

Case Study: Aerospace and Aviation Sector Applications

Solving complex challenges in aerospace

When it comes to aerospace manufacturing, demands for high quality, precise tolerances, and durability are paramount. For the past two decades, ActionLaser has been a significant player in this field, collaborating with renowned customers such as Caltech, NASA, and leading aircraft manufacturers. Together, they have tackled some of the industry's most challenging problems, often pioneering solutions that extend beyond ActionLaser's traditional scope.



The Problems: Manufacturers in the aerospace and aviation industry perpetually seek novel design solutions to enhance aircraft performance, as well as cost-effective methods for component construction. As the global leader in laser drilling technologies, ActionLaser has been tasked with proposing innovative approaches to enhance aircraft efficiency, reduce engine noise, and improve construction methods for aircraft components.

The Briefs: ActionLaser's initial foray into aviation began in 2001 with Caltech, exploring strategies to minimise aerodynamic drag on aerofoils. Subsequently, in 2004, a collaboration with Los Alamos National Laboratory, a NASA partner, focused on developing perforated screens in ultra-thin special materials. Since 2006, ActionLaser partnered with two major aviation companies to manufacture components with exacting tolerances.

The Process: Throughout each project, ActionLaser has adopted a collaborative approach, prioritising confidentiality and iterative development. Rigorous testing and refinement have been integral, ensuring that solutions meet stringent aerospace standards.

The Solutions: Across diverse projects, ActionLaser's hallmark has been its application of cutting-edge laser drilling technologies to solve complex challenges outside its traditional purview. These solutions have not only met but often surpassed client requirements, paving the way for the potential commercialisation of innovative products which ultimately improve the cost of components and aspects of aircraft performance.

Outcomes and Benefits: Early work with Caltech successfully demonstrated the ability for perforated aerofoil designs to reduce drag. Collaborative work with Los Alamos proved that ActionLaser's technology could produce fine slots in pure niobium metal just 0.2 millimetres in thickness – something the team had been unable to achieve previously. Recent projects involving laser-drilled titanium honeycomb structures for aircraft engine cowls have shown immense potential, undergoing rigorous testing on large aircraft platforms.

Conclusion: ActionLaser's technology and skills offered to this industry underscore its role as a catalyst for innovation and excellence. By leveraging its expertise in laser technology and collaborative partnerships, ActionLaser continues to push boundaries, helping to shape the future of aerospace and aviation engineering. As industry demands evolve, ActionLaser remains poised to deliver cutting-edge solutions that redefine standards in efficiency, weight reduction, and component performance.

For further information, or to discuss your business needs

W: www.actionlaser.com

E: sales@actionlaser.com

