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PRODUCT DEVELOPMENT TAKES OFF WITH
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Product Development Takes Off with CRP Technology

Being involved in groundbreaking development projects is something that happens to CRP Technology everyday. Recently the RP department played its part, producing a 1:8 scale wind tunnel model of the external fairing of the European Tiltrotor using SLS technology and Windform powders.

Everyone knows that the aerospace sector is tough to operate in. The standards applied across the industry are rigorous and quite rightly so. These standards extend across the whole development programme and so prototypes come under as much scrutiny as the final airframe.

When CRP Technology's Italian customer Sistemi Dinamici SpA, embarked on the production of a wind tunnel model of the Tiltrotor for AgustaWestland, the company approached CRP Technology with an intriguing project.

The challenge was to manufacture 1:8 scale models of the external fairings of the Tiltrotor for the wind tunnel testing, time was tight as is always the case in product development, but the project threw up some other tricky hurdles.

The external fairings are vital in

transferring the aerodynamic loads generated by the fuselage to the internal frame and so the performance of the parts, whether prototype or final part, are vital in the performance of the overall airframe.

Unsurprisingly the most critical aspect of the project was the resistance of the prototypes to heavy loads. In particular, the need to maintain dimensional tolerances, on a large part that measures 2 m on the aircraft, under these loads. CRP's RP department started with a careful analysis of the 3D data received from Sistemi Dinamici. The next step was to choose the correct material to stand up to the rigours of the test.

CRP's advantage in this area stems from the fact that the company not only works with these materials everyday but that it also manufactures them, and as such, the team knows the properties of each

material available in great detail. CRP selected WINDFORM GF, understanding that a short lead time, good mechanical performance and also good dimensional characteristics were paramount considerations.

Although WINDFORM materials are perhaps better known in Rapid Manufacturing environments, it is interesting to note that the properties in this instance lend themselves equally well to prototyping applications. Windform GF is a composite polyamide based material, aluminium and glass filled. It was the perfect choice for the wind tunnel model because of its high heat deflection, superior stiffness, great detail reproduction — almost comparable with SLA — gleaming metallic look and excellent surface finish.

The finished model can be seen on

the cover of this edition of the magazine after being painted.

Sistemi Dinamici SpA and AgustaWestland were delighted with the results — both from a structural point of view, because of the high durability and resistance and low deformation of the parts; and also from an aerodynamic point of view.

The perfect external finish once painted produced a prototype part that enabled the wind tunnel model to accurately reflect the real airframe on test, which was of course the aim at the start of the project.

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