

Forging forward in aerospace

High-powered speakers from Boeing, Gulfstream, and Northrop Grumman make mark on SAE International's premier aerospace conference.



AeroTech Americas audience members listen to a panel on flying cars.

Almost 900 engineers and related professionals helped propel the aerospace industry further into the future by having participated in or attended SAE International's premier aerospace event, AeroTech Americas 2019. Highlights from the March 26-28 event in Charleston, SC, included keynote addresses by executives from Gulfstream and Boeing, a prestigious lecture by a Northrop Grumman Corp.

technical fellow and SAE Member, a special session highlighting projects by college students, and many other features and activities covering the aerospace waterfront.

"There are a lot of things going on in the back rooms of manufacturing technology development centers that are going to change the way we manufacture aircraft, I'm here to tell you," Northrop Grumman's



A challenge for Boeing is to infuse ideas from a new generation of entrepreneurs into a company with a 103-year history, according to Boeing Chief Technology Officer Greg Hyslop.

George (Nick) Bullen said in his March 27 William Littlewood Memorial Lecture.

Established in 1971, this lecture promotes civil air transportation and broadly addresses the current interests and major developments in this field. The objective is to advance air transport engineering and to recognize those who make personal contributions to the field. This lecture honors the memory of William Littlewood, the only person ever to serve as President to both SAE International (SAE) in 1954 and the American Institute of Aeronautics and Astronautics (AIAA) in 1959.

Bullen's Littlewood Lecture technical paper, "The Future Airplane Factory: Digitally Optimized Intelligent Airplane Assembly," can be purchased [here](#).

The paper describes OEMs' and their



Nick Bullen talks about "the future airplane factory" in his William Littlewood Memorial Lecture.



AeroTech Americas 2019 Executive Chair Mark Kohler cited the grip of Gulfstream's new active control sidestick to quantify the amount of attention that engineers give to the smallest details in product development.

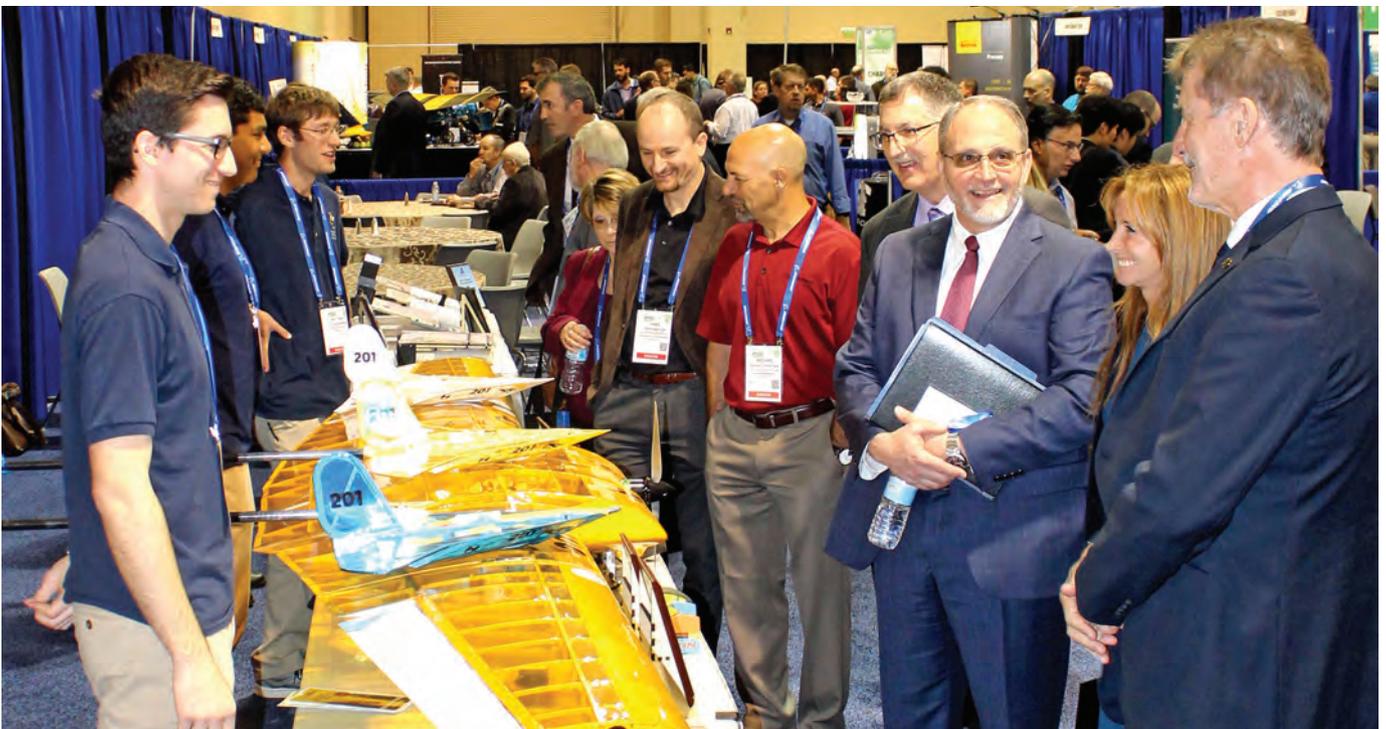
suppliers' "critical need to leverage the power of digital age technology for the betterment of their enterprise, factories, operations, products, and customers they serve. The

SAE Member Jake Schultz (standing) moderated a panel session on flying cars.



aerospace new-age manufacturing processes in development rely on many innovative technologies that contain digital components as part of their operation. At their core are data interactions that leverage advanced analytics and automated decisions formerly made by humans. This is not to say that the

current batch of airplane assembly lines will not continue to run as they have been created. What will happen in a decade or less is the emergence of an airplane manufacturing model that needs digital technology, advanced analytics, and automated independent machine decisions to function.



A team from Georgia Tech won the AeroTech Americas 2019 poster contest.

Today’s airplane manufacturing and sustainment models rely on data and analytics selectively.”

Bullen holds 16 U.S. and international patents and is an award-winning and critically acclaimed author of six books covering a wide array of subjects including innovative technologies, economics, composites, robotics, space launch vehicles, and auto-body joining. Among his many other functions at AeroTech Americas 2019, he served as a judge for a Student Poster Contest in which university teams touted research and development projects.

“Engineers in any organization are the creators.”

Greg Hyslop

Winning first place in the poster contest was a team from Georgia Tech, followed by a student from North Carolina A&T University (2nd) and a team from the University of Central Florida.

The opening keynote presentation was delivered by Greg Hyslop, Chief Technology Officer of Boeing. He noted that Boeing was founded by timber

Boeing remarks on 737 Max



Image credit: Boeing

The Boeing 737 Max.

Greg Hyslop, Boeing Chief Technology Officer, began his presentation with a few words about the 737 Max situation.

“We at Boeing understand that we serve the public trust, that we have to earn the trust of the flying public every day. We know that lives depends on the work we do, and the tragic losses of Ethiopia Airlines flight 302 and Lion Air flight 610 have affected all of us very deeply. We continue to extend our deepest sympathies to the loved ones of the passenger and crew that were on board these aircraft.

In the aviation industry, and at Boeing, we place safety above all else. That’s the bottom line. Safety is at the core of who we are as professionals in aerospace and at the core of who we are as Boeing Company. Our aviation industry is vigorously competitive, as well. It always has been. But not about safety. We all support meticulous forensic investigation of all safety-related incidents. The findings from those investigations are shared throughout the aviation community to ensure that all entities benefit from what is learned, which is why we’ve enjoyed an unprecedented safety record over the last several decades.

We are committed to upholding the integrity of that aviation accident investigation process by following the international protocols that any information be shared by the investigative authorities as opposed to the other parties. Because of this, I’m not going to say anything more about the investigations of the 737 Max program other than to say that we at Boeing are united with our airline customers, international regulators, and government authorities in our efforts to support the most recent investigation, understand the facts of what happened, and help strengthen the safety of our aviation system.”



Judges for the AeroTech Americas 2019 poster contest were (left to right) Nick Bullen of Northrop Grumman, Jeffrey Morgan of Boeing, Howard Jones of Pratt & Whitney, Ron Clements of Boeing, Dave Amirehteshami of Boeing, and Amit Vyas, Spirit Aerosystems.

merchant William E. Boeing in 1916. Like the company's founder, "many others who made money in other industries now are fascinated by things that fly, whether it's space travel, whether it's robo taxis, whatever it might be, and it's changing our industry again. The competition will make us better. The real challenge we have to face is how does a 103-year-old company act like a 3-year-old again so we can be fast and big and also not turn our back on the heritage we have."

An engineer himself, Hyslop touted the profession: "Engineers in any organization

are the creators. Scientists will answer the why questions. Engineers are always answering the how questions."

(See sidebar on page 15 for Hyslop's statement about the 737 Max.)

Gulfstream Aerospace Vice President-Advanced Aircraft Programs Mark Kohler, who served as Executive Chair of AeroTech Americas 2019, also gave a keynote speech. He described, among other things, the development process for the company's new G600 business jet that flies at a maximum operating speed of Mach 0.925. He noted that

engineers invested “thousands and thousands of hours” on just the grip of the active control sidestick, starting with a clay model and advancing development via additive manufacturing to produce subsequent prototypes. An important part of the development process was getting input from pilots as to the grip’s look, feel, and usability.

In the end, it was determined by Gulfstream that the grip and the larger active control sidestick system performed better than a traditional yoke system. “Products have to earn their way onto the aircraft,” Kohler said, noting that the active control sidestick system puts pilots in the “best position to safely and reliably operate the aircraft.”



SAE Member Pat Donnelly stops by the SAE Membership Lounge to pick up his member pin from Membership Manager Amanda Hildabrand.

AeroTech Americas 2020 will be held in Pasadena, Calif., March 17-19. ■

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