

Top News

DOE To Sponsor 'Real World Design Challenge' For High School Students

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Aviation Industry Is First To Focus Initiative On Greener Aviation Design

by ANN Correspondent Maxine Scheer

There's a new aviation education initiative about to be launched by the Department of Energy (DOE). It is called the "Real World Design Challenge" and its launch date is October 1, 2008.



Attention to this initiative was raised during AirVenture 2008 when Cessna CEO Jack Pelton and Lyn Freeman of Build A Plane announced they are working with DOE in developing the 2009 Pilot Program for this new high-school design competition. This real-world challenge, developed by Cessna in collaboration with educators, is "to create greener aircraft designs using computer-aided design," said Pelton.

Participation in the challenge offers students and teachers the opportunity to work alongside engineers and scientists at all of DOE's National Labs with support from industry mentors, and gain real-world experience by using the latest CAD/CAM design software, online project collaboration systems, and fluid dynamic modeling software to work on green aircraft design.

"Real" is the operative word in this challenge as teachers will be trained in real design software, student teams will be built around real industry roles such as project manager, scientist, engineer, and community relations & marketing, and teams will be given a real problem to solve.

By the time all is said and done, each teacher will receive nearly \$1 million in software and lifetime upgrades, all donated by industry partners including Parametric Technology Corporation (PTC) and Flomerics, Inc.



For the first year, the DOE challenge will limit participation to 10 states. Support from the states' Governors is mandatory and involves outreach, websites for teachers to enroll, and state coordinators. The DOE announcement came out in mid-July; via announcements from the Lieutenant Governor's Offices, Vermont, Kansas, and Oklahoma were the first three states to sign up.

Oklahoma, already promotes engineering through its 29 Technical Education Centers, has trained teachers for the DOE challenge at eight schools thus far and anticipates another eight to 10 to be trained before the competition starts in October. They heard about the challenge through Roger Tadjewski of the Business Education Partnership Group (BEPG). Roger comes from having successfully implemented business-education partnerships in the Automotive industry and is now focused on Aerospace.

The first competition will be between design teams in each state, with awards anticipated in January 2009. Winning teams from each state will come to Washington around March 2009 for another competition, culminating in a forum led by leading engineers and scientists and an award event.

ANN talked with Sue Ellen Wallbridge, DOE Program Manager, about how all this came about. "DOE is not just a bunch of Ph.D.s", says Wallbridge. "Engineering is quite valuable to DOE. We have 18 labs across the US (which includes Oak Ridge National Laboratory), and much of what we use in our research cannot be bought off the shelf; it needs to be engineered by multi-disciplined teams."

DOE staffs an office called "Workforce Development for Teachers and Scientists," or WDTS and sponsors over 600 undergraduate research scholarships, summer academies at DOE National Labs

creating "Teacher Scientists" and sponsors a science competition for middle and high school students called the "DOE Science Bowl."

"There are lots of different engineering contests," said Wallbridge, "but DOE wants to get into the brass tacks where students can contribute to something of concern to them and see some change come from their effort."

When asked about why aviation was chosen as the pilot, she responded, "quite honestly, aviation was first to the plate. We also knew that aviation would be a subject that would really excite the kids."

Parametric Technology Corporation (PTC), a 55,000+ person global software company, was the first to approach DOE with the idea for an aviation design challenge. A major industry focus of PTC's design and modeling software is Aerospace and Defense. ANN spoke with Dr. Ralph Coppola, Director of Worldwide Education, to learn more about PTC's role.

"PTC shares the concerns its clients have with the decline in US K-12 STEM (Science, Technology, Engineering, and Mathematics) education and the very real workforce crisis that threatens US Aerospace competitiveness and national security," said Coppola.



Over the past year, PTC talked regularly with DOE about the engineering education gap in their programs and at the same time was talking with Build A Plane about the need for an engineering curriculum to go along with the donation of aircraft. "Build A Plane and FAA were key players in developing and promoting an aviation -themed program to DOE," said Coppola.

PTC was involved in a similar initiative in the UK that resulted in 80% participation by UK schools and teams which secured financial compensation from having contributed to the design of a tool used to maintain the Rolls Royce Pegasus Engine.

Dr. Coppola also described the results of a recent focus group with Aerospace firms in New England. "Not surprisingly, they want engineers with superb academic credentials and 7-10 years of real world experience. The engineering pipeline shortage is now, especially amongst US citizens. So we talked about the concept of US students getting real-world experience during their K-12 education, and they were very supportive."

In addition to Cessna, PTC and Flomerics, Boeing, FAA and others have also joined the DOE/PTC led team to offer technical advice and mentoring.

A quote from the great philosopher Sophocles was used in the WDTS Strategic Plan... and seems quite appropriate to aviation: "One must learn by doing the thing; for though you think you know it, you have no certainty until you try."

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