Electrifying Designs

Bajaj Electricals (Bajaj) is a consumer electrical equipment manufacturer that supplies diversified luminary equipment including lamps, tubes, fans and other household appliances and consumer durables. Based in Mumbai, the company also takes on special engineering projects from developing transmission line towers to investing in die casting, and wind and solar energy.

“FDM technology and ABS thermoplastics have been a great combination for us. They provide us with the efficient solution to help us optimize our design and improve market delivery time by 10 to 15 percent.”

Vinayak Raje
Bajaj Electricals

stratasys

Case Study

Electrifying Designs

With growing demand from consumers and high market competition, Bajaj was under constant pressure to innovate in tdesign and catch the attention of potential buyers and investors. It became Bajaj's foremost priority to accelerate the product development cycle to launch new products earlier and maximize market potential. By adding 3D printing to its design process, Bajaj tackled this priority and quickly reduced its concept-to-retailer product development time from 1.5 years to seven months.

Meeting the New Giant – 3D Printing

"Innovation is core to our business as consumers look to us for new designs and products that can facilitate their daily routines," said Vinayak Raje, head designer at Bajaj. "Designers are often constrained by technical difficulties, particularly during concept modeling or prototyping when we were using conventional fabrication methods." Bajaj needed a solution to get past these constraints and speed prototypes through development.

3D printing helps the Bajaj design and development team untangle prototyping problems and generate new ideas for product designs. Since its adoption of an FDM® 3D Printer in 2008, Raje and his team have leveraged 3D printing to create mockups and functional prototypes for design validation and internal communication.

One example was to create new mixer and grinder motors for one of its new products where a precise prototype was of the utmost importance. Overall, the company costs have been reduced up to 80 percent throughout the initial stage of new product development by using 3D printing over traditional fabrication methods.

Precise Modeling for Functional Tests

Prior to installing a 3D printer, creating prototypes with complex geometry was time-consuming and labor-intensive for Bajaj's team using traditional fabrication methods. Even with an outsourced vendor, precision could be substandard, and it could take up to two months to produce one prototype.

But now, to come up with a mixer motor prototype that shows every small detail and can withstand form, fit and assembly tests, Bajaj's designers simply send their CAD design files to the 3D printer's software, which converts them to a compatible STL format before sending it to print.

Instead of hiring vendors for the prototype production, Bajaj designers use their 3D printer and created one-to-one sized models to test the structure and endurance of their design. In-house iterations helped the company develop a final product that could withstand 600 watts of load and run for over half an hour in more than 80°C.

Onsite 3D printing ensures Bajaj can skip the back-and-forth communication with vendors. The team can make changes to a design immediately after reviewing the printed model, and can start printing another a new round of design verification quickly.

Benefits across Departments

"FDM technology and ABS thermoplastics have been a great combination for us. They provide us with the efficient solution to help us optimize our design and improve market delivery time by 10 to 15 percent," said Raje.

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As Bajaj continues to expand its product portfolio, the 3D printer has become the indispensable tool for different teams and department, working around the clock to materialize designs, create small gadgets and tools or occasionally 3D print parts for marketing purposes.

“3D printing has transformed our product development process completely and benefited everybody in the company. We are glad to be one of the pioneers adopt innovative technology and we look forward to exploring more applications with our Stratasys 3D Printer,” said Raje.

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