envisiontec





Russian Dental Aligner Manufacturer Turns to EnvisionTEC to Provide Cost Effective, Accurate Models.

3D Smile is a Russia based aligner manufacturer founded in 2014 in Moscow. The business began as a small lab providing expertise and 3D printing services to Orthodontists using an EnvisionTEC Ultra 3SP.

Since 2014 3D Smile has grown immensely and now produces over 10,000 aligners per month for its clients. It has also expanded to provide digital services to aligner manufacturers around the world.

As experts in the industry the team at 3D Smile saw a niche for a seamless digital aligner work flow product, and 3D Smile began the production of its own specialised software solution. Now, not only does 3D Smile manufacture aligners but it also provides a full IT design and work flow solution to aligner manufacturers (dental labs or dental clinics who have in-house 3D printers).

Why 3D printing?

3D Smile was a pioneer, identifying the value of 3D printing and CAD/CAM to orthodontics early on. The team at 3D Smile realised that older, manual techniques utilising gypsum or other materials were just too slow to produce and not accurate enough for the effective production of vacuum formed tooth aligners.



"The 3D printing is an essential part for aligners. Effective aligners cannot be manufactured without precise 3D printing."

- Marina Domracheva, Founder and CEO, 3D Smile.



Daniil Lyashuk, head of treatment planning.

3D Smile

Industry: Dental/Orthodontic

Machines: Ultra 3SP

Materials: E-Model 3D printing was allowing for the manufacture of far more precise, patient specific tooth models. Additionally 3D printing was allowing patients to be serviced faster, with models able to be produced in a few hours instead of days.

In the future, 3D Smile can see the production of aligners via 3D printing, without the need for models, improving further the service for patients and removing yet another step from the process.

"The future is direct aligner 3D printing." - Marina Domracheva, Founder and CEO, 3D Smile.

Why EnvisionTEC?

Before establishing the business, the Smile 3D team knew the importance of choosing the right 3D printer and materials. The manufacturer needed to be experienced in the market and have a printer and material that would allow the accurate reproduction of scans, cater for the large number of models that 3D Smile needed to produce, and have excess capacity for future growth.

The 3SP range from EnvisionTEC allowed for large numbers of models to be produced simultaneously, either printed directly, flat on the build platform or vertically. The E-Model material allowed for the production of high-resolution models that allowed for the accurate reproduction of the CAD designs. After seeing the EnvisionTEC Ultra via distributor Cybercom, the team knew this was the solution they needed.

"We chose the EnvisionTEC Ultra 3SP printers based on their relative low price compared to the speed and accuracy."

- Marina Domracheva, Founder and CEO, 3D Smile.

3D Smile has now developed processes for both minor and severe teeth misalignment. Severe cases require on average 30 steps (which equates to 60 dental models – 30 for each jaw). Multiplied by the number of clients, this is a lot of models.

The selection of the EnvisionTEC Ultra 3SP 3D printers and E-Model has given 3D Smile the ability to support this level of production. Additionally the use of EnvisionTEC's E-Model material has reduced the cost of models which has made even the most severe cases cost-effective. 3D printing has brought hope to more patients than ever before.

The 3D Smile work flow:

A Members area	/8 PATH	INTS				
Pacients Submit a packent Case of the quarter	Show payments Search					
	A	Patient's name	Steps delivered	Payment received	Total payment	Patient's status
	6084	Demois Demo				Cear retainers ordered
	4617	Smith Robert				Instructions are processing
	3753	California Giuseppe				Treatment in progress
	3750	Pavlin Radko				Waiting for a payment
	3250	Chatur Kamal				Approve 3D plan
	3161	Bellon J-M	24 out of 24			Treatment in progress
	3099	Ori Jane Li				Retailer impressions
	2679	Ravid Tom	17 out of 17			
	2608	Chesed Chris				Instructions are processing
	2400	Korablin kan				Annese 20 also

Step 1. The 3D Smile system allows for the simple management of patient cases.



Step 2. Diagnosis (doctor evaluates root position and bone thickness BEFORE planning treatment to understand the available movement volume).



Step 3. Treatment Planning.



Step 4. Models are 3D printed.



Step 5. Aligners are manufactured, packaged and sent.

3D Smile have used the 3SP machines since 2014 and even running them constantly, have found them dependable assets that have supported the business through its growth.



"There needs to be a strong link between 'virtual tooth movement planning' and 3D printing. To make the 3D plan effective (that is teeth are moved where planned) the aligners must be very precise. " - Marina Domracheva, Founder and CEO, 3D Smile.

The Future

The 3D Smile software for the online visualisation of treatment plans provides orthodontic and dental professionals with a new dimension of tooth movement planning and review. This, combined with 3D Smile's in-house 3D printing facilities provides a full, outsourced aligner production service.

So far there has been immense interest in the software and production facilities. As the business and its service grows there will be inevitable need to expand production capacity. When this happens the business will purchase further EnvisionTEC 3D printers.

Conclusion

3D printing is the essential link between digital design and processes and the physical world. Without the use of accurate, quality 3D printers and materials the software and design comes to nothing as the appliances are not effective.

Using EnvisionTEC 3D printers and materials ensures that oral scans are reproduced as accurately as possible in the models. This in turn results in the best aligners possible that result in straight teeth. This ultimately is the goal, to give the patients the result they require and build confidence with the orthodontic professionals using the service.



The 3D Smile team.



For more information on 3D Smile.

Website: 3d-smile.com

email: info@3d-smile.com

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. EnvisionTEC 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.

Clinicians are rapidly adopting EnvisionTEC technologies to lower costs, provide more convenient chairside care and have tighter control over treatment plans. Dental labs, meanwhile, are finding 3D printing technologies are allowing them to increase competitiveness and re-shore production.

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, bridges and veneers for long-term temporary use.
- **Press E-Cast** A wax-filled material for the production of partial frameworks and full anatomical crowns and bridges. Press E-Cast offers both extreme dimensional accuracy and an exceptional surface finish.
- **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.

Partners

Many thanks to Marina Domracheva at 3D Smile for her help in the production of this case study.

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.

- **E-Guard** A biocompatible transparent material for the production of accurate bite splints and night guards.
- 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-OrthoShape** A grey ABS-like material recommended for the affordable volume production of models or thermoformed aligners.
- E-Rigid PU An excellent material solution for 3D printing dental diagnostic waxups.
- **E-Partial** A castable material developed for the creation of delicate partial frameworks with thin features and some flexibility.
- **Press-E-Cast** A wax-filled photopolymer material for the production of full anatomical crowns and bridges.

ENVISIONTEC, INC. Dearborn, USA Phone +1-313-436-4300

ENVISIONTEC GMBH Gladbeck, Germany Phone +49 2043 9875-0

ENVISIONTEC UK Stoke-on-Trent, UK Phone +44 (0)1782 418040

ENVISIONTEC Asia

Shanghai, China Phone +86 186 163 10393