way of production with the complete digitalization of its workflow.

New 3D printing technologies dedicated to dental are using moving DLP® heads to polymerize large surfaces of liquid resin with UV LED to achieve unequaled levels of resolution and speed for dental applications and insuring more repeatability of the precision and not depending only on one technician expertise.

Those new dental 3D printers allow premium quality with fine detail and superior accuracy of dental master model; a per-unit-cost amongest the lowest for the orthodontic models; or the development of new innovative application with themoformed aligner replacing traditional brackets

DENTAL MASTER MODELS FOR RESTORATION
Prosthetics and implants

While the majority of dental models are still produced manually from plaster casting, dentists are increasingly using intra-oral scanners, thereby bringing the workflow into the digital realm, which is expected to result in a sharp increase in the demand for dental models over the coming years.
To meet the increasing demand, dental laboratories need to increase their production capacity while maintaining the necessary precision and quality of their master models.
Thanks to 3D printers, dental laboratories can increase their production capacity and decrease per-unit cost while reducing manual work and improving material efficiency.
Additionnaly, while traditional stone models are unprecise, 3D printed master models are now allowing unrivaled surface finish and accuracy in all 3 dimensions for bridges and crown work, not depending on technician expertise.

ORTHODONTIC MODELS
Thermoforming of aligners

Traditional fixed braces used for teeth strainghtening are less attractive and uncomfortable because of the use of wires or brackets (often made of metal). Additionaly, fixed braces can only be removed by professionals, meaning they cannot be temporrily removed for important occasions or photographs.
With the ultra-customization allowed with 3D printing, dental laboratories developped new invisible realignment technique through the use of a system of clear, scalable, custom aligners made using digital modeling software and thermoformed directly from 3D printed othodontic models.
With a daily wearing time of 22 hours and changed every three weeks, the aligners will gradually and smoothly straighten teeth, taking between 6 and 18 months to achieve perfect alignment.
While the production of aligner needs a perfect communication between the dental laboratory and the dentist and a perfect precision and quality of the dental model used for thermoforming aligner, the use of 3D printing solutions is insuring the repeatability of the whole process, accuracy and quality.

LOST WAX CASTING PATTERNS
Removable partial denture, bridge & crowns wax-up

While removable partial denture, bridge or crowns are commonly produced in ceramics or metal alloys, one of the main cost-efficient solutions turns to be the 3D pritning of lost wax casting patterns.
The 3D printing of high resolution patterns allows the investment casting of removable partial denture, bridges or crowns in semi-precious metals.
High precision and excellent burn-out properties of 3D printing castable materials for direct metal investment casting or pressable ceramics turns to be the more cost efficient solution since it save gains on dental expert time for manual wax modeling.
Additionnally, the 3D printing insure the repeatability of the design and a better adjustement of the removable partial denture, bridge or crowns.

IMPLANTOLOGY
Certified Drill Guide for precise placement of dental implants

3D printing materials are now offering CE certification to 3D print custom implant surgical guides for precise placement of dental implants.
With the growing use of intra-oral scanners, dental experts can now 3D print high-precision unique surgical guides for orthodontic surgeons that can be reliably used to align the drill.
The majority of surgical guides is now designed with 3D software and directly 3D printed with certified materials.

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