

CREATIVE WRITING

Zebra Sharpens Its Writing Instrument Creation Process With 3D Printer

"Now that we have the Objet® 3D Printer, we have reduced our development cycle from 12 months to eight months. In addition, we can do molding more freely, which saves us critical time in the design process."

— Zebra spokesperson

Zebra's Objet 3D Printer helped it get a grip on improving its design process.

Since its successful development of the first Japanese steel pen nib in 1897, Tokyo-based Zebra Co., Ltd. has dominated the Japanese writing instruments manufacturing market. Zebra has thrived by introducing a series of cutting-edge writing tools, including wooden ballpoint pens, tricolor ballpoint pens, double-headed permanent markers and a hybrid mechanical pencil and ballpoint pen.

Form Follows Function

In its quest to expand and improve its product line, Zebra conducts extensive form and function testing of all new products under development.

Originally, Zebra outsourced creation of its 3D prototypes, but this was costly and slow and it created bottlenecks. To promote more design creativity and better evaluate new ideas during the design process, Zebra looked for a new prototyping method. The company needed to produce high-quality models with the detail and precision necessary for form and function testing. It also wanted the convenience of in-office use, and a clean process that fit in with Zebra's commitment to environmental responsibility.

Zebra investigated multiple types of 3D molding machines. "We learned that Stratasys® 3D Printers have several advantages, such as faster molding speeds, faster preprint preparation, high precision and easy cleaning, requiring only water-rinsing of the model," said a Zebra spokesperson. In addition, of all the machines Zebra investigated, Stratasys 3D Printers were the only ones that allowed for the rigorous functional testing needed to ensure a successful pen grip. The company purchased an Objet model to boost its production capabilities. "The Objet 3D Printer was the most effective of all the 3D printers reviewed," said the Zebra spokesperson.



With an in-house 3D printer, Zebra compressed its typical product development from 12 months to eight months.



Zebra now uses its Objet 3D Printer for all its new product prototypes.

Zebra immediately put the Objet 3D Printer to work in in the development of an innovative emulsion ink-based ballpoint pen. The smoothness of the writing experience is a key advantage of the pen, so ensuring ease of grip was crucial to the development process.

Around-the-Clock Creations

With the Objet 3D Printer producing prototypes during almost every stage of product development, Zebra compressed its typical 12-month process into eight months, or a 33 percent time reduction.

Now instead of creating explanatory materials to communicate form and functionality, Zebra proceeds straight to prototyping, printing multiple models as the design evolves. Likewise, high-quality 3D models printed in-house have replaced outsourced prototypes. And the company no longer needs to do laser modeling in order to evaluate the grip and ease of use – it's all done with 3D models, in less time and with lower costs.

Zebra also uses the printer to create production jigs that are too complex to make using cutting or other methods. The jigs are produced overnight, with the printer working unattended, facilitating and speeding molding.

“We develop a number of new products each year, and all our prototypes are now produced using the Objet 3D Printer,” said the Zebra representative.

In-house 3D printing has also improved communication during the development process. Multi-disciplinary teams can easily understand original design plans and internal structures. The ease of communication is a key reason that the Objet 3D Printer is now continuously in operation.



Zebra tests the smoothness of the writing experience – a key advantage of its writing instruments – with its Objet 3D Printer.

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