> When we started using the Connex500 in our lab, it was a quantum leap for us
>
> **Hugo Arnold**
> Head of Prototype Manufacturing, Geberit

Geberit Uses Objet Multi-Material 3D Models to Save Cost and Time to Market

The Geberit Group is one of Europe's leading makers of sanitary technology products, which are recognized worldwide for their innovation, durability, quality and ecological efficiency. In business for more than 135 years, and considered a pioneers for its comprehensive system solutions, Geberit's longevity and successful worldwide market penetration are due in part to its longstanding emphasis on innovation.

The company's constant drive for groundbreaking and comprehensive systems and solutions means that prototypes play an important role in the development process. Prior to 2005, when Geberit purchased its first Objet 3D printer, an Eden260™, the vast majority of prototypes were produced in-house by CNC machining; only a few prototypes were made using 3D printing outsourced to a service bureau. The decision to add in-house Objet 3D printing capabilities was a landmark moment that changed Geberit's entire product development process, enabling not only feasibility testing, but also fit and function testing with high-pressure running water, all in the early design stages.

In 2008, Geberit made another landmark Objet purchase, this time of the Connex500™ multi-material 3D printing system. With the installation of the advanced Objet machine, Geberit became the first company in its sector with in-house multi-material 3D printing capabilities, gaining a real competitive advantage.

Well-founded trust in Objet

Despite the relative newness of multi-material 3D printing, Geberit's confidence in Objet's 3D printing technology made choosing the Connex500 an easy decision. "We are real fans of Objet, due to the model quality, and in particular the superior surface quality and fine features," says Hugo Arnold, Head of Prototype Manufacturing at Geberit. "Also, we found that our requirements and needs were always taken seriously by Objet, which is very important to us."

The Connex500 utilizes Objet's PolyJet Matrix™ technology, which is the only method available for producing, in a single build, 3D parts and models made with multiple materials with different physical properties. An intrinsic part of the technology is the concept of Digital Materials – composite model materials generated on the fly to provide an exceptionally wide variety of properties.

Wide variety of materials equals competitive edge

For Geberit, the superior quality and smoothness of surfaces, large build tray size, and wide range of shore hardness values that can be attained with Digital Materials are key advantages of the Connex500. New Digital Materials introduced in late 2009 with Digital Materials Pack2, along

CASESTUDY

AT A GLANCE

Company: Geberit Group
URL: www.geberit.com
Location: Jona, Switzerland
Industry: Developer, manufacturer and marketer of sanitary technology products such as plumbing fittings, drainage and waste water systems

Challenges

Build one-step multi material parts in order to considerably reduce post-process assembly

Solution

In-house prototyping with Connex500™ multi-material 3D printing system from Objet Geometries

Results

- Feasibility studies are conducted prior to series production
- Faster and more cost effective time-to-market
- Optimized product development starting from very early design stages
- High-quality models meet the highest levels of accuracy and finish

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with the new TangloBlackPlus model material, which offers improved part strength, have also been welcomed at Geberit.

"The addition of TangoBlackPlus to the Connex500 offers us an almost unlimited variety of new applications," says Arnold. "Our engineers are astonished about the diversity of Objet's materials now available with Digital Materials Pack2. "With the wide range of shore hardness values we believe we have a competitive edge in time and technology."

With the ability to print in a single build process, parts that – like the end products – combine different materials, Geberit is able to conduct feasibility testing relatively early in the design process, long before it has to commit to production runs. For example, using the Connex500, Geberit simultaneously prints four or five different designs for any part, along with free-form rubber parts for sealants and gaskets. This enables Geberit product designers to figure out the optimal solution in terms of flow control, water pressure and noise reduction.

"It is very helpful to simulate the installation and removal of assemblies of parts as it enables tight spaces to be evaluated and optimized according to the usage of the final products and assemblies," says Arnold. "We save considerable time and money in the product development, and hence reduce time-to-market, thanks to Objet."

3D models enhance communication

Multi-material parts produced on the Connex500 provide valuable support to internal and external marketing processes. With their close proximity in look, feel and function to the target end products, the Objet models are used in presentations to the marketing department and top management at Geberit, and to marketing partners. Similarly, the Objet models are used in presentations to target market focus groups, enabling developers to get real market feedback on design issues ahead of series production.

Appreciation for innovation

Other benefits of the Connex500 include improved internal communication between engineers, product designers and the rapid prototyping department. Additionally, the new 3D printer has enhanced creativity, as developers are challenged to design and test more ideas for future products.

At Geberit, there is high internal appreciation of advanced and innovative enabling technologies, such as Objet's PolyJet Matrix™ Technology, which drives the Connex500. As a result, the prototyping department's use of the Connex500 has being exceptionally well-received within the company. Hugo Arnold sums up: "Geberit is very proud to work with such an advanced technology. Thanks to Objet and the Connex500, our rapid prototyping department has received great recognition from management and other departments, such as marketing."

About Objet Geometries

Objet Geometries Ltd., the innovation leader in 3D printing, develops, manufactures and globally markets ultra-thin-layer, high-resolution 3-dimensional printing systems and materials that utilize PolyJet™ polymer jetting technology, to print ultra-thin 16-micron layers.

The market-proven Eden™ line of 3D Printing Systems and the Alaris™30 3D desktop printer are based on Objet's patented office-friendly PolyJet™ Technology. The Connex™ family is based on Objet's PolyJet Matrix™ Technology, which jets multiple model materials simultaneously and creates composite Digital Materials™ on the fly. All Objet systems use Objet's FullCure® materials to create accurate, clean, smooth, and highly detailed 3D parts.

Objet's solutions enable manufacturers and industrial designers to reduce cost of product development and dramatically shorten time-to-market of new products. Objet systems are in use by world leaders in many industries, such as Education, Medical / Medical Devices & Dental, Consumer Electronics, Automotive, Toys, Consumer Goods, and Footwear industries in North America, Europe, Asia, Australia, and Japan.

Founded in 1998, Objet serves its growing worldwide customer base through offices in USA, Mexico, Europe, Japan, China and Hong Kong, and a global network of distribution partners. Objet owns more than 50 patents and patent pending inventions. Visit www.objet.com.

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