

PROPULSION ENERGY



FORUM

24-26 AUGUST 2020 | VIRTUAL EVENT

What's going on in
the **HUB**



Page 18

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VIRTUAL PORTAL

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through October 2020

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TECHNICAL PROGRAM COMMITTEE

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John W. Robinson, The Boeing Company (retired)
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(Electrified Aircraft Deputy Forum Technical Chair)

Mike Choi, NASA Goddard Space Flight Center
(Energy Deputy Forum Technical Chair)

Andrew Yatsko, Georgia Institute of Technology
(Propulsion Deputy Forum Technical Chair)

Stephanie Sawhill, Systima Technologies, Inc.
(Special Sessions Deputy Forum Technical Co-Chair)

Nathan Andrews, Southwest Research Institute
(Special Sessions Deputy Forum Technical Co-Chair)

Technical Discipline Chairs

ADDITIVE MANUFACTURING FOR PROPULSION SYSTEMS

Elizabeth Jens, NASA Jet Propulsion Laboratory

ADVANCED INTEGRATED INTELLIGENT PROPULSION CONTROLS

Al Behbahani, U.S. Air Force Research Laboratory

ADVANCED MECHANICAL COMPONENTS

Patrick Dunlap, NASA Glenn Research Center

ADVANCED PROPULSION CONCEPTS

John W. Robinson, The Boeing Company (retired)

ADVANCED VEHICLE SYSTEMS

Frank Chandler, California State Polytechnic University, Pomona

Timothy Chen, Innovative Rocket Technologies

AEROSPACE POWER SYSTEMS

Abbas Salim, Lockheed Martin Corporation (retired) (All)

Greg Semrau, Moog, Inc. (Nuclear Power Systems)

Harold White, NASA Johnson Space Center (Electric Propulsion)

Giang Lam, Lockheed Martin Corporation (Solar Arrays)

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Wensheng Huang, NASA Glenn Research Center

ENERGETIC COMPONENTS AND SYSTEMS

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John Zevenbergen, TNO

ENERGY CONVERSION TECHNOLOGY

Ed Lewandowski, NASA Glenn Research Center

Abbas Salim, Lockheed Martin Corporation (retired)

Greg Semrau, Moog, Inc.

ENERGY-EFFICIENT AND RENEWABLE ENERGY TECHNOLOGIES

Li Qiao, Purdue University

David Carrington, Los Alamos National Laboratory

Ryoichi Amano, University of Wisconsin-Milwaukee

Scott Duncan, Georgia Institute of Technology

FUEL AND POWER GENERATION TECHNOLOGY

Li Qiao, Purdue University

David Carrington, Los Alamos National Laboratory

GAS TURBINE ENGINES

Dennis Culley, NASA Glenn Research Center

Justin Locke, United Technologies Research Center

HIGH-SPEED AIR-BREATHING PROPULSION

Erik L. Axdahl, The Spaceship Company

Zekai Hong, National Research Council Canada

Robin Hunt, NASA

HYBRID ROCKETS

Trevor S. Elliott, University of Tennessee at Chattanooga

Matthew A. Hitt, USASMD/ARSTRAT

INLETS, NOZZLES, AND PROPULSION SYSTEMS INTEGRATION

Scott Ochs, United Technologies Research Center

ITAR

James Horton, Aerojet Rocketdyne

LIQUID PROPULSION

David Coote, NASA

NUCLEAR AND FUTURE FLIGHT PROPULSION

Jim Cavera, Blue Origin

Jason Cassibry, University of Alabama in Huntsville

PRESSURE GAIN COMBUSTION

William Hargus, Air Force Research Laboratory

PROPELLANTS AND COMBUSTION

Timothy Ombrello, Air Force Research Laboratory

PROPULSION EDUCATION

Robert A. Frederick Jr., University of Alabama in Huntsville

John Bennewitz, Air Force Research Laboratory

SMALL SATELLITES

Jeremy Straub, North Dakota State University

SOLID ROCKETS

Reid Young, Northrop Grumman

Wes Ryan, NASA

THERMAL MANAGEMENT TECHNOLOGY

Michael K. Choi, NASA Goddard Space Flight Center

Greg Semrau, Moog, Inc.

UNMANNED AIRCRAFT SYSTEMS (UAS): PROPULSION, ENERGY AND APPLICATIONS

Lea-Der Chen, Texas A&M University - Corpus Christi

Esteban Valencia, Escuela Politécnica Nacional

AIAA/IEEE ELECTRIC AIRCRAFT TECHNOLOGIES SYMPOSIUM ORGANIZING COMMITTEE

Phillip J. Ansell, University of Illinois at Urbana-Champaign

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Roger Brewer, Lockheed Martin Corporation

Mike Filipenko, Rolls-Royce

Andrew Gibson, ES Aero

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Linda Taylor, NASA

Dave Torrey, General Electric

Alicia Tomaszewski, IEEE

WELCOME TO

PROPULSION ENERGY FORUM

Welcome to the 2020 AIAA Propulsion and Energy Forum! This year's event features a truly exciting lineup of plenary and Forum 360 speakers at the forefront of innovation in aerospace and energy. The Executive Steering Committee is pleased to present this year's forum in an online format designed to bring you greater access to a variety of live and on-demand content. The more than 450 technical presentations featured provide opportunities to hear from leading experts, explore topics in depth, and gain valuable insights throughout the week and beyond. We truly appreciate how our industry has remained flexible and adaptive to the myriad challenges of the COVID-19 environment, including making the most of virtual technologies and events. Thank you for continuing to join us in this new frontier and shape the future of our industry.

EXECUTIVE STEERING COMMITTEE

2020 AIAA Propulsion and Energy Forum



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Leadership and Professional Consultant
(General Chair)



BARBARA M. ESKER

Aeronautics Research Mission
Directorate, NASA



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SESSIONS AT A GLANCE



GROW

Technical Career Development



CONNECT

Networking



EXPLORE

the HUB



DISCOVER

High Level



DEVELOPMENT

Student & Young Professionals

	Monday 24			Tuesday 25				Wednesday 26			Thursday 27	Friday 28	
0900 hrs	Plenary			Plenary				Plenary		Electric Aircraft Technologies Symposium	Electric Aircraft Technologies Symposium	Electric Aircraft Technologies Symposium	
0930 hrs													
1000 hrs									How to Get Published with AIAA				
1030 hrs	Forum 360	Technical Sessions		Forum 360	Technical Sessions		Forum 360	Technical Sessions	COPV Cylinder Solutions from Worthington Industries				
1100 hrs													
1130 hrs													
1200 hrs			Aerospace America Interview with Kathryn Lueders				Electrified Flight Development Programs	Technical Sessions					
1230 hrs				Rising Leaders in Aerospace Panel									
1300 hrs	Forum 360		DoE OTT Department of Exploration			Leveraging Data Science and Uncertainty Quantification for Propulsion Applications			Electric Aircraft Technologies Symposium				
1330 hrs			Propulsion and Energy Professionals Lounge	Propulsion and Energy Professionals Lounge									
1400 hrs			Technical Sessions	Aerojet Rocketdyne	Forum 360	Technical Sessions							
1430 hrs	Cultivating Your Online Presence and Networking in the Virtual World with Lockheed Martin							Technetics Group					
1500 hrs	Forum 360						Forum 360	Technical Sessions					
1530 hrs													
1600 hrs													
1630 hrs													
1700 hrs			Get to Know the Industry: A YP Networking Event with AIAA Technical Committees										
1730 hrs													
1800 hrs													



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No matter the mission, Lockheed Martin uses a proven approach: engineer with purpose, innovate with passion and define the future. But that future will never be realized unless we encourage young people to study science, technology, engineering and math. That's why it is especially critical for a company like ours to support students in all aviation career fields and inspire them to be the future leaders of the next generation. Their mission defines our purpose.

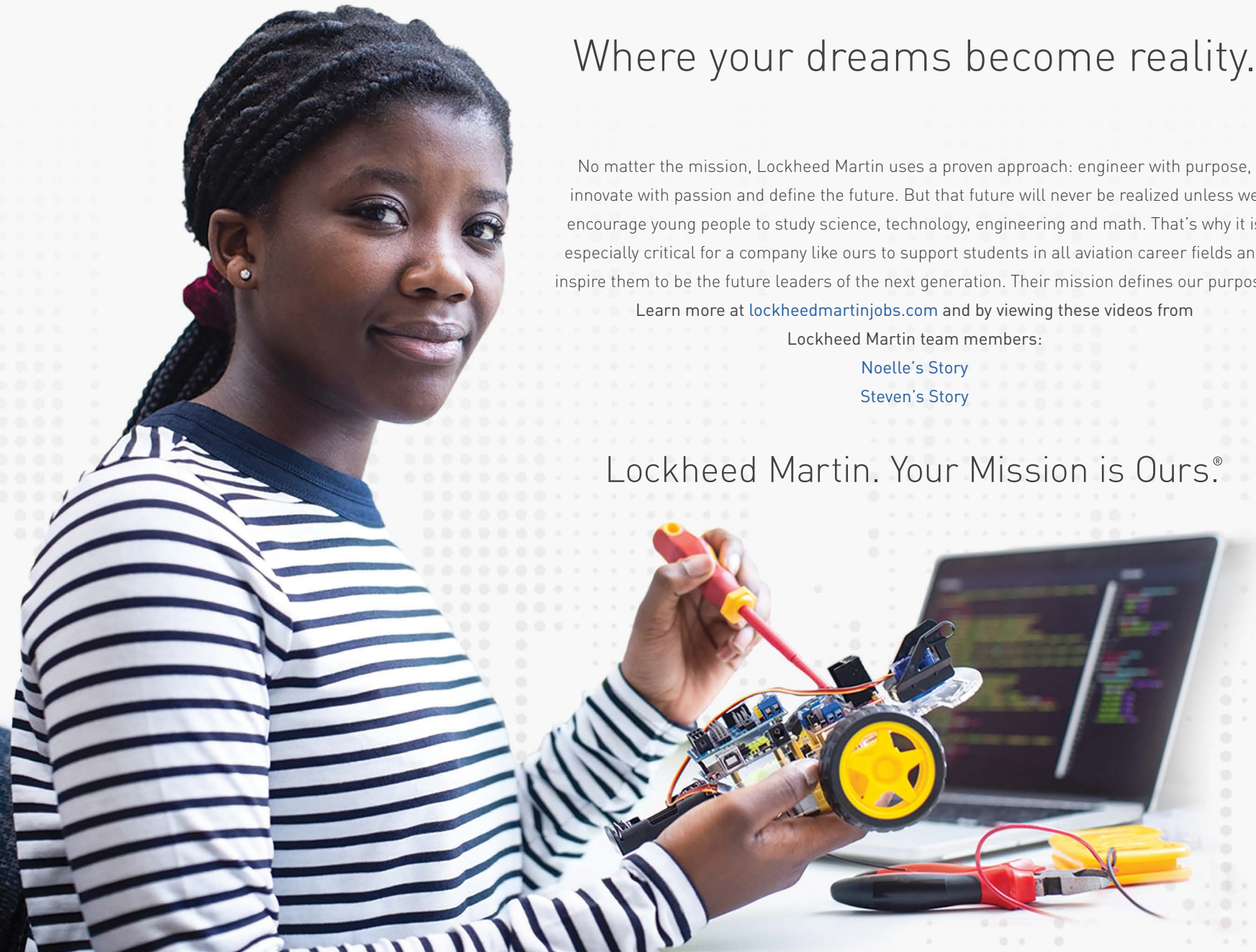
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Lockheed Martin team members:

[Noelle's Story](#)

[Steven's Story](#)

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PLENARY & FORUM 360 SESSIONS

MONDAY, 24 AUGUST

0900-1000 HRS

Monday Plenary

Robert Lightfoot, Vice President, Strategy and Business Development, Lockheed Martin Space

Marla Pérez-Davis, Center Director, NASA Glenn Research Center

FORUM
360°

1030-1200 HRS

Sustaining the LEO Ecosystem

MODERATOR: **Darren McKnight**, Technical Director, Centauri Corporation

PANELISTS:

Walt Everetts, Vice President, Space Operations and Engineering, Iridium Communications Inc.

Chris Kunstadter, Global Head of Space, AXA XL

Tim Maclay, CEO, Celestial Insight, Inc.

Clare Martin, Executive Vice President, Operations and Programs, Astroscale U.S.

Michael Nicolls, Founder and Chief Technical Officer, LeoLabs

FORUM
360°

1300-1430 HRS

Sustaining Mission Possibilities Through Enabling Technologies

MODERATOR: **Brian Brady**, Principal Engineer and Scientist, Propulsion Science Department, The Aerospace Corporation

PANELISTS:

Sandra Cauffman, Deputy Director, Earth Science Division, Science Mission Directorate, NASA

Daniel Lockney, Technology Transfer Program Executive, Space Technology Mission Directorate, NASA

Matt Moran, Managing Member, Moran Innovation LLC

Marla Pérez-Davis, Center Director, NASA Glenn Research Center

FORUM
360°

1500-1630 hrs

Sustainable Expansion in Cislunar and Beyond

MODERATOR: **Amanda Mitskevich**, Program Manager, Launch Services Program, NASA Kennedy Space Center

PANELISTS:

Natalya Bailey, CTO and Founder, Accion Systems

Steven G. Labbe, Director, Engineering, Intuitive Machines

Michelle Rucker, Lead, Mars Integration Group, NASA Kennedy Space Center

Jeff Thornburg, CEO/CTO, Interstellar Technologies Corp.



PLENARY & FORUM 360 SESSIONS

TUESDAY, 25 AUGUST

0900-1000 HRS

Tuesday Plenary

Kathryn Lueders, Associate Administrator, Human Exploration and Operations Mission Directorate, NASA

FORUM
360°

1030-1200 HRS

Maximizing the Power of Intelligent Systems in Energy and Propulsion

MODERATOR: **Vernon McDonald**, Senior Vice President, Strategic Solutions, KBR Inc.

PANELISTS:

Jason Bowers, Advanced Technology, ISRS Engineering and Technology, Collins Aerospace

Jonathan Cirtain, President, BWXT Advanced Technologies, LLC

Jason Crusan, Vice President, Technology, Woodside Energy

Skyler Shuford, Founder, Chief Operating Officer, Hermeus Corporation

Julie Van Kleeck, Vice President, Advanced Space and Launch System Business Unit, Aerojet Rocketdyne (ret.)

FORUM
360°

1400-1600 HRS

What's the Next Breakthrough? Technology or Integration?

MODERATOR: **Mary Wadel**, Deputy Director, Aeronautics, NASA Glenn Research Center

PANELISTS:

Charles "Chuck" J. Cross, Chief, Turbine Engine Division, Aerospace Systems Directorate, Air Force Research Laboratory

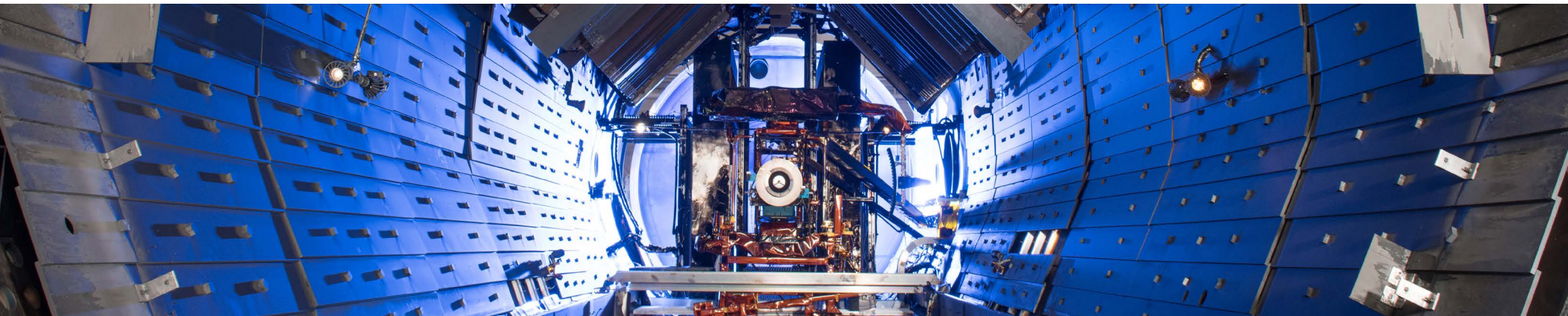
Arjan Hegeman, General Manager, Advance Technology, GE Aviation

James "Jim" Heidmann, Project Manager, Advanced Air Transport Technology, NASA

Irewole "Wally" Orisamolu, Associate Director, Advanced Propulsion Technologies, Pratt & Whitney

Lisa Teague, Head, Research and Technology, Rolls-Royce Corporation

Karen Thole, Department Head, Mechanical Engineering, Pennsylvania State University



PLENARY & FORUM 360 SESSIONS

WEDNESDAY, 26 AUGUST

0900-1000 HRS

Plenary: Future Aviation Powered by Advanced Propulsion

Robert Pearce, Associate Administrator, Aeronautics Research Mission Directorate, NASA



1030-1200 HRS

Perspectives on Electrified Aircraft Propulsion

MODERATOR: **Amy Jankovsky**, Project Manager, Electric Aircraft, NASA Glenn Research Center

PANELISTS:

Zubair Baig, Electrification Lead, Pratt & Whitney

Fayette Collier, Associate Director, Flight Strategy, Integrated Aviation Systems Program, Aeronautics, NASA

Ignacio Echavarría Díaz-Guardamino, Deputy Power System IPT and Battery Management Lead, Skydweller Aero Inc.

Evgeni Ganev, Consultant, EMPS Consulting

David Hall, Research Engineer, MIT Gas Turbine Laboratory

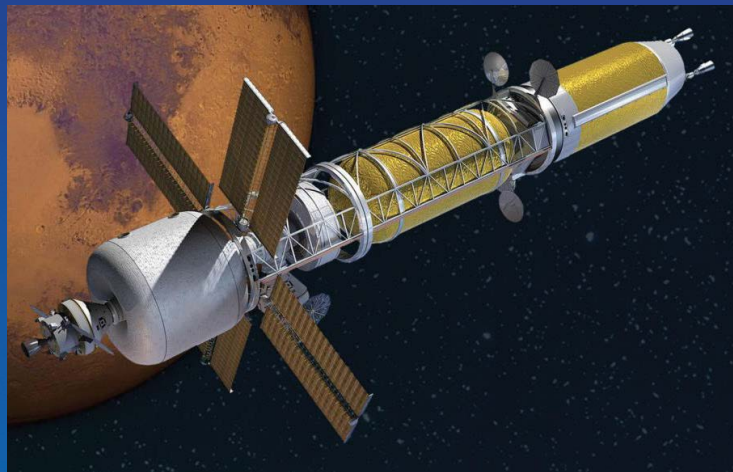
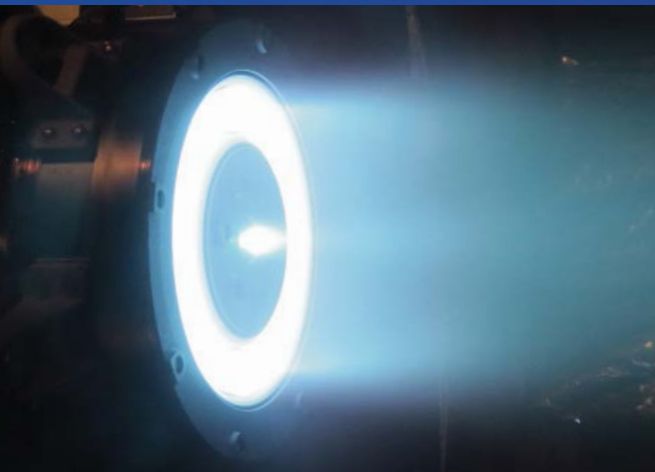


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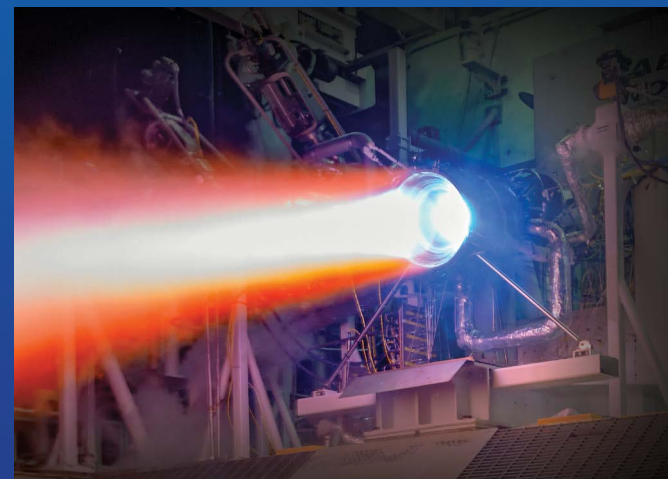
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RECOGNITION

AIAA celebrates our industry's discoveries and achievements from the small but brilliantly simple innovations that affect everyday life to the major discoveries and missions that fuel our collective human drive to explore and accomplish amazing things.

SERVICE AWARD

2020 Sustained Service Award

Jeffrey W. Hamstra, Lockheed Martin Corporation
"For outstanding and exemplary leadership of the Propulsion and Energy Group and long-standing support of Technical Activities within the Institute"

TECHNICAL AWARDS

2020 AIAA Aerospace Power Systems Award

Charles W. Bennett, Lockheed Martin Corporation
For sustained excellence in the design and deployment of energy storage systems for unique space environments and applications.

2020 AIAA Air Breathing Propulsion Award

Heinz Pitsch, RWTH Aachen University
For seminal contributions to the fundamental understanding, theory, and computational modeling of turbulent combustion.

2020 AIAA Energy Systems Award

Alan Williams, University of Leeds
For pioneering contributions to energy systems for enhanced efficiency and reduced pollution using experiments and modeling, and for education and services to industry and government.

2020 AIAA Propellants & Combustion Award

Meredith B. Colket, III, United Technologies Research Corporation (retired)
For pioneering contributions in the development of endothermic fuels leading to demonstration of the X-51 and coordinating technology programs supporting certification of alternative jet fuels.

2020 AIAA Wyld Propulsion Award

Alec D. Gallimore, University of Michigan
For groundbreaking achievements and leadership in technology and workforce development that has contributed significantly to increased utilization of spacecraft electric propulsion systems.

BEST PAPERS

2019 AIAA Aerospace Power Systems Best Paper Award

"Solar Power for Deep-Space Applications: State of Art and Development" (AIAA-2019-4236)
Andreea Boca, Clara A. MacFarland, Robert S. Kowalczyk, NASA/Jet Propulsion Laboratory, California Institute of Technology

2019 AIAA Electric Propulsion Best Paper Award

"High Power Demonstration of a 100 kW Nested Hall Thruster System" (AIAA-2019-3809)
Sarah W. H. Shark, Aerojet Rocketdyne; **Scott J. Hall**, Vantage Partners, NASA Glenn Research Center; **Benjamin A. Jorns**, University of Michigan; **Richard R. Hofer** and **Dan M. Goebel**, NASA/Jet Propulsion Laboratory

2020 AIAA Gas Turbine Engines Best Paper Award

"Conjugate Heat Transfer Study of Innovative Pin-Fin Cooling Configuration" (AIAA-2020-0634)
Mohammad A. Hossain; Munevver E. Asar; Ali Ameri, NASA; **Jeffrey P. Bons**, Ohio State University

2019 AIAA High Speed Air Breathing Propulsion Best Paper Award

"Using Computational Flow Imaging to Optimize Filtered Rayleigh Scattering Measurements of an Isolator Shock Train" (AIAA-2019-4016)
Robin L. Hunt, Cody R. Ground, Robert A. Baurle, **Paul M. Danehy**, NASA Langley Research Center

2019 AIAA Hybrid Rockets Best Paper Award

"Real Time Deep Throttling Tests of a Hydrogen Peroxide Hybrid Rocket Motor" (AIAA-2019-4266)
Alessandro Ruffin, Technology for Propulsion and Innovation; **Enrico Paccagnella, Marco Santi, Francesco Barato, Daniele Pavarin**, University of Padova

2019 AIAA Inlets, Nozzles, and Propulsion System Integration Best Paper Award

"Development of a Ducted Propulsor for BLI Electric Regional Aircraft – Part I: Aerodynamic Design and Analysis" (AIAA-2019-3853)
Kenneth A. Brown, Jonathan Fleming, Matthew Langford, Wing Ng, Techsburg, Inc.; **Kyle Schwartz**, AVEC, Inc., **Cory Combs**, Ampaire, Inc.

2019 AIAA Liquid Propulsion Best Paper Award

"Additive Manufacturing and Hot-fire Testing of Liquid Rocket Channel Wall Nozzles Using Blown Powder Directed Energy Deposition Inconel 625 and J8K-75 Alloys" (AIAA-2019-4362)
Paul R. Gradl, Christopher S. Protz, Tal Wammen, NASA Marshall Space Flight Center

2019 AIAA Nuclear and Future Flight Best Paper Award

"Applications of Nuclear Thermal Propulsion to Lunar Architectures" (AIAA-2019-4032)
Christopher B. Reynolds, James F. Horton, Claude. R. Joyner II, Timothy Kokan, Daniel J. H. Levack, Aerojet Rocketdyne

2019 AIAA Propellants and Combustion Best Paper Award

"Influence of Combustion on Flow-Structures and Cross-Frequency Coupling in a Pressurized Gas Turbine Model Combustor" (AIAA-2020-0172)
Mitchell L. Passarelli and Timothy M. Wabel, University of Toronto; **Krishna Venkatesan and Arin Cross**, GE Global Research; **Adam M. Steinberg**, Georgia Institute of Technology

RECOGNITION

2019 AIAA Solid Rockets Best Paper Award

“Numerical Simulations of Air Inclusions Using ROBOOST Simulation Tool” (AIAA-2019-3959)

Fabrizio Ponti and **Stefano Mini**, University of Bologna, Forli, Italy; **Adriano Annovazzi**, Avio Space Propulsion, Rome, Italy

2019 ASME Aerospace Division Propulsion Technical Committee Best Paper Award

“GRCop-42 Development and Hot-fire Testing Using Additive Manufacturing Powder Bed Fusion for Channel-Cooled Combustion Chambers” (AIAA 2019-4228)

Paul R. Gradl, **Chris Protz**, **Ken Cooper**, **Chance Garcia**, NASA Marshall Space Flight Center; **David Ellis**, **Laura Evans**, NASA Glenn Research Center

BEST STUDENT PAPERS

2019 AIAA Hybrid Rockets Best Student Paper Award

“Experimental Findings on Pre- and Post-combustion Chamber Effects in a Laboratory-scale motor”

(AIAA-2019-4336)

Flora Mechentel, NASA Jet Propulsion Laboratory, **Brian J. Cantwell**, Stanford University

2019 AIAA Propulsion Education Best Student Paper Award

“Development and Experimentation of a Lab-Scale Pulse Detonation Engine (PDE)” (AIAA-2019-3808)

Austin P. Murray, **Tyler L. Smith**, **Eric D. Pittman**, **Grant A. Risha**, **Jeffrey D. Moore**, Penn State Altoona

2019 AIAA Solid Rockets Best Student Paper Award

“Comparative Analysis and Justification of Optimal Rocket Motor Selection in NASA USLI By Applying Newton’s Second Law to a Variable Mass Body” (AIAA-2019-4138)

Brandon Roberts, UT Space Institute; **Ashwyn M. Sam**, **John A. Brand II**, **Trevor S. Elliott**, University of Tennessee at Chattanooga

BEST STUDENT PAPER COMPETITION

2019 AIAA Aerospace Power Systems Best Student Paper Competition Award

“Hydrogen Loss Effects on Microreactors for Space and Planetary Nuclear Power Production” (AIAA-2019-4452)

Vedant Mehta and **Patrick McClure**, Los Alamos National Laboratory; **Dan Kotlyar**, Georgia Institute of Technology

2020 AIAA Aerospace Power Student Paper Competition

Competition held during the week of the forum. Winners will be announced at a later date.

All these papers can be found online at Aerospace Research Central (arc.aiaa.org). Thank you to the Technical Committees who took the time to judge these papers and recognize the ongoing advancement of our aerospace community.



Intelligent Light

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Tune in to Steve M. Legensky, President & CTO presenting at the HUB:

“Leveraging Data Science and Uncertainty Quantification for Propulsion Applications”

Tuesday, 25 August, 1:00-1:30pm



STUDENT AND YOUNG PROFESSIONAL EVENTS

MONDAY, 24 AUGUST

1430-1500 HRS

Cultivating Your Online Presence and Networking in the Virtual World with Lockheed Martin

Tune in to hear how to make the most of virtual networking opportunities during your time at the AIAA Propulsion and Energy Forum and how you can maximize your presence on virtual networking platforms like LinkedIn.

Jason Boone, Enterprise Talent Sourcing Innovation Lead, Lockheed Martin

1700-1830 HRS

Get to Know the Industry: A Young Professionals Networking Event with AIAA Technical Committees



Join us for a virtual meet-and-greet with members of the Propulsion and Energy Group Technical Committees (TC)! Come and listen to TC members give lightning talks about some of the emerging technologies and innovations in their fields, network with your AIAA peers, and find out how you can get involved in the TC community.

TUESDAY, 25 AUGUST

1230-1330 HRS

Rising Leaders in Aerospace Panel: State of Propulsion



Join us for a panel discussion with industry insiders and experts about the state of the propulsion industry. Topics covered include the “next giant leap,” impact of the coronavirus pandemic, and suggestions for how young professionals can get more plugged into what’s happening around the industry.

MODERATOR: Bryan Brown, University of Cincinnati

PANELISTS:

Kevin Antcliff, Deputy Lead, Emerging Applications & Technologies NASA

Graham Warwick, Managing Editor, Technology, *Aviation Week and Space Technology*



On Monday, be sure to take advantage of the AIAA Propulsion and Energy Virtual Photo Booth, available exclusively to student registrants!

YOUNG PROFESSIONALS & STUDENT EVENTS SPONSOR





AIAA/IEEE ELECTRIC AIRCRAFT TECHNOLOGIES SYMPOSIUM*

26-28 AUGUST 2020 | VIRTUAL EVENT

Building upon a successful event in 2018 and 2019, the symposium will bring aerospace and electrical engineers together to look at progress over the past year and continue the discussion about the aerospace industry goals and challenges for future aircraft. To accommodate rapid growth in emerging markets and ensure sustainability of air travel, one approach being explored is using nontraditional aircraft propulsion: electric, turboelectric, or hybrid/electric powertrains.

Sponsored by:



TUESDAY, 25 AUGUST

1300-1500 HRS

Rolling Recap

1500-1700 HRS

Student Challenge Workshop

WEDNESDAY, 26 AUGUST

0900-1000 HRS

Plenary: Future Aviation Powered by Advanced Propulsion

1030-1200 HRS

Forum 360: Perspectives on Electrified Aircraft Propulsion

1215-1445 HRS

Electrified Flight Development Programs

1500-1650 HRS

A Control Systems Perspective of Electrical Aircraft Propulsion: Vision and Challenges

1500-1650 HRS

Battery Systems Panel

1700-1800 HRS

Software Tools for Electrified Propulsion

1700-1800 HRS

Turboelectric and Hybrid-Electric Power Coupling

1700-1800 HRS

Superconducting Machines and Power Systems

THURSDAY, 27 AUGUST

0900-0950 HRS

Electric Aircraft Technologies Symposium Keynote I

Mike Mekhiche, Deputy Director, Rolls-Royce

1000-1150 HRS

Hydrogen Aircraft Panel

1200-1300 HRS

Electrified Propulsion System Design and Impacts

1200-1300 HRS

Integrated Motor System Developments

1200-1300 HRS

Aircraft Operations Analysis

1330-1420 HRS

Electric Aircraft Technologies Symposium Keynote II

Valery Miftakhov, Founder & CEO, ZeroAvia

1430-1620 HRS

ULI Panel

1630-1730 HRS

Aircraft Thermal Management Systems

1630-1730 HRS

Electrified Aircraft Power System Sizing and Design Methods

1630-1730 HRS

High-Power Electric Machines and High-Voltage Operations

FRIDAY, 28 AUGUST

0900-0950 HRS

Electric Aircraft Technologies Symposium Keynote III

Andreas Kollbye, Chief Strategy Officer, Widerøe AS

1000-1150 HRS

High Voltage Distribution Panel

1200-1300 HRS

Aircraft Concept Studies and Distributed Propulsion Systems

1200-1300 HRS

Drives and Inverters

1200-1300 HRS

Developments of the NASA High Efficiency Megawatt Motor

1330-1520 HRS

Thermal Management Panel

1530-1600 HRS

Closing Remarks

* Separate Registration is Required

the HUB

where great minds gather



SPONSORED BY:



MONDAY, 24 AUGUST

1200-1230 HRS

Aerospace America Interview with Kathryn Lueders

NASA's New Era of Human Spaceflight

Join us for a Q&A with Kathryn Lueders, NASA associate administrator for human exploration and operations, to learn more about how the agency is evolving to advance exploration of the moon, Mars, and beyond.

1300-1330 HRS

DoE OTT Department of Exploration

DoE OTT Department of Exploration: How DoE powers the journey to Mars and beyond. Presented by Conner Prochaska, CTO, DoE OTT.



Office of
Technology
Transitions

1330-1400 HRS

Propulsion and Energy Professionals Lounge

Connect with your peers and take your conversations further in our Professionals Lounge. Drop in anytime Monday or Tuesday between 1330-1400 hrs, and join the conversation!

1400-1430 HRS

Aerojet Rocketdyne: Satellite Electric Propulsion from 1980-2020: Not the Propulsion of the Future Any More!

Aerojet Rocketdyne, a world leader in the development, qualification and flight of electric propulsion systems, will discuss the evolution of these systems and what's in store next. Electric Propulsion is commonly used to transfer satellites to their proper orbital locations and keep them on station once there. Since electric propulsion systems use significantly less propellant than comparable, conventional chemical propulsion systems, they help extend the life of satellites and efficiently move large amounts of mass in space.

PRESENTED BY: Joe Cassady, Executive Director of Space at Aerojet Rocketdyne



1430-1500 HRS

Cultivating Your Online Presence and Networking in the Virtual World with Lockheed Martin

Tune in to hear how to make the most of virtual networking opportunities during your time at the AIAA Propulsion and Energy Forum and how you can maximize your presence on virtual networking platforms like LinkedIn. Don't forget to take your picture using the AIAA Propulsion and Energy Forum Virtual Photo Booth, available exclusively to student attendees!

This event is sponsored by **LOCKHEED MARTIN**



1700-1830 HRS

Get to Know the Industry: A YP Networking Event with AIAA Technical Committees

Join us for a virtual meet-and-greet with members of the Propulsion and Energy Group Technical Committees (TC)! Come and listen to TC members give lightning talks about some of the emerging technologies and innovations in their fields, network with your AIAA peers, and find out how you can get involved in the TC community.

TUESDAY, 25 AUGUST

1300-1330 HRS

Leveraging Data Science and Uncertainty Quantification for Propulsion Applications

Combustion, aeroacoustics, and multi-stage turbomachinery applications are making more use of unsteady CFD calculations. "Digital Twin" analysis of as-built parts and hypersonics applications utilize statistical analysis and UQ. In all of these situations, more CFD results and experimental data need to be efficiently handled, with the knowledge extracted qualified by confidence intervals. Join us for a presentation of Intelligent Light's state-of-the-art tools that are enabling these 21st-century workflows.

PRESENTED BY: Steve Legensky, President and CTO, Intelligent Light

Intelligent Light

aiaa.org/virtualpropulsionenergy

the HUB

where great minds gather



SPONSORED BY:



1330-1400 HRS

Propulsion and Energy Professionals Lounge

Connect with your peers and take your conversations further in our Professionals Lounge. Drop in anytime Monday or Tuesday between 1330-1400 hrs and join the conversation!

1400-1430 HRS

BWX Technologies

This presentation will summarize the activities performed by BWX Technologies, Inc. (BWXT) to develop nuclear thermal propulsion technology. Topics will include key technical focus areas, challenges with developing this technology and the application of advanced technologies in manufacturing, testing and design.

PRESENTED BY: Kate Kelly, BWXT NTP Development Activities



1500-1700 HRS

Student Challenge Workshop

This year the Electric Aircraft Technologies Symposium (EATS) is sponsoring a new student design competition on electric aircraft. To increase student participation in this emerging area at the intersection of the electrical and aerospace disciplines, the Student Challenge Workshop has been set up for the organizers and student teams to

present their proposals, discuss the technologies involved, and provide a forum where students can interact with professional engineers and technologists who work in the area of electric aircraft development. Please join the workshop if you are interested in the student design competition or in supporting student engagement in the development of electrified aircraft.

WEDNESDAY, 26 AUGUST

1000-1100 HRS

How to Get Published with AIAA

Interested in submitting content for publication with AIAA? Find out how to publish with AIAA's meeting papers, journals, books, Aerospace America, or how to participate on an AIAA Standards Committee.

1100-1130 HRS

COPV Cylinder Solutions from Worthington Industries

With a rich history in supporting aerospace applications as SCI, learn the latest from Worthington Industries and how our High Pressure Composite team can assist your next project requiring high pressure gaseous storage.



1300-1400 HRS

Meet the Author: Kevin Michaels, *Aerodynamic: Inside the High-Stakes Global Jetliner Ecosystem*

Kevin Michaels is the author of *AeroDynamic: Inside the High-Stakes Global Jetliner Ecosystem*, a recipient of the 2019 Choice Outstanding Academic Title Award.

Kevin is Managing Director of AeroDynamic Advisory, a specialty consulting firm focused on the global aerospace and aviation industries. He has 34 years of experience, including hundreds of consulting engagements for leading aviation and aerospace companies across the globe. Kevin is a globally recognized expert in the aerospace manufacturing and MRO sectors, and has significant functional expertise in business-to-business marketing, customer satisfaction, M&A advisory, technology assessment, cluster development, and strategic planning. His experience spans the air transport, business & general aviation, and military sectors.

1430-1500 HRS

Technetics Group

We will discuss the ways in which abrasives provide for a range of seal properties by adapting the metallic alloy or the metal matrix composite (MMC) materials and the structure to specific turbine conditions and requirements. The observations indicate that the Feltmetal™ process is flexible enough to engineer unique structures and properties for balancing the competing factors in abradable sealing.



FEATURED CORPORATE SUPPORTERS

Aerojet Rocketdyne

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Aerojet Rocketdyne is a world-class developer and manufacturer of advanced propulsion and energetics systems for customers including the U.S. Department of Defense, NASA and other agencies and companies, both in the United States and abroad. Our markets include space, where we provide a full range of propulsion and power systems for launch vehicles, satellites and other space vehicles; strategic missiles; missile defense; and tactical systems and armaments. Our propulsion systems, both liquid- and solid-fueled, have been at the heart of virtually every major U.S. space and missile program since the dawn of the space age. All of our products are manufactured at ISO 9001/AS 9100-certified facilities around the country.

PRESENTATION:

Satellite Electric Propulsion from 1980 - 2020: Not the Propulsion of the Future Any More!

BWXT Technologies

www.bwxt.com/contact-us



At BWX Technologies, Inc. (NYSE: BWXT), we are People Strong, Innovation Driven. Headquartered in Lynchburg, Va., BWXT provides safe and effective nuclear solutions for national security, clean energy, environmental remediation, nuclear medicine and space exploration. With approximately 6,650 employees, BWXT has 12 major operating sites in the U.S. and Canada. In addition, BWXT joint ventures provide management and operations at more than a dozen U.S. Department of Energy and NASA facilities. Follow us on Twitter at @BWXTech and learn more at www.bwxt.com.

PRESENTATION:

BWXT NTP Development Activities

Intelligent Light

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www.ilight.com

Intelligent Light

Today's engineers and researchers are under extraordinary pressure to aggressively increase performance, decrease build costs and respond quickly to changing customer needs. Our products and services target next-generation in situ/in transit workflows, data science applications for CFD and multi-physics analysis and VV/UQ. Intelligent Light's combined software and consulting solutions are currently being sold on a subscription basis and supported globally to the users of the largest HPC systems such as the US DoD HPCMO CREATE program, Japan's JAXA and RIKEN AICS and Germany's large aeroengine supplier and the DLR.

Lockheed Martin

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Lockheed Martin is a global security and aerospace company principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

PRESENTATION:

Meet the Aerospace Talent Sourcing Squad

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FEATURED CORPORATE SUPPORTERS

Northrop Grumman

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Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR, space, strike, and logistics and modernization to customers worldwide. Please visit news.northropgrumman.com and follow us on Twitter, @NGCNews, for more information.



Technetics

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Every sealing solution Technetics offers is engineered for safety, performance and durability—that's why we have engineering teams dedicated to the design and R&D of custom seal and component solutions. This experience is augmented by close partnerships with leading industry OEMs and long-standing relationships with government research agencies, renowned universities, independent research firms, and national laboratories. And because we're committed to customer safety, we also maintain a range of in-house testing equipment to ensure every one of our sealing solutions meets your demanding requirements.



PromimAI

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Our subscription-based remote AI Consulting service provides a cost-effective means to deliver private-label AI/ML engineering and compute resources. These capabilities assist in the process of solving next-gen CFD, object detection, predictive maintenance, aerodynamics, defensive overmatch, commercial space, and cosmology research problems. Our U.S. based and certified data science engineers for Microsoft, Google, NVIDIA, and AWS AI platforms are here to support your innovation needs. Our process also delivers NIST security controls, ITAR compliance, and Data Anonymization. Remote services start as low as \$495/Month. Subscribe today!



Worthington Industries

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Manufacturer of Composite Overwrapped Pressure Vessels.



GENERAL INFORMATION

CONFERENCE PROCEEDINGS

Proceedings for the forum will be available online. The cost is included in the registration fee where indicated.

Online proceedings are available now. Please follow the instructions below to access the proceedings:



Proceedings:

1. To view proceedings visit arc.aiaa.org > Meeting Papers.
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2. All manuscript files submitted by 5 August are currently in the proceedings.
3. Direct any questions concerning access to proceedings and/or ARC to arcsupport@aiaa.org.

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1. The manuscript in the proceedings is the version of record and may not be edited. All changes will be available through the Crossmark feature. View corrections by clicking the Crossmark icon, located on every article's page and PDF. Please visit <https://arc.aiaa.org/page/crossmark> for more information.
2. Corrections will be available online approximately 15 business days after the last day of the conference.
3. For concerns regarding the presentations file (e.g., uploaded MP4 file), please contact arcsupport@aiaa.org after 17 August 2020.



CERTIFICATE OF ATTENDANCE

The Certificates of Attendance will be sent to all registered attendees at the end of the event. AIAA offers this service to better serve the needs of the professional community. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

EMPLOYMENT OPPORTUNITIES

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at careercenter.aiaa.org.

MEMBERSHIP

AIAA is a great resource for networking with other aerospace professionals, continuing your education, staying up to date on the latest news, and furthering your career. Aerospace is a field where Membership Matters. Regardless of what aerospace area you are involved with, being an active member of AIAA can accelerate and strengthen your professional life. Don't miss any of the benefits that come with being a part of the largest professional association built by and for aerospace practitioners. aiaa.org/member

CONTINUE THE CONVERSATION ON ENGAGE

AIAA Engage allows you to connect with a community of nearly 30,000 of your AIAA colleagues online. Visit the 2020 AIAA Propulsion and Energy Forum community to connect with other forum attendees, discuss the sessions, share your experiences, and ask follow-up questions. Visit aiaa.org/engagepropulsionenergy to continue the conversation.

NONDISCRIMINATORY PRACTICES

AIAA accepts registrations irrespective of race, creed, sex, color, physical handicap, and national or ethnic origin.

PHOTO/VIDEO NOTICE AND POLICY

Participation in an AIAA event constitutes consent to the use and distribution by AIAA and its employees, agents, and assignees of the attendee's image and/or voice for purposes related to the mission of AIAA, including but not limited to, publicity, marketing, other electronic forms of media, and promotion of AIAA and its various programs and events.

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Video or digital recording during any portion of this event is prohibited without prior written permission of AIAA.

Please contact AIAA's Senior Director, Strategic Marketing & Communications, Brian Talbot (BrianT@aiaa.org), with requests or questions.

“NO PAPER, NO PODIUM” AND “NO PODIUM, NO PAPER” POLICY

If a written paper and its presentation with audio is not submitted by the stated deadlines, authors will not be permitted to present the paper at the forum. Also, if an author is not available to participate in the assigned Q&A hosted virtually, their submission will be withdrawn from the proceedings. **It is the responsibility of those authors whose papers and presentations are accepted to ensure that a representative participates.** These policies are intended to improve the quality of the program for all participants, and to ensure that the published proceedings accurately reflect the presentations made at the forum.

JOURNAL PUBLICATION

Authors of appropriate papers are encouraged to submit them for possible publication in one of the Institute's archival journals: *AIAA Journal*; *Journal of Aerospace Information Systems*; *Journal of Air Transportation*; *Journal of Aircraft*; *Journal of Guidance, Control, and Dynamics*; *Journal of Propulsion and Power*; *Journal of Spacecraft and Rockets*; or *Journal of Thermophysics and Heat Transfer*. You may now submit your paper online at <http://mc.manuscriptcentral.com/aiaa>.

THANK YOU

for attending the virtual 2020 AIAA Propulsion and Energy Forum.
Registrants will continue to have access to the virtual forum at
aiaa.org/virtualpropulsionenergy through October 2020.

SEE YOU NEXT YEAR

9-11 August 2021
Denver, CO

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