

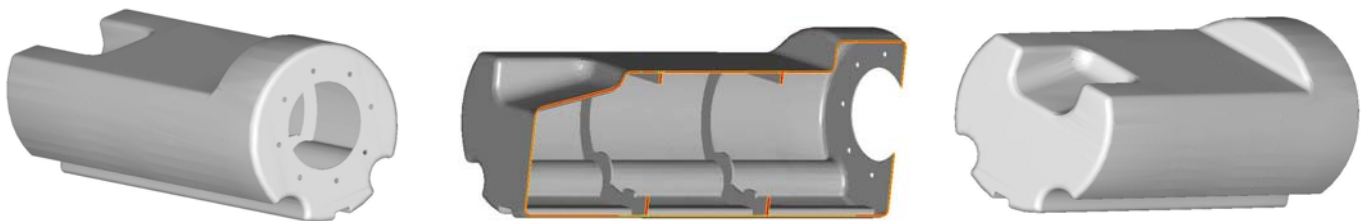
The Silver Fox small UAV, developed by Advanced Ceramics Research of Tucson, Arizona, is designed to provide low cost aerial surveillance imaging and carry sensor payload packages. Working with engineers at Solid Concepts, a leading supplier of rapid prototyping and manufacturing services, Advanced Ceramics has been able to develop a more reliable and larger volume fuel tank for the Silver Fox while not occupying any additional fuselage space.

This was accomplished using a Direct Digital Manufacturing (DDM) technology called Selective Laser Sintering (SLS). The SLS process can provide production parts directly from 3D CAD data in as little as one day, without any tooling and with minimal NRE dollars. The SLS process can also produce parts with very complex geometries, including interior features that would be prohibitively expensive to produce using traditional manufacturing techniques. The new fuel tanks were constructed from Solid Concepts proprietary NyTek™ 1100 material that produces fully dense SLS parts compatible with many petroleum-based products. To validate the new tank design, it was fully loaded with fuel and pressure tested at 5 psi for 48 hours at elevated temperatures, with no measurable fuel loss.



The re-designed Silver Fox fuel tank provides the following benefits over the original fuel tank:

- * A more durable, integrated, single-piece design resulting in greater structural integrity
- * Complex geometry includes clearance for hardware and fasteners
- * Integrated wire-way clearance passages for routing of electrical wiring and cables
- * Conformal shape results in increased fuel volume, providing longer flight times
- * Bulkheads add additional strength and reduce fuel movement, resulting in a more stable flight



Advanced Ceramics Research Program Manager, Blane Boynton and Lead Design Engineer, Steve DeBord claim the success of this endeavor included five design concepts evolving into three prototype builds and then into production for 12 units in less than five weeks. This conformal fuel tank now contains 25% more fuel within the same fuselage space. The 2-ounce weight increase included the addition of anti-slosh bulkheads, which also resulted in a more robust tank with greater structural integrity for improved safety and reliability.

For more information, visit <http://www.solidconcepts.com> or <http://www.acrtucson.com>.