MODELLING LUXURY

From tires to interiors, Bentley designs with 3D printing

"Stratasys' rapid prototyping systems have allowed us to develop things in a totally new way. With this technology, we can simulate exactly how the car will look."

— Kevin Baker, Bentley Motors

Bentley designers hone nearly every detail of the car, inside and out, with the help of a 3D printer.

When your very name conjures up visions of luxury, quality and detail, your design studio has to employ the very best minds working with the very best technology. Founded from modest beginnings in England in 1919, Bentley Motors Ltd. is dedicated to making responsive and powerful Grand Tourer automobiles with the stamina to cross continents at speed, in refined comfort and style.

Long before mission statements became popular, the company's creator, W.O. Bentley, said the company's objective was "to build a fast car, a good car, the best in its class." Maintaining this tradition for automotive excellence and prestige is a fundamental focus for Bentley as it combines innovative technologies with traditional craftsmanship at every stage of development and production.
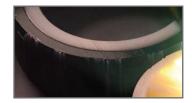
Little surprise then, that Bentley should equip its design studio with Objet30 Pro desktop and Objet500 Connex multi-material 3D printers.

Using patented PolyJet technology, Stratasys 3D Printers enable the design studio team to easily and quickly produce small-scale models, as well as full-size parts, for assessment and testing prior to production on the assembly line. Virtually every part is prototyped in miniature, right down to the crystal decanter.

"The accuracy of the Objet30 3D Printer enables us to take a full-size part and scale it down to produce a one-tenth scale model," explains David Hayward, operations and projects manager at the Bentley Design Studio. "Once we have approval at this scale, we can move onto our larger Objet500 Connex 3D Printer to produce one-third scale models, full-sized parts as well as parts that combine different material properties without assembly."

Designers can use Objet 3D Printers to produce virtually any detail on the car's exterior or interior to scale.

The Objet500 Connex 3D Printer can build a rubber tire and rigid wheel rim in one piece.

Stratasys
FOR A 3D WORLD™

Multi-Material Capability

The Objet500 Connex 3D Printer also empowers the design studio team to combine a variety of material properties within the same printing process. From wheel rims and tires, to full-size tail pipe trims, multi-material 3D printing enables Bentley engineers to produce models across several engineering functions with a diverse range of material properties. A single prototype can combine rigid and rubber-like, clear and opaque materials with no assembly required, enabling you to 3D print, for example, a rubber tire on a wheel rim.

In fact, according to Hayward, every conceivable object used on either a car's interior or exterior can be created using this technology. "We can reproduce grills, mouldings, headlamps, door mirrors — basically every part that we see on the car — a design-intent production model," he explains.

PolyJet's rubber-like material enables Bentley to simulate rubber with different levels of hardness, elongation and tear resistance. "We can also produce rubber components with a variety of different tensile strengths," continues Hayward. "We've even developed designs for actual glassware and the decanter using the clear material."

Kevin Baker, design model manager at the Bentley Design Studio, is equally impressed with the way the team's 3D printing solutions have revolutionized the design processes. "Stratasys' rapid prototyping systems have allowed us to develop things in a totally new way. With this technology, we can simulate exactly how the car will look," he says.

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