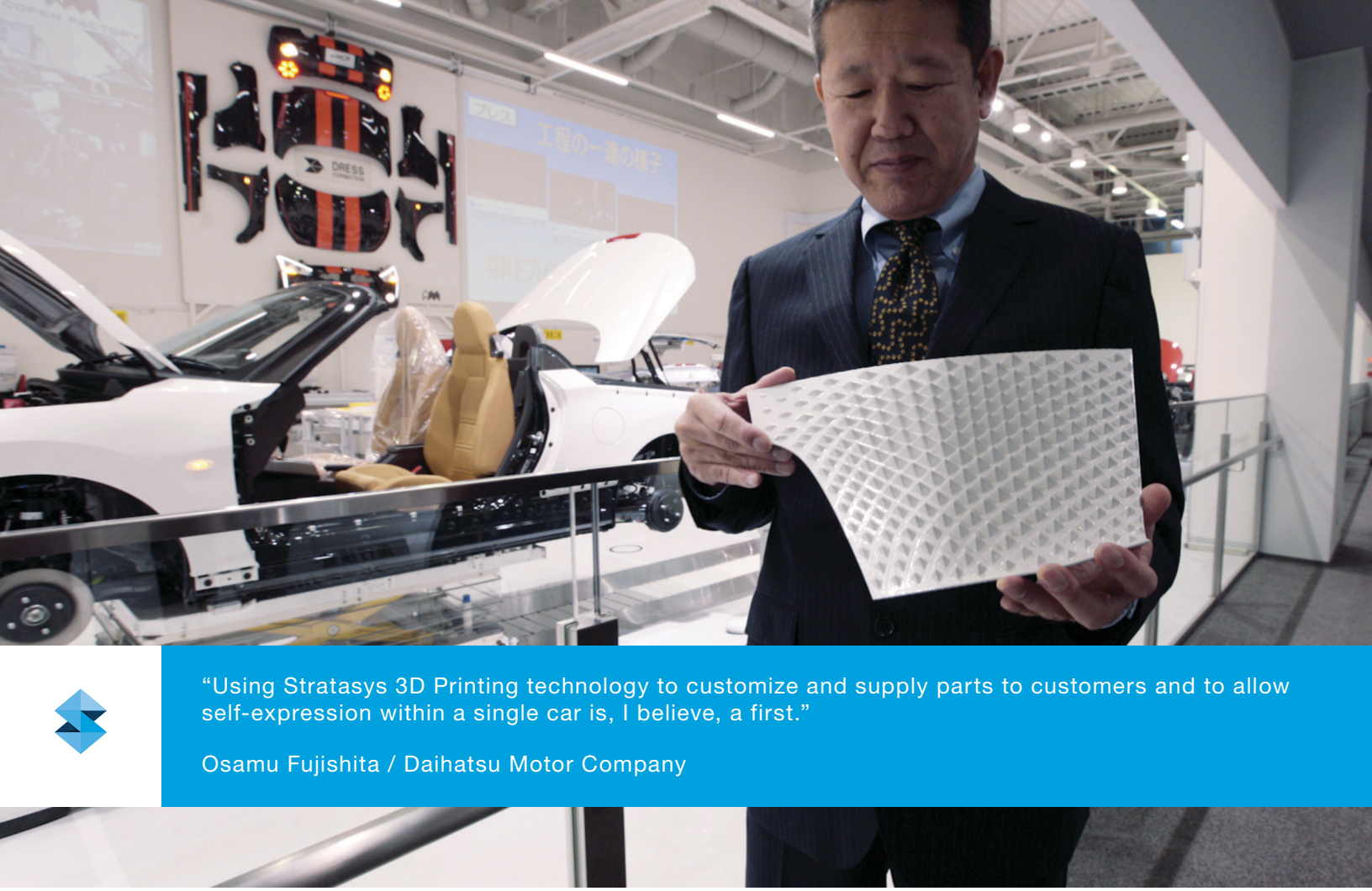


> “Using Stratasys 3D Printing technology to customize and supply parts to customers and to allow self-expression within a single car is, I believe, a first.”
>
> Osamu Fujishita / Daihatsu Motor Company

Daihatsu employs Stratasys 3D Printing to create custom production parts.

CASE STUDY

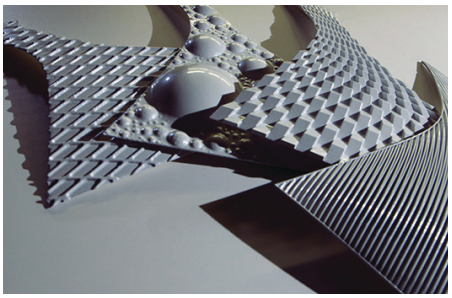
Designed by Consumers

STRATASYS COLLABORATES WITH DAIHATSU TO CREATE CUSTOMIZABLE EFFECT SKINS

Many consumers choose a car as a means of expressing themselves. But most of the time, it is the vision of the vehicle’s designer that the customer selects, rather than their own. Daihatsu Motor Company, a manufacturer of small and lightweight cars based in Ikeda, Osaka, Japan, wanted to place more customization and design freedom directly into the hands of its customers. The automaker relied on Stratasys® 3D Printing technology and expertise to bring the customer into the design process in a totally new way.

Stratasys partnered with leadership at Daihatsu, along with outside design partners, to create Effect Skins – intricate, tactile patterns built with Stratasys 3D Printers. When placed on the front and rear bumpers of the Daihatsu Copen, a popular two-door convertible, the Effect Skins frame the head and tail lights, creating a flash of expression as the "face" of the car.

Osamu Fujishita, general manager of the product planning division for Daihatsu, said the automaker chose the Copen model for the Effect Skins because owners are enthusiasts who have tremendous passion for their cars, and enjoy sharing it by customizing them. This project harnessed direct digital manufacturing to produce production parts – instead of prototypes – engineered to withstand real-world conditions on the exterior of the car.



Effect Skin designs created using ASA thermoplastic.

Design Freedom for Customer Personalization

Bringing the Effect Skins to life required a team of automotive insiders and outsiders working collaboratively with Stratasys experts.

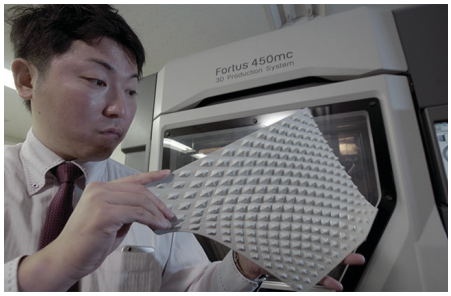
Kota Nezu, whose Tokyo-based company Znug Design manages planning and design for industrial products, such as cars and motorcycles, served as a facilitator between Daihatsu and Sun Junjie, a 3D modeling artist. Junjie had extensive experience in the fashion industry as well as a deep understanding of Stratasys technology, but was a newcomer to the automotive industry. That perspective was a perfect fit for the Effect Skins project and helped open up a world of design possibilities.

Stratasys 3D Printing allowed Sun Junjie and Kota Nezu to create multiple, quick design iterations.

Drawing inspiration from nature and fashion, Junjie and Nezu developed 15 patterns, with themes ranging from geometric to organic. Because the customer can adjust the parameters of the designs themselves, there are exponentially more styles and preferences that can be personally customized.

Daihatsu 3D printed the Effect Skins in ASA thermoplastic, which is durable and enables thin, but sturdy walls. It is also available in 10 colors, allowing for even more design possibilities. The ability to quickly 3D print and test design concepts and iterations, empowered Junjie to experiment with many different design algorithms and iterate numerous styles quickly.

"Normally, there is a gap in the process in going from data created with 3D CAD to producing the object—the modeling and the actual sculpting are different areas," Junjie said. "This project would not have been possible with traditional manufacturing or tooling methods," Nezu said.



Takehiro Koyama shows one of the Effect Skin designs produced on a Fortus 3D Printer.

Collaborative Partnership

Nezu and Junjie said there were many benefits of working with Stratasys beyond the technology itself. Stratasys application engineers made suggestions throughout the development process and provided expertise on both the technology and material capabilities.

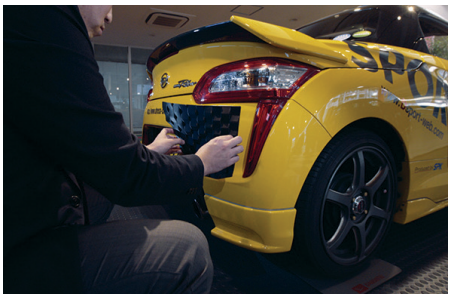
“It’s much more than Stratasys producing something that we requested. We think of ideas together to make things work better to reach the final goal,” Nezu said. “We can form that sort of a team with them. That’s one of the biggest benefits.”

Customers can personalize their own Effect Skins.

Efficient, On-Demand Production

The traditional manufacturing method of reducing costs is mass production of parts to take advantage of economies of scale. But this Effect Skins project illustrates the power of Stratasys 3D Printing when it comes to creating both on-demand and cost-effective production parts.

“We believe on-demand production offers definite benefits to supply chain efficiencies and allows easy access for customers,” Fujishita said. “So we see it as essential in growing the market for these products and that’s how we are moving forward.”



Final Effect Skin being installed on the Daihatsu Copen.

Nezu observes two primary advantages for manufacturers that use 3D printing: the ability to develop multiple designs in a short amount of time, and just as importantly, the ability to bring customers into the production process itself.

“What really interests me is making cars even better, more enjoyable products for their customers,” he said. “That’s where I sense a lot of possibility—cars could become more open-source products where the customer or a third party can come in and help make the automobile industry more customizable. And with Stratasys 3D Printing technology, open and innovative manufacturing is now possible.”

stratasys

E info@stratasys.com / STRATASYS.COM

HEADQUARTERS
7665 Commerce Way, Eden Prairie, MN 55344
+1 800 801 6491 (US Toll Free)
+1 952 937 3000 (Intl)
+1 952 937 0070 (Fax)

2 Holtzman St., Science Park, PO Box 2496
Rehovot 76124, Israel
+972 74 745-4000
+972 74 745-5000 (Fax)

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