



Maxillofacial Laboratory Chooses EnvisionTEC to Improve Patient Support

The Maxillofacial Laboratory provides services to St George's University Hospitals Foundation Trust (St Georges) and is made up of Orthodontic and Prosthodontic Dental Technicians as well as Maxillofacial Prosthetists.

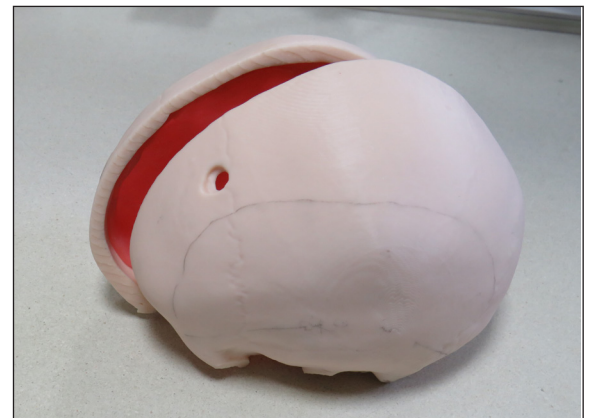
The majority of the work undertaken by the laboratory is to service the NHS, although there are the occasional private cases that are requested.

The work undertaken includes orthodontic and dental appliances, facial and body prostheses, titanium cranioplasties for neurosciences, pressure splints for burns & plastics, oncology splints and devices.

Why look at 3D printing?

Over the years the maxillofacial profession has used this technology to supply their referring clinical teams with 3D models of bony anatomy to give the clinician a more accurate representation of their patients abnormalities.

Time has seen a marked increase in what 3D printing can offer the profession and it is now used to print cranial defects for more accurate titanium skull plates, facial bone anatomy which provides clinicians with a greater ability to plan osteotomies, implant placements, bone augmentation plannings, etc.



Skull sections printed on the EnvisionTEC Vector 3SP.

Maxillofacial Laboratory at St George's University Hospitals Foundation Trust

Industry:
Dental/Orthodontic

Machines:
Perfactory Vida and Vector 3SP
Ortho

Materials:
E-Model Light and
E-Guide Tint

Why EnvisionTEC?

The team at St Georges were seeking a range of machines that provided the accuracy to reproduce bone structures and dental models combined with a range of complimentary materials. The guiding principle was choosing a machine that ensured the most accurate results for the patients across the different applications.

Additionally they were looking for 3D printers that would accept files from multiple CAD sources. Initially the printers would be fed using freeware, Invisalio, Meshmixer, Osirix (for Apple OS), but later from the Materialise suite of software that was being phased in to cover future craniofacial work.

After speaking to reseller partner Blueprint Dental, the team from St Georges were invited to visit EnvisionTEC's facilities to view the range of machines and materials. After reviewing their options, and seeing a number of different rival systems they settled on an EnvisionTEC Perfactory Vida 3D printer together with a Vector 3SP Ortho 3D printer.

The flexibility of the two machines allows them to cover any requests from the differing departments.



"There are many 3D printer companies but EnvisionTEC are one that cater for the medical profession and provide a variety of budget conscious 3D printers."

- Iain Muir-Nelson - MIMPT, Maxillofacial Laboratory Manager

Outcome

The restorative dental team at St Georges is now using EnvisionTEC's 3D printing technology to produce implant guides for more accurate placement of dental implants, and printed denture bases to improve turnaround times.

The Maxillofacial clinicians at St Georges are now requesting 3D models to allow them to pre-bend bone plates prior to theatre sessions, which is reducing the time the operation takes as well as the length of anaesthesia needed.

The use of EnvisionTEC 3D printing technology is improving the results, reducing discomfort and decreasing recovery times for patients. The team at the hospital see the use of 3D printing technology expanding into many more areas of the hospital as time goes on, so watch this space.



Highly accurate bone prints are taken from the EnvisionTEC Vector 3SP, placed in plaster and plates are pressed in house. Saving time and external cost.

EnvisionTEC materials and 3D Printers for Dental and Orthodontic applications

EnvisionTEC offers a full range of desktop, full-production and high-speed continuous 3D printers for dentists, orthodontics and dental labs. The machines are known throughout the industry for extreme accuracy, high throughput and a smooth surface finish. EnvisionTEC 3D printers deliver tight-fitting crowns and orthodontic models with a best-in-class smooth surface that results in crystal-clear thermoformed aligners.

Paired with an industry-leading materials library, featuring a variety of FDA and CE-approved materials, EnvisionTEC machines offer unmatched flexibility and a complete solution that delivers reliable, proven results. For more information on the EnvisionTEC range of Dental printers and materials visit: envisiontec.com/dental

EnvisionTEC materials

- **E-Denture** - A biocompatible Class IIa material suitable for 3D-printing all types of denture bases.
- **E-Denstone** - A material developed specifically for the rapid production of highly accurate, scannable dental models.
- **E-Dent 100/400** - printing materials for the production of crowns and bridges for long-term temporary use.
- **Press E-Cast** - A wax-filled material for the production of partial frameworks and full anatomical crowns and bridges. Both with extreme dimensional accuracy and exceptional surface finish.
- **E-Guard** - A biocompatible transparent material for the production of accurate bite splints and night guards.
- **E-Gum** - developed for use in the creation of flexible gingival masks for use in combination with 3D printed dental models.
- **E-Guide Tint** - A biocompatible Class I material for the production of high precision surgical drill guides for use in implant surgery.
- **E-IDB** - A material allowing for the production of indirect bonding trays.
- **E-Model** - A tough material that is ideal for the production of dental and orthodontic models.
- **E-Partial** - A castable material developed for the creation of delicate partial frameworks with thin features and some flexibility.

With Thanks

Thanks go to team at St Georges, especially Iain Muir-Nelson for his support in the making of this case study. Thanks also to EnvisionTEC distributor Blueprint Dental (blueprintdental.co.uk).

About EnvisionTEC

EnvisionTEC is a leading global provider of professional-grade 3D printing solutions. Founded in 2002 with its pioneering commercial DLP printing technology, EnvisionTEC now sells a range of printer configurations based on six distinct technologies that build objects from digital design files. The company's premium 3D printers serve a variety of medical, professional and industrial markets, and are valued for precision, surface quality, functionality and speed.

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