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Shush! Aerospace Engineers Working to Hush Sonic Booms | College of Engineering

10/02/2017

Published in *Utah State Engineer* – Oct. 2, 2017 – If supersonic flight is to take hold in commercial air travel, aircraft designers will need to overcome a noisy problem: sonic booms.

USU aerospace engineering faculty Dr. Doug Hunsaker is joining Texas A&M University, Boeing and a team of university and industry partners to design aircraft that break the sound barrier during overland flight without violating noise restrictions. The work is part of a \$10 million NASA grant awarded to several institutions. USU will receive \$75,000 per year for five years.

“Sonic booms represent one of the biggest challenges in supersonic flight,” said Hunsaker. “They can damage property and they disturb communities along the flight path.”



If supersonic flight is to take hold in commercial air travel, aircraft designers will need to overcome a noisy problem: sonic booms.

Experts say part of the solution will come from air craft structures that change shape during different phases of flight. Engineers are experimenting with airfoils constructed from new metals called shape memory alloys (SMAs) which, depending on their temperature, can take on different shapes.

“If you bend a paper clip it can easily be reformed into its original shape,” said Hunsaker. “The same is true for SMAs. They have two stable shapes at two different temperatures. Using electrical current, we can change the metal’s temperature and alter its shape.”

Hunsaker and his students will look specifically at wing and airfoil designs. They plan to run detailed computational fluid dynamics simulations coupled with optimization algorithms to uncover designs that perform best at various altitudes and airspeeds.

NASA says the study addresses one of its main aviation-related research goals.

“Potential outcomes of the research could include revolutionary technologies, operational concepts, design tools, models, or other advancements we can’t even begin to characterize today,” said Doug Rohn, director of NASA’s Transformative Aeronautics Concepts Program.

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