

"Objet technology is an invaluable aid in the education process of our students. And, in the fields of development and services it has become an essential tool"

Prof. Jens Bliedtner,
University of Applied Sciences Jena



Case Study

At a Glance

Company: University of Applied Sciences Jena

URL: www.fh-jena.de

Location: Thuringia, Germany

Industry: Offers a full range of Bachelor's and Master's degree courses. Focuses on modern technology, up-to-date management and scientific innovation

Challenges

- University of Applied Sciences Jena needed a fast, easy-to-use, and cost-effective way for students and researchers to efficiently validate designs and make models for vacuum casting
- Recently, the university was asked to produce a model of the HI-virus for the Phyletisches Museum Jena

Solution

Eden™ 3D Printing System, installed in '04

Results

- Students and researchers in precision engineering, medical engineering, biology, construction and design are able to explore new product development possibilities
- Cost-effective rapid prototyping enables fast validation of virtual constructions using real components
- High-quality, smooth-surfaced models enable students to manufacture components and assemblies with movable parts
- The job shop can manufacture models for vacuum casting
- Design errors are identified early in the design process, reducing material usage and development times
- Further savings due to the elimination of costly manufacturing of tools
- Unique HI-virus provides museum visitors with insight into deadly virus

Easy, fast and real visualization of component functions

University of Applied Sciences Jena Uses Objet 3D Printing Technology to Advance Education and Research at the University and Beyond

The University of Applied Sciences Jena is a modern educational institute in every respect. Founded in 1991, and with a student body of nearly 5,000, the university focuses on providing practice-oriented, science-based education. Through cooperation with universities around Europe and beyond, world-leading industrial and technology companies and industrial research institutes in Jena, the university's students are enriched by exposure to advanced technology, up to date management and scientific innovation.

In 2004, the university installed an Eden330™ 3D Printing System. It selected the Eden because the printer offered a fast and cost effective method for producing high-quality prototypes on campus, and because of its innovative, office-friendly and clean technology. "Our students have no exposure to the uncured materials and the whole process is clean, which is ideal for an educational setting," said Jens Bliedtner name, prof. at the University of Applied Sciences Jena. "Additionally, the fact that the Eden printer does not require a specially equipped lab made the purchase decision easier."

The Eden 3D Printing System is used by multiple departments at the university to create highly accurate 3D models for a wide range of purposes. Students and researchers in the fields of precision engineering, medical engineering, biology, construction and design regularly use the 3D Printing System as part of their studies and R&D work. It is also used by the job shop to manufacture various parts and assemblies.





High-quality models and low finishing needs save time and cost, expand opportunities

The unique process produces accurate models that have very smooth surfaces and fine details, with no post-processing required. This enables students and faculty at the University of Applied Sciences Jena to produce high-quality models quickly, with low finishing costs, and to manufacture components and assemblies with movable parts. They also use the Eden330 to make models for vacuum casting.



With the fast, cost-effective rapid prototyping capabilities provided by the Eden system, students can easily and rapidly visualize component functions; they can quickly validate virtual constructions by using real components and they are able to use functional models in presentations. Additionally, the Eden330 opens new possibilities for the development process, enabling fine details, complex geometries and thin-walled components.



Museum-quality 3D printing

Recently, the Eden 3D Printing System proved indispensable to the success of a high-profile project that the University of Applied Sciences Jena took on as a public service. The Phyletisches Museum Jena (the museum of natural history at Friedrich-Schiller University Jena), approached the heads of the SciTec Department of the university with the idea of creating a model of the HIV virus, to mark the 100th anniversary of the museum. The SciTec Department worked with industrial design company Develos Product Industriedesign Weimar to create the prototype.

The model shows how HI-virus – the virus that causes AIDS – slowly destroys its victim’s immune system by accelerating a normal process called homing, which diverts white blood cells from the bloodstream to the lymph system. It is a powerful tool in better understanding the structure of the virus and how it works. Since the first cases of AIDS were reported around 27 years ago, the disease has become a global epidemic, with more than 33 million people around the world living with HI-virus.

This model of the HI-virus was printed on the Eden 3D printing system. The two parts shown here were printed in a single run, and then painted.

After completing the HI-virus model, the University of Applied Sciences Jenna donated it to the Phyletisches Museum in honor of the museum’s 100th anniversary and the Friedrich-Schiller University’s 450th anniversary. It is on permanent display in the Evolution Room of the Phyletisches Museum in Jena.

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.

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.

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.

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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