



“Using FDM for composite tooling provides us greater design freedom and more rapid iteration, regardless of part complexity.”

Fabio Gualdo / Spring SRL



The final rear support part

CASE STUDY

Lightweight Solution to Heavy Challenges

STREAMLINED MANUFACTURING AND INCREASED FLEXIBILITY AT SPRING SRL WITH FDM

GREATER QUANTITIES IN LESS TIME

Italy-based, Spring SRL was founded as a concept development and prototyping house and has established itself as a pioneer in advanced tooling and manufacturing solutions. After years of using traditional manufacturing for concept development and prototyping, Spring SRL faced challenges in meeting customer demand for larger quantities with shorter turnaround times.

Using traditional methods, a project calling for composite molded tooling for motorcycle fender supports required a labor-intensive aluminum tool that demanded lengthy machining and lead-times that could quickly escalate from weeks to months. This and inevitable design iterations led to rising costs, and once machined, tools like this one were often heavy and unwieldy to handle and store.

3D Printing Technology Offers Personalization

After incorporating 10 FDM 3D printers from Stratasys into the concept development process, the Italian service bureau is much more nimble when it comes to complex projects. "The company has seen a surge in customers requiring customized 3D printed parts," said Fabio Gualdo, co-owner of Spring SRL. "3D printing offers our customers an opportunity to introduce personalization into their product development process and enables them to overcome the costly barriers of traditional manufacturing for low-volume production."

3D printing the rear fender supports in ULTEM™ 9085 resin thermoplastic was crucial to ensuring the part could withstand the grueling pressures and high-temperatures associated with motor racing. The Stratasys thermoplastic also offered noticeable weight savings in comparison to metal-manufactured parts, improving the aerodynamics, downforce and handling of the motorcycle, as well as part performance during racing.

Greater Design Freedom

Spring SRL's composite tooling woes were also solved with the additive technology of 3D printing. Using ST-130 soluble support material to 3D print the mold, the team was able to lay-up the composite material and later wash away the support material easily, leaving the final composite part.

The company's use of Stratasys FDM 3D Printers allowed them to reduce the lead time of the fender supports by 75%, while halving the production time of the composite tool compared to traditional methods. "This has been crucial to streamlining our manufacturing and providing customers with composite parts faster than ever before," said Gualdo.

Beyond Motorcycle Parts

3D printing technology serves the company well beyond motorcycle parts in numerous manufacturing applications, including, for example, reducing the weight of a complex CNC-manufactured aluminum kitchen part. Using the Stratasys Fortus 900mc™ 3D printer's large build tray, Spring SRL built the part in full-size using an advanced polycarbonate material, which is 59% lighter than its metal counterpart. The team was able to achieve this 36% faster than using traditional methods, with no loss of mechanical characteristics.

"Besides the substantial weight and time reductions, our customer was astounded by the strength and high temperature tolerance of the 3D printed part," said Gualdo.

"3D printing is fundamental to our business. It allows us to be highly flexible, not only in the huge variety of applications we can offer our customers, but in our ability to meet very tight deadlines," said Gualdo.



3D printed motorcycle rear fender support



Spring SRL has 10 Stratasys FDM 3D Printers on site.

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