

Dr. Marty Bradley
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EDUCATION

1994 Ph.D. Aerospace Engineering University of Southern California
1991 E.A.E. Aerospace Engineering University of Southern California
1986 M.S. Aerospace Engineering University of Southern California
1984 B.S. Aerospace Engineering University of Southern California
Summa Cum Laude

Courses or training in Program Management, Project Scheduling, System Architecting, Systems Engineering, Subcontract Management, and Political Process

EXPERIENCE

A proven team leader for projects related to electric and hybrid electric aircraft, sustainable aviation, advanced concepts and technologies, green aircraft design, alternative fuels, environmental life cycle assessment (LCA), and propulsion. Has led vehicle design and technology planning studies for commercial and military operational and demonstrator vehicles. Has worked propulsion integration for turbines, ramjets, scramjets, ducted rockets, rockets, pulsejets, combined cycle engines, electric, and hybrid electric propulsion. Experienced in leading multi-disciplinary and multi-site design teams.

2020-Present Senior Technical Fellow Electra.aero

- *Currently supporting design studies and collaboration activities, including engagement and with suppliers and government agencies. Supporting multiple NASA and Air Force Agility Prime contract activities.*

2020-Present Sustainable Engineering Consultant

- *Currently supporting Ampaire working on Electric Aircraft.*
- *Supporting multiple universities and small businesses pursuing NASA and ARPA-E contracts related to Hydrogen aviation.*
- *Currently teaching the AIAA short course on "Design of Electrified Propulsion Aircraft"*
- *Currently teaching the AIAA short course on "Sustainable Aviation"*
- *Currently serving on Advisory Board for AIAA Education Book Series*
- *Technical Program Chair for AIAA 2020 Propulsion and Energy Forum*

2018-Present Part-time Lecturer University of Southern California, Los Angeles, CA

- *Currently teaching the undergraduate capstone design course in Aircraft Design (AME-481).*
- *Supporting USC University Led Initiative proposals to NASA*
- *Currently participating in Strategic Planning Committee for USC Aerospace Mechanical Engineering Department.*

2014-2020 Technical Fellow Boeing Commercial Airplanes, Long Beach, CA

- *Technical lead for Sustainable Aviation Concepts for Boeing Commercial Airplanes. Includes system analysis for advanced propulsion, advanced technologies, and electric/hybrid electric aircraft. Responsible for technology incubation and planning and responsibility for environmental analysis of new concepts.*
- *Supported sustainable aviation fuels, hydrogen concepts, and proposals for hybrid electric aircraft concepts and demonstrators*
- *Led alternative fuels and environmental analysis of supersonic and hypersonic aircraft concepts*
- *Led steering and capture teams and an advisor for Boeing NASA contracts related to hybrid electric and transonic truss braced wing technologies*
- *Founder and Leader for the AIAA Aircraft Electrified Propulsion and Power Working Group*
- *Founder and Chairman of the AIAA/IEEE Electric Aircraft Technology Symposium (EATS)*
- *Chairman of AIAA Green Engineering Program Committee*
- *Served on the National Academies Low Carbon Aviation Committee*

1988-2014 Technical Fellow Boeing Research & Technology, Huntington Beach, CA

- Technical Lead for the development of a Design for Environment toolset to calculate the life cycle environmental impact of Boeing products
- Environment Domain technical representative to the Boeing enterprise wide technology strategy process
- Associate Editor for Environment for the Boeing Technical Journal
- Led NASA funded Subsonic Ultra Green Aircraft Research (SUGAR) phase I and phase II studies to identify and assess concepts and technologies for commercial aircraft in the 2030-2050 timeframe
- Co-leader for the Commercial Aviation Alternative Fuels Initiative (CAAFI) R&D Team.
- Lead for Alternative Fuels Development for the Boeing Research and Technology Platform Performance Technology organization. Responsible for life cycle and aircraft performance analysis with alternative fuels and advanced technologies.
- Developed the initial flight test plans for 3 tests with biofuel powered 747 and 737 aircraft for the Boeing Commercial Aircraft organization.
- Developed flight test planning documents for the first biofuel flight demonstration in a commercial aircraft (Virgin Atlantic 747).
- Program/project manager for several programs related to the following areas: Quiet Supersonic Platform (QSP) supersonic aircraft, and biological sensor development.
- Program manager for a Boeing funded program that included the design, aerodynamic and thermal analysis, ground testing, and flight testing of a high speed (Mach 3-4.5) ramjet powered missile.

1984-1988 Senior Engineer Northrop Aircraft Division, Hawthorne, CA

- Conducted analysis and experimental nozzle and thrust reverser studies for high performance low-observable fighter aircraft including the F-23 Advanced Tactical Fighter (ATF).

SELECTED HONORS, AWARDS, and PROFESSIONAL RECOGNITION

2019 AIAA Sustained Service Award "For sustained, significant service at the national level with emphasis on Technical and Program/Integration Committee leadership, including formation of new committees."

2019 Boeing Technical Journal – Knowledge Management Award "Environmental Impacts of Aerospace Batteries"

2018 Fellow AIAA "For industry leading development of innovative advanced technology aircraft and propulsion concepts that have redefined the boundaries of high performance, efficiency, and low environmental impact"

2018 Engineers' Council "Distinguished Engineering Project Achievement Award" for electric aircraft

2017 Engineers' Council "Distinguished Achievement Award: For ... advanced technology aircraft, fuel, and propulsion concepts that ... reduce commercial aviation carbon emissions"

2016 Selected by the AIAA to lead the Electric Aircraft/Hybrid Electric Propulsion Working Group

2015 Selected to serve on the National Academies Low Carbon Aviation Committee

2014 Boeing Performance & Innovation Award for NASA SUGAR Program

2013 Selected as Chairman for AIAA Green Engineering Program Committee

2012 Boeing Recognition Award for development and certification of aviation biofuels

2011 Patent Award for Aircraft Alternative Fuel System

2011 Leadership Award – Commercial Aviation Alternative Fuels Initiative

2010 Meritorious Invention Disclosure Award – Optimal Design for Hybrid Electric Propulsion

2010 Technical Replication Award: "Sustainable Biofuel for Military Customers"

2009 Boeing Recognition Award for 3 Biofuel Flight Demos

2008 Associate Fellow AIAA

2008 Boeing Environment, Health, and Safety Innovation Award for 747 Biofuel Flight

2000 Technical Fellow Boeing

1998 Associate Technical Fellow Boeing

1993 Engineer of the Year Rockwell International Defense Systems

1992 Engineer of the Month Rockwell International North American Aircraft

1984 Summa Cum Laude Honors University of Southern California

Boeing Leadership Center – Program Manager's Workshop

30 Boeing PRIDE awards for individual and team excellence

Boeing Certified Systems Engineer

Session Chairman for 9 AIAA Environmental, Propulsion, and Hypersonic Panel & Paper Sessions

Track Chairman – BTEC19, BTEC20, BTEC21 – Environment Domain Sessions

Board of Advisors – University of Southern California Aerospace / Mechanical Department
Advisory Board – Cal State Los Angeles - Center for Energy & Sustainability
Advisory Board – Georgia Tech Aerospace Systems Design Laboratory
Aerospace Editor for McGraw Hill Yearbook of Science and Technology
Associate Editor for Environment – Boeing Technical Journal
Board of Advisors – AIAA Education Book Series

SELECTED PUBLICATIONS & PRESENTATIONS

2021 NASA “Regional Air Mobility - Leveraging Our National Investments to Energize the American Travel Experience”
2020 AIAA LA-LV Electric and Hybrid Aircraft mini-Conference - Keynote “Perspectives on the Design of Electric and Hybrid Electric Aircraft”
2020 AIAA SciTech “Rolling Recap: Summary of AIAA Electric Aircraft Activities in 2019”
2019 AIAA Orange County Aerospace Conference - “Electric Aircraft Opportunities & Challenges A Boeing Perspective”
2019 NASA DoE Aviation Battery Workshop – Keynote “Electric Aircraft Opportunities, Challenges, and Enabling Battery Requirements A Boeing Perspective”
2018 “Rolling Recap: Summary of Electric Aircraft Activities at the P&E 2017 Forum”
2018 Boeing Technical Journal "Environmental Impact of Aerospace Batteries"
2017 Boeing Technical Journal "Boeing Environmental Life Cycle Assessment Methods & Results"
2016 National Academies “Commercial Aircraft Propulsion and Energy Systems Research-Reducing Global Carbon Emissions”
2015 “SUGAR Phase II – Vol. II – Hybrid Electric Design Exploration” Final Report
2014 McGraw Hill Yearbook of Science & Tech. “Options for Future Methane and LNG-fueled Aircraft”
2014 AIAA Invited Panel Presentation “Progress on Hybrid Electric Transport Aircraft”
2013 SAE Aerotech Conference “Results of the Subsonic Ultra Green Aircraft Research (SUGAR) Study”
2013 SAE Aerotech Conference “Parametric Life Cycle Assessment for the Design of Aircraft”
2013 BTEC “Case Studies in Aircraft Life Cycle Assessment Using the qUWick Tool”
2013 AIAA Invited Panel Presentation “Future Disruptive Aircraft & Propulsion Technologies”
2013 AIAA Invited Presentation “Boeing SUGAR Phase II N+4 Study”
2012 AIAA Webinar “Lessons from the Subsonic Ultra Green Aircraft Research (SUGAR) Study”
2012 Chicago Ideas Week “Alternative Energy for Aviation: Biofuels, Batteries, or Something Else?”
2012 US Korea Conference “Future Energy Options for Aviation”
2012 NASA Fundamental Aeronautics Conference “Boeing SUGAR Phase II Status”
2012 “SUGAR Phase II - Vol. I - N+4 Advanced Concept Development” Final Report
2011 Lithium Battery Conference “Hybrid Electric Propulsion with Advanced Battery Technology”
2011 NASA Fundamental Aeronautics Conference “Boeing N+3 SUGAR Concepts and Technologies”
2011 BTEC “Opportunities for New Experiences (ONE) Environmental Business Case Project Results”
2011 BTEC “Technology Trends for Future Energy and Aviation”
2011 BTEC “qUWick Life Cycle Analysis Tool Demonstration”
2010 US Korea Conference “A Taste of SUGAR: Sample of Boeing N+3 Study Results”
2010 AIAA Invited Presentation “A Taste of SUGAR: Sample of Boeing N+3 Study Results”
2010 “Subsonic Ultra Green Aircraft Research (SUGAR) Phase I Final Report”
2010 Mil. Energy & Alt Fuels Conf. “Commercial Aviation Alternative Fuels Initiative (CAAFI)”
2009 SAE Aerotech “Technology Challenges and Integrated Vehicle Concepts for the 2030/2035 Time Period – Subsonic Ultra Green Aircraft Research (SUGAR)”
2009 BTEC “Commercial & Military Aviation Biofuel Programs” Selected as session Best Paper
2009 3rd Alt. Energy Now Conf. “Biofuels for Commercial & Military Aviation: A Boeing Perspective”
2008 BTEC “Alternative Jet Fuel Environmental Challenges”
2008 Univ. Puget Sound “The Challenge: Moving Away from Oil and Fossil Fuels”
2007 BTEC “Boeing’s Role in USAF Initiative on Alternative Fuels”
2007 BTEC “Propulsion Challenges in Alternative Fuels”
2007 AIAA Presentation “Alternative Fuels for Commercial and Military Aviation in the 21st Century”
2007 BTEC “Alternative Fuels and Their Potential to Impact Aviation”
1994 Ph.D. Dissertation "Flow Models for the Design of a Hypersonic Iodine Vapor Wind Tunnel Nozzle with Chemical and Vibrational Nonequilibrium Effects"
Plus numerous classified, proprietary, and customer reports (NASA, AFRL, DARPA)

SECURITY CLEARANCE Previously held a Top Secret Clearance with Special Access

RELEVANT HOBBIES Model railroading, military history, computer wargaming

MILITARY EXPERIENCE Two years in ROTC (Navy and Air Force) with training in military protocol, naval ship systems, and Air Force history