

Innovative Concepts for Future Aircraft Design: Virginia Tech's 'Centura' wins NASA's competition

August 2 2004

"Centura," a single-engine jet aircraft designed by undergraduate engineering students from Virginia Tech and their counterparts at Loughborough University in the U.K., has won the Best Overall Award in [NASA's](#) 2004 Revolutionary Vehicles and Concepts Competition.

The competition, sponsored by the NASA Langley Research Center's Aerospace Vehicle Systems Technology Office and FAA's Hughes Technical Center, challenged students to develop innovative concepts and systems for future aircraft. The awards ceremony was held July 30 at the Experimental Aircraft Association's AirVenture 2004 in Oshkosh, Wis.

This marks the second year in a row and the fourth time in the past seven years that Virginia Tech/Loughborough University teams have won first place in NASA-sponsored university design competitions.

This year's team included 15 Virginia Tech students -- 10 aerospace and ocean engineering (AOE) seniors, two industrial and systems engineering (ISE) seniors and three freshmen in general engineering -- and 11 fourth-year aeronautical engineering students from Loughborough. The team's advisers are Jim Marchman, professor of aerospace and ocean engineering in the College of Engineering at Virginia Tech, and Gary Page, professor of aeronautical engineering at Loughborough.

The team designed Centura as an aircraft that could replace single-engine, piston-powered vehicles in the general aviation market, Marchman said. To succeed with this concept, the students had to design a new jet engine optimized for low flight speeds at low altitudes -- not the typical jet environment.

"Most designs for general aviation jets aim for high performance and high-altitude flight," Marchman said. "The Virginia Tech/Loughborough team's unique concept is for a plane that would meet the needs of the thousands of single-engine general aviation pilots whose flying is usually done at altitudes below 10,000 feet and speeds below 250 knots."

"The team selected the name Centura for their design because they felt it honored the 100th anniversary of flight and reflected the 21st century technology used in the aircraft," Marchman said.

For more information about Centura and the team, visit www.aoe.vt.edu/design/centuria/index.html.

Award winners in the 2004 competition placed in three tiers. The Virginia Tech/Loughborough team placed best overall in the top tier, which also included teams from Cornell University and Georgia Tech. Second tier teams were from Clemson University, Montana State University, Pennsylvania State University and University of Virginia. Teams placing in the third tier represented Ohio University, Penn State (which entered two vehicles) and University of Kansas. A student from Iowa State University won honorable mention for a personal air vehicle.

Source: [Virginia Tech](#)

competition (2004, August 2) retrieved 26 April 2024 from
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