

EC-Atech Quickly Customizes Toner Cartridge Prototypes with 3D Printing

A Need for Quicker, Cost-Effective Prototyping

EC-Atech is a Hong Kong-based original equipment manufacturer specializing in the production of toner cartridges. Achieving a high level of precision is crucial to the company because of its need to ensure that the final products do not leak ink and are free of any other printing defects. For this reason, EC-Atech strives to develop high-quality prototypes that strictly adhere to specifications, especially when it comes to fixtures. These fixtures are instrumental in ensuring the efficient operation of the toner cartridges and their ability to maintain accurate, repeatable and consistent motions between work pieces. To do so, the fixtures needed to be durable and customized to each toner cartridge.

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Assistant Product Manager of EC-Atech



The high standards on precision can pose a challenge to balancing quality and cost. This was the case for EC-Atech when it worked with a third-party manufacturer for its prototype development. To meet the strict requirements, the team often had to communicate back and forth with the client and the prototype manufacturer to customize the prototypes to the exact specifications. This process would often require up to five rounds of revisions before the team could finalize the design.

Besides the need for multiple revisions, the use of metal prototypes — the default method for the industry — often lowered the efficiency of the process because the lead time for metal production could range anywhere from three weeks to four months. And when combined with the need for multiple design revisions, prototype development could take upwards of a year, if not longer.

Seeing these inefficiencies, EC-Atech saw the need to streamline its workflow. With the goal of producing durable and custom-made prototypes, the company turned to Stratasys® and its FDM Technology™ — an additive manufacturing technique that builds work pieces layer by layer using production-grade thermoplastics. This technology is optimized for producing work pieces in complex shapes, which made it ideal for EC-Atech. Today, FDM Technology allows the company to customize the fixtures for each toner cartridge.



Finding Efficiencies and Fostering Creativity

Since introducing 3D printing to its assembly line, EC-Atech has seen significant improvements in both its product quality and cost effectiveness. Because the tools are now made with thermoplastics instead of metal, their weight has been reduced from 20 kg to a mere 1 kg. And despite the lighter weight, there has been no compromise on quality — because compared to metal, thermoplastics provide more resistance to chemical erosion while offering strength and stability.

Given the material's low melting point, the production process also requires less power and heat, which helped EC-Atech cut back on energy costs. Additionally, prototypes can now be developed within weeks instead of months. With a shorter lead time and lower unit cost, the team can achieve cost-effective production — even at quantities under 100 units. “With 3D printing, we have shortened the lead time from one year to four months,” said Ng Wai Kwong, Assistant Product Manager of EC-Atech. “But in just one third of the original lead time, we are able to customize durable components that weigh less and cost less.”

3D printing has also fostered creativity at EC-Atech. Using FDM Technology, the team has been able to design a tool that helps toner cartridges apply glue faster — which helped minimize the possibility of human error and ensure the consistent quality of the products.

Looking Forward to the Future

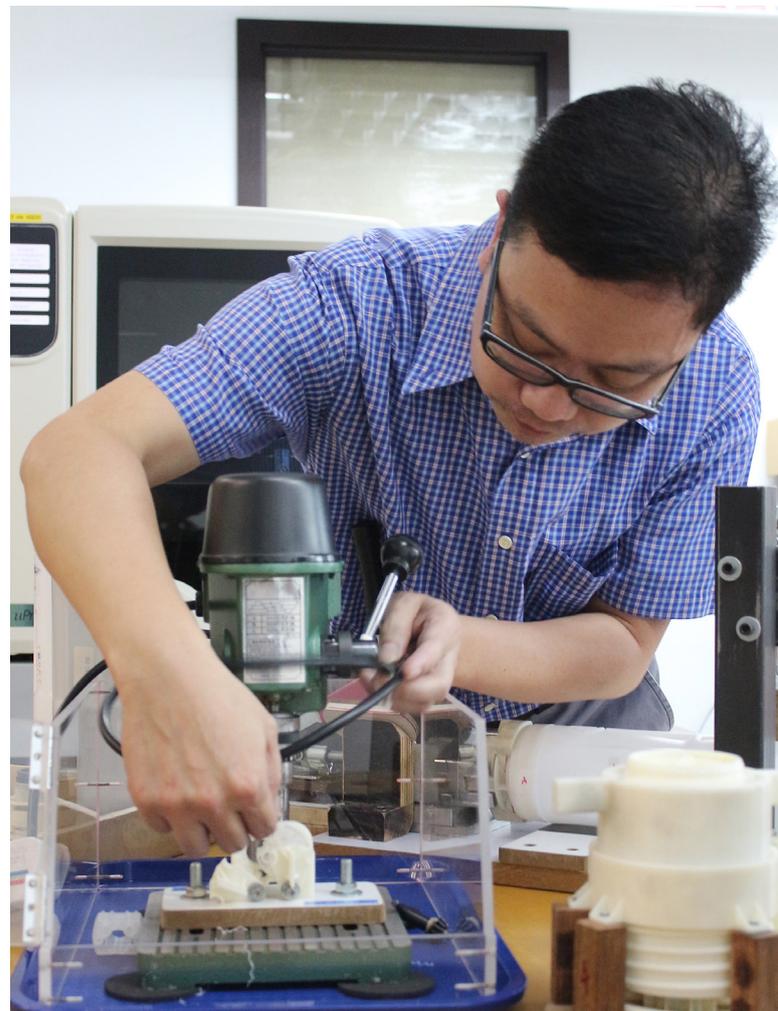
While it may take time to educate the industry on the benefits of adopting 3D printing into their production process, EC-Atech is optimistic about the company's growth through the use of this technology. In the future, it will continue to seek new ways to use 3D printing to optimize manufacturing across the business.

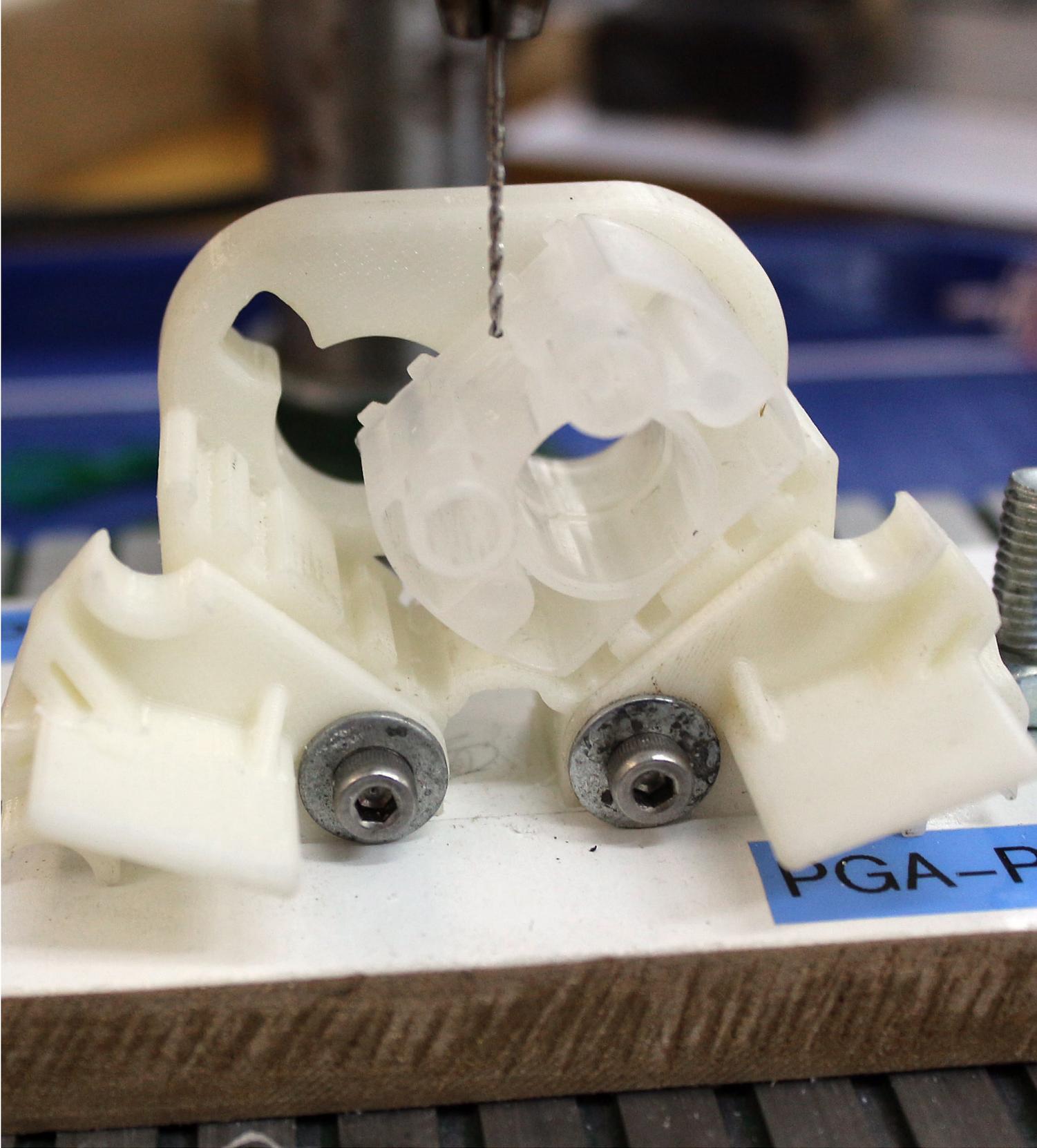
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