Soaring to New Heights with FDM

CZECH AIRCRAFT COMPANY SAVES UP TO 80% OF PROTOTYPING AND PRODUCTION COSTS USING FORTUS

"With Fortus, we can now develop and test innovative designs – and if necessary change them quickly without halting the production process. This means we no longer need to make 'functional' compromises."

– Igor Mega, Evektor

CASE STUDY

VUT100 Cobra by Evektor

Evektor s.r.o. was founded in 1991 with an original focus on the design of lightweight aircraft. It has since diversified with the inclusion of other services such as the design and development of component parts for the automotive and consumer equipment industries. Its customers include companies such as STIHL® power tools and Skoda Auto a.s.

Evektor's headquarters is located at the international airport in Kunovice, Czech Republic, which reflects the company's continuing commitment to its roots in aircraft design. Evektor is considered to be one of the most significant design, engineering and production companies in the Czech Republic.

Real Challenge

To keep up with the requirements of its customers and to increase efficiency, Evektor needed to re-evaluate its methods for prototype production. The Evektor team realized that the traditional methods it was using, such as labor-intensive CNC milling, were adding too many hours to the design and production process for prototyping components.

A further challenge Evektor faced was the sheer size of the components it produces, such as airplane and automotive body panels. Outsourcing the production of these parts was becoming increasingly costly and did not allow for unplanned projects. The Evektor team needed an in-house solution with a build capacity large enough to accommodate the production of these parts. In addition, its development of unique end-use parts, such as blowpipes, required a special flame retardant thermoplastic; Evektor needed to invest in a production system that was compatible with such materials.

The dashboard cover was built on a Fortus 900mc, finished, and then installed directly in to the VUT100.

Real Solution

Evektor was already using a Dimension 3D printer as part of its internal design function, so the team was familiar with Stratasys. This played a significant role in its decision to purchase a Stratasys Fortus 900mc production system.

In addition, the Fortus 900mc's large build envelope, at 91 x 61 x 91 centimeters, (36 x 24 x 36 inches) was a key factor, as it provides enough capacity for Evektor to produce large component parts like the dashboard cover for the VUT100 Cobra airplane.

Four printed components of the dashboard cover

The 900mc has allowed Evektor to increase prototype production speed and reduce cost as well as fulfilling alternative criteria. Its compatibility with ULTEM* 9085, a flame retardant thermoplastic, is also important. ULTEM 9085 provides an ideal solution for the manufacturing of component parts for aircraft, as it is lightweight and able to withstand intense heat.

Completed dashboard cover

Real Benefits

The Fortus 900mc is now being used by Evektor for in-house prototyping of component parts across its entire product range: automotive, aerospace and consumer parts. Evektor's design and production teams have already experienced notable time and cost savings compared with its previous methods for prototyping.

"The development cycle has accelerated significantly since we purchased the Fortus machine. The machine itself is faster than CNC milling and we no longer have to worry about the delays associated with a reliance on outsourced parts," said Igor Mega, head of technology at Evektor. "We can save between 10% and 80% of development costs depending on the type of prototype or part. We easily save up to 80% of the costs when producing more complex parts."

The Fortus 900mc has also freed up the design team to be more creative in their work. Mega continued, "Some of the benefits of the Fortus machine are not directly quantifiable, but are equally important to us as a company. For example, we can now develop and test innovative designs - and if necessary change them quickly without halting the production process. This means we no longer need to make 'functional' compromises."

Speaking about Evektor's future relationship with Stratasys, Mega noted, "In the future we hope to purchase one of the smaller Fortus machines to complement our existing Stratasys suite of machines."

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