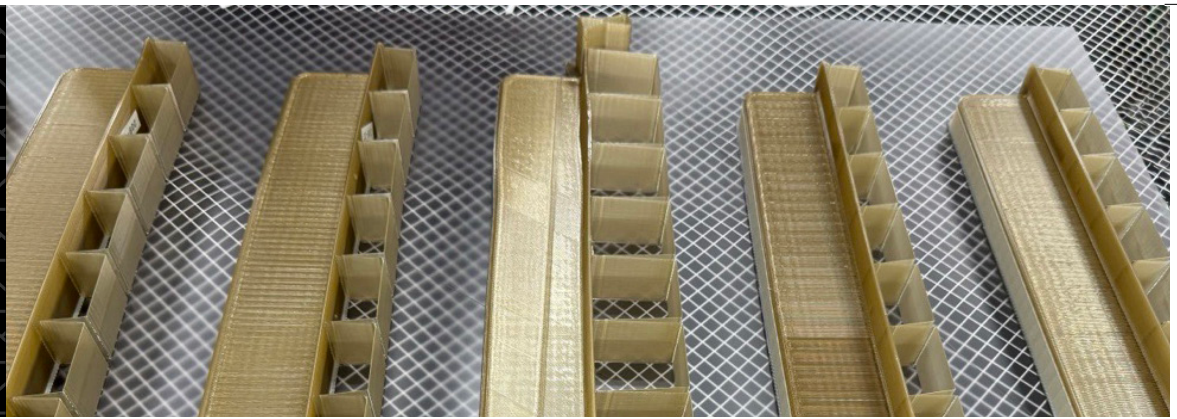




US Air Force

Use Case – 3D Printed Microvanes Help the U.S. Air Force Cut C-17 Fuel Costs by \$14 Million Annually

Company Profile

The U.S. Air Force operates one of the world's most capable air mobility fleets, supporting global missions that include troop transport, cargo delivery, aerial refueling, humanitarian response, and rapid deployment. Within that fleet, the C-17 Globemaster III serves as a strategic airlift aircraft for the Air Force, Air National Guard, and Air Force Reserve, providing mobility support for high-demand missions around the world.

Problem

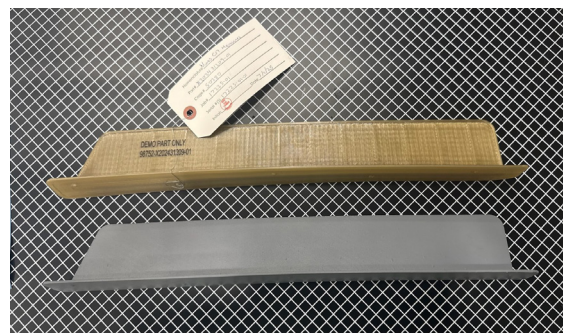
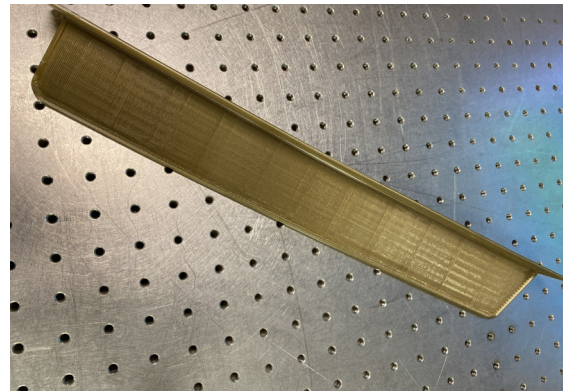
The C-17's upswept cargo-door section creates aerodynamic drag, increasing fuel consumption and limiting mission efficiency. Across a large fleet, even small inefficiencies can translate into significant operating costs and reduced range. The Air Force needed a low-cost modification that could improve fuel efficiency without disrupting aircraft availability or compromising demanding mission profiles, including air refueling, assault-strip operations, and airdrop missions.

Solution

The Air Force Operational Energy and Air Mobility Command advanced the final evaluation phase for 3D printed microvanes, developed through collaboration among the Air Force Research Laboratory, private industry, and the Air Force Lifecycle Management Center. Each microvane is a thin, blade-like 3D-printed device, measuring about 4 by 16 inches (102 x 406 mm). Printed on an F900® 3D printer with Antero® 800NA aerospace-grade engineering thermoplastic, twelve are bonded to the rear exterior of the C-17 using strong adhesive bonding. The devices reduce drag caused by the aircraft's rear cargo-door geometry, improving fuel efficiency and extending mission range.

Impact

Microvane-equipped C-17s demonstrated a 1% reduction in drag and fuel consumption compared with unmodified aircraft. When installed across the U.S. Air Force C-17 fleet, including Air National Guard and Air Force Reserve aircraft, the technology is projected to save more than \$14 million annually and deliver a return within seven months through fuel cost reductions.



7 months

**Projected return
on investment**



\$14M+

**Projected annual
fuel savings**



1%
**Drag and fuel-
consumption
reduction**

“

Every gallon of fuel saved strengthens our readiness and operational effectiveness.”

Roberto Guerrero

Deputy Assistant Secretary of the Air Force for Operational Energy, Safety, and Occupational Health



© 2026 Stratasys. All rights reserved. Stratasys, the Stratasys Signet logo, Antero, and FDM are registered trademarks of Stratasys Inc. Antero 800NA is a trademark of Stratasys, Inc. All other trademarks are the property of their respective owners, and Stratasys assumes no responsibility with regard to the selection, performance, or use of these non-Stratasys products. Product specifications subject to change without notice. UC_FDM_AE_C17_Microvanes_0726