

TRISA AG

Trisa AG uses 3D Systems-powered 3D printing to speed stylish, high-performing toothbrushes to global market

- **Trisa AG** – One of the largest toothbrush makers in Europe and the manufacturer behind some of the world's most popular toothbrush labels
- **Challenge** – Finding ways to bring style-sensitive products to market more quickly
- **Solution** – Using the Spectrum™ Z510 high-definition color printer to produce prototypes
- **Results**
 - Making prototypes three times faster
 - Producing prototypes at one-tenth the previous cost
 - Subtracting one month from yearlong design cycle
 - Achieving better toothbrush design through more prototypes
 - Attracting new clients by offering compelling time and cost benefits of 3D printing
 - Designing better-performing products that promote oral health

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– PETER GROSS
HEAD OF INNOVATION
TRISA AG



High-definition 3D Printing Accurately Models Detailed Toothbrush Bristles

The toothbrush may be a humble object in the great scheme of things, but subtle design decisions can make great differences in the ability to clean teeth, penetrate tight interdental spaces, promote healthy gums and win over consumers.

For example, many toothbrush makers customize the size of toothbrush heads to the average physical size of customers in their target geographies. Other design considerations are the layout, stiffness and texture of the bristles, and the color, style, ergonomics and flexibility of the handle. Designers must adjust these decisions to the projected cost of the toothbrush and its place on the economy-to-premium scale.

Concerns like these are always on the minds of design professionals at Trisa AG of Switzerland, one of the largest toothbrush makers in Europe and the manufacturer behind some of the world's most popular toothbrush labels.

“We're constantly looking for better ways to promote oral health and help toothbrush

companies appeal to users on both functional and aesthetic levels,” said Martin Bütler, product designer for Trisa AG.

Challenge

Reducing Time to Market

Since toothbrush style is nearly as important to the consumer as clothing style, toothbrush companies are especially eager to put promising new designs onto store shelves as quickly as possible.

That's a major reason that in 2004 Trisa investigated ways to shorten its design cycle and identified 3D printing as a potentially effective option. Until that time, Trisa used time-consuming methods to create prototypes of new brushes. The company would either order a prototype made from scratch on a milling machine or send the design to a stereolithography contractor.

“Either way, models would take nearly a week to arrive, and our modelers would be forced to painstakingly insert one bristle after the other into the brush head, trim the bristles into their final shape, and paint the prototype in the proposed colors,” said Peter Gross, head of innovation for Trisa. “We were convinced that 3D printing would offer better speed, convenience and potential cost savings.” In much the same way that conventional desktop printers provide computer users with a paper output of their documents, 3D printers provide designers with a physical prototype of real-world objects.





Realistic Color Prototype (left) and Actual Toothbrush (right)

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Solution

The Spectrum Z510 High-Definition Color Printer

In evaluating various 3D printing technology options, Trisa sampled 3D printing from various 3D printer manufacturers. Although the machines produced acceptable detail, they lacked the multicolor capabilities and speed of the 3D Systems Spectrum Z510. The Spectrum Z510 is the only 3D printer that simultaneously prints in multiple colors, and like a 2D color printer, it is capable of printing colors in an infinite variety of hues. Since color is so critical in a style-conscious market, monochrome prototypes don’t suffice, and hand-painting prototypes is too time-consuming.

In production use for Trisa AG, the Spectrum Z510 produces prototypes three times faster and up to one-tenth of the cost of milling or stereolithography, and it requires neither bristle-by-bristle insertion or after-the-fact painting. It simply produces the parts directly from Trisa’s UGS® 3D files.

Results

Shortened Design Cycle, Satisfied Customers

“3D printing with 3D Systems technology has completely changed our practices,” said Gross. “It takes one day instead of at least three to obtain a prototype, and the time and labor costs are one-tenth those of the traditional methods. We’re shaving one month from our yearlong development cycle and are designing better products because we can sample more prototypes.”

Trisa’s new ability to create more prototypes faster and accelerate new products to market makes a big difference with the major toothbrush brands it serves. “They are astonished by the quality of our new models and the speed with which we’re producing them,” said Gross. “Three-dimensional printing is a critical competence for us that builds credibility with our existing client base and is a strong asset for securing new business.”

Trisa AG plans to continue using 3D printing and expand its use of the technology going forward. “We intend to build on our success by combining 3D printing with other product development technologies in unique ways, but that’s all we can say right now about that,” said Gross. “In the meantime, we’ll be seizing the advantages of fast, affordable prototyping, accelerated design cycles and earlier product delivery.”



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Issue Date January 2012