FORUM 78
THE FUTURE OF VERTICAL FLIGHT
FORT WORTH, TEXAS, USA | MAY 10-12, 2022

PROGRAM

www.vtol.org/forum

Forum 78 Sponsors
Energizing the future of flight

We are applying four decades of experience and know-how in energy management, power conversion and controls to enable the electrification of aircraft. Our offerings are modular, scalable, and adaptable for regional and business jets, urban air mobility, and military applications.

boesystems.com/electrification
Welcome to Forum 78!

As the Chair of the Board of the Vertical Flight Society, it gives me great pleasure to welcome you to the 78th Annual Forum & Technology Display. It’s been a difficult two years, as we all dealt with the unprecedented individual, professional and business challenges brought on by the pandemic. But we are excited to gather again, in person, to celebrate our collective resiliency, recognize significant accomplishments and reconnect with colleagues during the world’s premier vertical flight technology event.

Forum 78 brings together the best and brightest technical minds with the world’s leading vertical flight manufacturers, suppliers and innovators. This flagship event features some 220 technical papers, 30+ panel discussions by vertical flight leaders in industry, government and academia, and nearly 80 exhibitors showcasing their latest technologies, innovations and capabilities. Coupled with insights from the Opening General Session, professional short courses and the Grand Awards Breakfast Banquet, Forum 78 highlights “The Future of Vertical Flight” and the inspirational vision and exhilarating journey to get there.

I encourage you to take full advantage of every opportunity and engagement that Forum 78 offers and return to your organizations buoyed by the knowledge and relationships you gain here, as well as new ideas and renewed enthusiasm to advance the state of the art of vertical flight. You are the pioneers, trailblazers and visionaries who will capture the imagination, push the boundaries and create the possibilities of future vertical flight!

It has been enlightening and rewarding to serve as the VFS Chair this past year. I have gained unique insights into VFS and the growing, transformational vertical flight industry. VFS is an invaluable vertical flight resource for advancing your professional capabilities and uniting the global technical community to work together in advancing the future of vertical flight.

I hope the exchange of ideas, learning and networking during Forum 78 lasts well beyond this week, and that you remain actively engaged in VFS throughout your career.

Paul Lemmo
President, Sikorsky, A Lockheed Martin Company
Chair of the Board, 2021–2022
Vertical Flight Society
Download the Forum 78 app to view the technical paper schedule, events and special sessions, and manage your personal agenda. Go to the Apple App Store or the Android Play Store and download CrowdCompass AttendeeHub. Use forum78 as the password to download the app. Also, please use the hashtag #forum78 for all your social media posts!

### Sunday, May 8, 2022

<table>
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<tr>
<th>Time</th>
<th>Location</th>
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<tr>
<td>7:00 am – 5:00 pm</td>
<td>VFS Show Office, Room 101</td>
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<tr>
<td>9:00 am – 5:00 pm</td>
<td>Exhibit Move-in (Exhibitors Only), Exhibit Hall A&amp;B</td>
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<tr>
<td>2:00 pm – 5:00 pm</td>
<td>Attendee Registration, Exhibit Hall Concourse</td>
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### Monday, May 9, 2022

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<th>Time</th>
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<tr>
<td>6:00 am – 5:00 pm</td>
<td>VFS Show Office, Room 101</td>
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<tr>
<td>7:00 am – 5:00 pm</td>
<td>Speaker Ready Room, Room 102</td>
</tr>
<tr>
<td>7:00 am – 5:00 pm</td>
<td>Registration Opens, Exhibit Hall Concourse</td>
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<tr>
<td>7:30 am – 11:30 am</td>
<td>VFS Technical Council Meeting</td>
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<tr>
<td>8:00 am – 5:00 pm</td>
<td>Exhibit Move-in, Exhibit Hall A&amp;B</td>
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<tr>
<td>8:00 am – 5:00 pm</td>
<td>Short Course on Electric VTOL Technology, Room 202 A&amp;B</td>
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<tr>
<td>8:00 am – 5:00 pm</td>
<td>Short Course on Model-Based Systems Engineering (MBSE), Room 202 C&amp;D</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Journal Editors Meeting, Room 203 A</td>
</tr>
<tr>
<td>2:30 pm – 3:30 pm</td>
<td>Chairs/Session Chairs Meeting, Room 203 A</td>
</tr>
<tr>
<td>4:00 pm – 4:30 pm</td>
<td>Student Volunteers Meeting, Room 201 B&amp;C</td>
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### Tuesday, May 10, 2022

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<tr>
<td>6:00 am – 5:00 pm</td>
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<tr>
<td>7:00 am – 5:00 pm</td>
<td>Registration Opens, Exhibit Hall Concourse</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>Unmanned VTOL Aircraft and Rotorcraft Committee Meeting, Room 103B</td>
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**Technical Session A — Sponsored by Leonardo Helicopter Division**

- Aerodynamics I, Room 201 B&C
- Aircraft Design I, Room 202 A&B
- Acoustics I, Room 201 A
- Crash Safety, Room 202 C&D
- eVTOL I, Room 200
- Handling Qualities I, Room 204 A&B
- Modeling & Simulation I, Room 203 B&C
- Product Support, Room 100

**Special Session 1: International VTOL R&D, Ballroom A, B, C**

*Moderated by Dan Newman, Boeing*

- Dr. Noah Schiller, NASA
- Derek Gowanlock, NRC Canada
- Arnaud LePape, ONERA
- Florian Antrack, DLR
- Pat Collins, UK MoD

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**Forum 78 Program Schedule**

May 10–12, 2022 • Fort Worth, Texas, USA

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As combat evolves, so do we. To help warfighters overcome advancing threats, we are leveraging our combat proven experience with our F-35 helmet mounted display system (HMDs) to deliver wide-field-of-view and integrated night vision capabilities optimized for low-level combat operations.

We deliver unmatched lethality and survivability in HMDs, electronic warfare systems, long range precision fires, and air launched effect systems. Backed by proven performance, our combat-tested solutions are ready today.
### Tuesday, May 10, 2022 (con’t)

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>9:00 am – 7:00 pm</td>
<td>Exhibit Hall Opens, Exhibit Hall A&amp;B</td>
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<tr>
<td>9:00 am – 10:00 am</td>
<td>Propulsion Committee Meeting, Room 103A</td>
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<tr>
<td>9:00 am – 12:00 pm</td>
<td>VFS Board of Directors Meeting, Room 203A</td>
</tr>
<tr>
<td>9:30 am – 10:00 am</td>
<td><strong>Technical Session A Refreshment Break, Exhibit Hall A&amp;B — Sponsored by Siemens</strong></td>
</tr>
</tbody>
</table>
| 10:00 am – 12:00 pm| **Special Session 2: Future Vertical Workforce, Ballroom A, B, C**  
**Moderated by Danielle McLean, Hy-Sky**  
- Russell Julian, Texas UASWERX  
- Victoria Natalie, USRI/Oklahoma State  
- Daniel Plaisance, Helmerich Research Center/OK State–Tulsa  
- Sharon Rossmark, Women And Drones  
- Mike Burrows, San Bernadino International Airport  
- Vineet Sahasrabudhe, Sikorsky, a Lockheed Martin Co. |
| 11:00 am – 12:00 pm| Advanced Vertical Flight Committee Meeting, Room 104                                              |
| 11:00 am – 12:00 pm| Structures & Materials Committee Meeting, Room 104 B                                              |
| 12:00 pm – 1:30 pm| **Exhibit Hall Lunch Break — Sponsored by The Boeing Company**                                 |

### Opening General Session

**Welcome**
- **Mike Hirschberg**, Executive Director, Vertical Flight Society

**Keynote Address**

**Straight Talk from the Top**  
Moderated by Elan Head, *The Air Current*
- **Tomasz Krysinski**, VP Research & Innovation, Airbus  
- **Keith Flail**, Executive VP, Advanced Vertical Lift Systems, Bell  
- **Shane Openshaw**, VP, Tiltrotor Programs, The Boeing Company  
- **Roberto Garavaglia**, Senior VP Strategy & Innovation, Leonardo Helicopters  
- **Paul Lemmo**, President, Sikorsky, a Lockheed Martin Co.

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<tbody>
<tr>
<td>3:15 pm – 4:00 pm</td>
<td>Education Committee Meeting, Room 103 A</td>
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<tr>
<td>3:30 pm – 4:00 pm</td>
<td><strong>Opening General Session Refreshment Break, Ballroom Foyer — Sponsored by GE Aviation</strong></td>
</tr>
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</table>
| 4:00 pm – 5:00 pm| **42nd Annual Nikolsky Lecture**  
*Introduced by Harry Nahatis, GE Aviation*  
**Dr. Marilyn Smith**, Georgia Institute of Technology: “Computational Vertical Lift Aeromechanics and Its Future in the Twenty-First Century” |
| 5:00 pm – 7:00 pm| Industry Reception  Exhibit Hall A&B — **Sponsored by Sikorsky, a Lockheed Martin Company**      |
| 6:00 pm – 7:30 pm| Handling Qualities Committee Meeting, Room 104                                                    |
## Wednesday, May 11, 2022

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<tbody>
<tr>
<td>6:00 am – 5:00 pm</td>
<td>VFS Show Office, Room 101</td>
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<tr>
<td>7:00 am – 5:00 pm</td>
<td>Registration Opens, Exhibit Hall Concourse</td>
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<tr>
<td>8:00 am – 12:15 pm</td>
<td><strong>Technical Session B — Sponsored by Leonardo Helicopter Division</strong></td>
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<tr>
<td>8:00 am – 9:30 am</td>
<td>Special Session 3: PEO Aviation’s MOSA Collaboration and Progress, Ballroom A&amp;B</td>
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<tr>
<td>9:00 am – 10:00 am</td>
<td>Acoustics Committee Meeting, Room 103 A</td>
</tr>
<tr>
<td>9:00 am – 5:00 pm</td>
<td>Exhibit Hall Opens, Exhibit Hall A&amp;B</td>
</tr>
<tr>
<td>9:30 am – 10:15 am</td>
<td>Technical Session B Refreshment Break, Exhibit Hall A&amp;B — Sponsored by Siemens</td>
</tr>
<tr>
<td>10:00 am – 11:00 am</td>
<td>Crash Safety Committee Meeting, Room 104</td>
</tr>
<tr>
<td>10:15 am – 12:15 pm</td>
<td>Special Session 4: US Army Programs, Ballroom A&amp;B</td>
</tr>
<tr>
<td>12:15 pm – 1:45 pm</td>
<td>Exhibit Hall Lunch Break — Sponsored by The Boeing Company</td>
</tr>
<tr>
<td>1:30 pm – 2:30 pm</td>
<td>Avionics and Mission Systems Committee Meeting, Room 103 B</td>
</tr>
<tr>
<td>1:45 pm – 6:00 pm</td>
<td><strong>Technical Session C — Sponsored by Leonardo Helicopter Division</strong></td>
</tr>
<tr>
<td>1:45 pm – 3:15 pm</td>
<td>AAM Logistics Task Force (Invite Only), Room 104</td>
</tr>
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- Technical Session B — Sponsored by Leonardo Helicopter Division
  - Aerodynamics II, Ballroom C
  - Aircraft Design II, Room 202 A&B
  - Dynamics I, Room 201 A
  - eVTOL II, Room 200
  - Handling Qualities II, Room 204 A&B
  - Modeling & Simulation II, Room 203 B&C
  - Propulsion I, Room 202 C&D

- Special Session 3: PEO Aviation’s MOSA Collaboration and Progress, Ballroom A&B
  - COL Scott Anderson, Project Manager, Unmanned Aircraft Systems
  - COL Burr Miller, Project Manager, Aviation Mission Systems and Architecture
  - Matt Sipe, MOSA Transformation Office

- Special Session 4: US Army Programs, Ballroom A&B
  - Ski Horrocks, Deputy Project Manager, FARA
  - Alan McClendon, Chief Engineer, Utility Helicopters
  - Viva Kelley, Deputy Project Manager, Cargo Helicopters
  - Bob Sheibley, Deputy Project Manager, Advanced Turbine Engines

- Technical Session C — Sponsored by Leonardo Helicopter Division
  - Aerodynamics III, Ballroom C
  - Acoustics II, Room 100
  - Advanced Vertical Flight I, Room 202 A&B
  - Crew Stations I, Room 201 A
  - Dynamics II, Room 202 C&D
  - Modeling & Simulation III, Room 203 B&C
  - Safety, Room 200
  - Structures & Materials I, Room 204 A&B
  - Test & Evaluation I, Room 201 B&C
### Wednesday, May 11, 2022 (con’t)

<table>
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<tr>
<th>Time</th>
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| 1:45 pm – 3:15 pm | **Special Session 5: Flight Test, Ballroom A&B**<br>**Moderated by Dyan Gibbens, US Air Force AFWERX**  
- Matt Chasen, LIFT Aircraft  
- Lt Col Thomas Meagher, USAF  
- Col Martin “Riddler” Salinas, USAF  
- Rick Simmons, VFS E-VTOL Flight Test Council  
- Peter Schmidt, Transcend Air                                                   |
| 2:00 pm – 3:00 pm | Aircraft Design Committee Meeting, Room 103 A                                               |
| 2:30 pm – 3:30 pm | Manufacturing Technology & Processing Committee Meeting, Room 105                         |
| 3:15 pm – 4:00 pm | **Technical Session C Refreshment Break, Exhibit Hall A&B** — **Sponsored by Continuum Dynamics, Inc.** |
| 4:00 pm – 5:00 pm | VFS Design-Build-Vertical Flight (DBVF) Committee Meeting, Room 103 B                    |
| 4:00 pm – 5:30 pm | Systems Engineering Committee Meeting, Room 105                                            |
| 4:00 pm – 6:00 pm | **Special Session 6: US Navy/ US Marine Corps Programs, Ballroom A&B**  
- TBD                                                                       |
| 6:00 pm – 7:00 pm | Electric VTOL Technical Committee Meeting, Room 104                                       |

### Thursday, May 12, 2022

<table>
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<td>Speaker Ready Room, Room 102</td>
</tr>
<tr>
<td>7:30 am – 1:30 pm</td>
<td>Registration Opens, Exhibit Hall Concourse</td>
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</tbody>
</table>
| 7:30 am – 9:30 am | **78th Annual Grand Awards Breakfast** — **Sponsored by Bell**                       
- Ballroom A, B, C  
- Advanced tickets required — limited seating                                      |
| 9:00 am – 10:00 am | Aerodynamics Committee Meeting, Room 103 B                                               |
| 9:00 am – 12:00 pm | Exhibit Hall Open, Exhibit Hall A&B                                                      |
| 9:30 am – 10:15 am | **Technical Session D Refreshment Break, Exhibit Hall A&B** — **Sponsored by Siemens** |
| 9:30 am – 10:30 am | Modeling and Simulation Committee Meeting, Room 103 A                                    |
| 10:15 am – 11:15 am | Operations Committee Meeting, Room 103 B                                                 |
| 10:15 am – 12:15 pm | **Technical Session D** — **Sponsored by Leonardo Helicopter Division**                   
- Acoustics III, Room 100  
- Crew Stations II, Room 201 A  
- HUMS I, Room 202 C&D  
- Manufacturing & Technology I, Room 200  
- Propulsion II, Room 203 B&C  
- Structures & Materials II, Room 204 A&B  
- Test & Evaluation II, Room 202 A&B  
- Unmanned VTOL Aircraft II, Room 201 B&C                                            |
| 10:15 am – 12:15 pm | **Special Session 7: Expanding the Supply Chain, Ballroom A, B, C**  
- Alan Davis, i5 Services  
- Patrick Joyce & Arti Shah, Deloitte Consulting  
- John Vogel, HyPoint  
- Andrew Miller, Benchmark Mineral Intelligence  
- Dana Jensen, Gemini Industries / US Air Force                                           |

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**Siemens Xcelerator** is a software-as-a-service portfolio for organizations seeking operational excellence. It is unique in its ability to drive digital transformations and foster collaboration in aerospace and defense with a comprehensive digital twin. Siemens is trusted by manufacturers and government agencies for this digital twin, empowering the next generation of design, manufacturing, and maintenance through increased automation and digitalization. Explore the future of aerospace with Siemens.

[siemens.com/plm/aerospacedefense]
Where today meets tomorrow

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siemens.com/plm/aerospacedefense
Urban Air Mobility is the fusion of aerospace excellence at automotive manufacturing volumes. eVTOL manufacturers need proven aerospace materials at every stage of development. Toray’s expansive thermoset and thermoplastic composite portfolio supports structural applications at any production rate. Toray also produces non-structural components such as textiles for seat fabrics, films for windows and batteries, resins for motors and cases, and fibers for bearings and bushings.
### Thursday, May 12, 2022 (con’t)

<table>
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<th>Time</th>
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<tbody>
<tr>
<td>10:30 am – 11:30 am</td>
<td>Safety Committee Meeting, Room 104</td>
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<tr>
<td>10:30 am – 12:00 pm</td>
<td>Product Support Committee Meeting, Room 103 A</td>
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<tr>
<td>11:00 am – 12:00 pm</td>
<td>History Committee Meeting, Room 105</td>
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<tr>
<td>12:00 pm – 1:30 pm</td>
<td>Dynamics Committee Meeting, Room 104</td>
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<tr>
<td>12:15 pm – 1:45 pm</td>
<td>Test &amp; Evaluation Committee Meeting, Room 103A</td>
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<tr>
<td>12:15 pm – 1:30 pm</td>
<td>Voucher Lunch Break — Sponsored by The Boeing Company</td>
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</table>
| 1:30 pm – 5:30 pm | **Technical Session E — Sponsored by Leonardo Helicopter Division**  
|                | • Aerodynamics IV, Room 201 B&C                             |
|                | • Advanced Vertical Flight II, Room 203 B&C                 |
|                | • Aircraft Design III, Room 202 A&B                         |
|                | • History, Room 204 A&B                                     |
|                | • HUMS II, Room 202 C&D                                      |
| 1:30 pm – 4:30 pm | NATO Industry Advisory Group (NIAG) Study Group SG-266, Room 203 A  
| (By Invitation Only) | (By Invitation Only)                                        |
| 1:30 pm – 3:00 pm | **Special Session 8: Challenges in Electric VTOL, Ballroom A, B, C** — Moderated by Dave Clark, Aerocar Journal  
|                | • Starr Ginn, NASA                                            |
|                | • JR Hammond, CAAM                                            |
|                | • David Eichstadt, VerdeGo                                    |
| 3:00 pm – 3:30 pm | Technical Session E Refreshment Break, 200 Level Meeting Room Corridor  
|                | — Sponsored by Siemens                                        |
| 3:30 pm – 5:30 pm | **Special Session 9: Progress in Electric VTOL, Ballroom A, B, C** — Moderated by Graham Warwick, AviationWeek  
|                | • Joerg Mueller, Airbus                                       |
|                | • Erick Corona, Wisk                                          |
|                | • Manal Habib, MightyFly                                      |
|                | • Robert Scholl, Textron Aviation                            |

### Friday, May 13, 2022

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| 7:30 am – 10:30 am / 8:30 am – 11:30 am / 9:30 am – 12:30 pm | Bell Training Academy Tour  
|               | Meet at the Fort Worth Convention Center 13th Street Entrance  
|               | 15 minutes prior                                             |
|               | (Must be pre-registered to board the bus; please bring ID)       |

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**FORUM 79**

**THE FUTURE OF VERTICAL FLIGHT**

**MAY 16-18, 2023 | WEST PALM BEACH, FL, USA**

**Plan now to attend next year’s Forum!**
Forum 78 Exhibitor Technical Briefings

**Tuesday, May 10**
10:00am – 10:30am  Booth 914
**Howmet Fastening Systems**
**Title of Briefing:** Ergo-Tech® blind bolt
**Briefing Description:** Howmet Fastening Systems will demonstrate the installation of its Ergo-Tech® blind bolt and discuss the properties that make it unique among aerospace fasteners.

**Tuesday, May 10**
1:00pm – 1:30pm  Booth 413
**Continuum Dynamics, Inc.**
**Title of Briefing:** Latest Advancements in eVTOL Aircraft Modeling and Simulation
**Briefing Description:** Summary of ongoing work being performed by CDI and Penn State in collaboration with NASA, the FAA, the DAF (Agility Prime) and industry advancing the state-of-the-art in the modeling and simulation of eVTOL aircraft.

**Wednesday, May 11**
9:30am – 10:00am  Booth 714
**Hexagon**
**Title of Briefing:** Certification of eVTOL Aircraft – Ensure safety, longevity, and structural integrity
**Briefing Description:** What keeps eVTOL aircraft startups and engineers awake at night? And what determines if an eVTOL startup is successful or not? The answer is airworthiness certification (safety) and aircraft performance. Now imagine having access to a playbook, decades in the making, that details the procedures and tools that aircraft companies use to design and manufacture aircraft that meet airworthiness standards dictated by the FAA and EASA.

Learn more about the tools and procedures that established aircraft companies use today:

- What are aircraft engineers using simulation software for today to certify a new aircraft?
- How is simulation technology used for the following applications: structural design and light weighting, aerodynamic design, noise prediction, propulsion and emissions, control and mechanisms, durability and reliability, and sustainable material development and virtual coupon testing?
- How is simulation used to complement physical testing, such as ground vehicle vibration test, wing bending test, fan blade out, bird strike testing and more?

**Wednesday, May 11**
9:35am – 10:05am  Booth 924
**Alpine Advanced Materials**
**Title of Briefing:** Go Further. Go Faster. Be Lighter with HX5.
**Briefing Description:** HX5® is a highly characterized nanocomposite material that is 93% as strong as 6061-T6 aluminum but only half the weight, enabling your vehicle to go further and faster. HX5 is noncorrosive, UV-resistant and extreme-temperature tolerant, and is ideal for a variety of applications including defense, aviation and emerging transportation including eVTOL and UAVs. Come visit our booth to learn more.

**Wednesday, May 11**
10:00am – 10:30am  Booth 914
**Howmet Fastening Systems**
**Title of Briefing:** FC43® panel fastener
**Briefing Description:** Howmet Fastening Systems will present its FC43® panel fastener - a modular system ideally suited for application on composite airframes.

**Wednesday, May 11**
1:15pm – 1:45pm  Booth 413
**Continuum Dynamics, Inc.**
**Title of Briefing:** Latest Advancements in eVTOL Aircraft Acoustics Modeling and Simulation
**Briefing Description:** Summary of ongoing work being performed by CDI and Penn State in collaboration with NASA, the FAA, the DAF (Agility Prime) and industry advancing the state-of-the-art in the modeling and simulation of eVTOL aircraft.

**Wednesday, May 11**
2:00pm – 3:00pm  Booth 1013
**Drive System Design**
**Title of Briefing:** How to Select the Optimal Electrified Architecture For eVTOL
**Briefing Description:** Drive System Design (DSD) has applied our architecture definition tool, ePOP, to objectively quantify the propulsion architecture trade-offs affecting the eVTOL industry. We apply a complete system approach to electrified propulsion, to answer fundamental questions including; How many propulsion ‘modules’ are optimal? Rotor Radius – Is bigger really better? What could including a transmission offer me? How should I design my system for best redundancy and ease of certification? How can I take a modular approach to my future product strategy? This briefing will provide an overview of the tool and how it can be leveraged to give eVTOL providers a competitive advantage.
Win a $200 Amazon.com Gift Card!
Prize drawings to be held in the Exhibit Hall during the Forum 78 Technical Session Refreshment Breaks!

Wednesday, May 11 at 10:00am and 3:45pm
Thursday, May 12 at 10:00 am

Forum 78 attendees may enter to win by dropping a business card in the ticket tumbler located in the Exhibit Hall during the refreshment break. A prize drawing winner must be present in the Exhibit Hall to win and must claim the prize by the close of each Exhibit Hall Refreshment Break. A prize may be claimed at the location of the ticket tumbler. An unclaimed prize will be made available for a repeat prize drawing at a later refreshment break.

Sponsored by The Vertical Flight Society

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**Wednesday, May 11**
3:30pm – 4:00pm Booth 217

**Advanced Rotorcraft Technology, Inc.**

**Title of Briefing:** Advanced Modeling and Real-Time Simulation of Advanced Multi-Rotor VTOL Air Vehicles

**Briefing Description:** ART will be discussing first principle based multi-rotor aerodynamic interaction modeling for high fidelity performance analysis for vehicle and control system design, flight dynamics, and real-time flight simulation.

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**Wednesday, May 11**
3:30pm – 4:00pm Booth 419

**Inceptra**

**Title of Briefing:** Accelerating VTOL Aircraft Development from Concept to Certification

**Briefing Description:** Learn about the Dassault Systèmes “Reinvent the Sky” industry solution for startups, small and medium enterprises, and OEMs to design, prototype and certify VTOL aircraft faster. This cloud-based solution minimizes IT-related expenses, facilitates collaboration, and includes industry process experiences and the same product design, simulation, manufacturing, and PLM apps available to the largest aircraft makers in the world. It shortens the time from concept to flight with less resources by leveraging a common product innovation platform to eliminate development inefficiencies and ensure product quality, providing full data traceability for certification.

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**Thursday, May 12**
9:45am – 10:15am Booth 419

**Inceptra**

**Title of Briefing:** Accelerating VTOL Aircraft Development from Concept to Certification

**Briefing Description:** Learn about the Dassault Systèmes “Reinvent the Sky” industry solution for startups, small and medium enterprises, and OEMs to design, prototype and certify VTOL aircraft faster. This cloud-based solution minimizes IT-related expenses, facilitates collaboration, and includes industry process experiences and the same product design, simulation, manufacturing, and PLM apps available to the largest aircraft makers in the world. It shortens the time from concept to flight with less resources by leveraging a common product innovation platform to eliminate development inefficiencies and ensure product quality, providing full data traceability for certification.
General Information

Forum 78 Registration Information

All Forum 78 attendees must register to receive a badge. Badges must be visibly displayed to gain admittance to both the Exhibit Hall and sessions.

REGISTRATION HOURS:

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<th>Day</th>
<th>Hours</th>
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<tr>
<td>Sunday, May 8, 2022</td>
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<td>Monday, May 9, 2022</td>
<td>7:00 am – 5:00 pm</td>
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<tr>
<td>Tuesday, May 10, 2022</td>
<td>7:00 am – 5:00 pm</td>
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<tr>
<td>Wednesday, May 11, 2022</td>
<td>7:00 am – 5:30 pm</td>
</tr>
<tr>
<td>Thursday, May 12, 2022</td>
<td>7:30 am – 1:30 pm</td>
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Forum 78 Proceedings

The Forum 78 Proceedings will contain all papers presented at the technical sessions. It will be available for free download by all paid Forum registrants and available for purchase by others.

Publication Bins

Publication bins will be located in the registration area stocked with the May/June 2022 issue of Vertiflite and industry relevant periodicals and literature.

Speaker Ready Room

Speakers may rehearse their presentations in the Speaker Ready Room, from the hours of 7:00 a.m. – 5:00 p.m. on Monday, Tuesday and Wednesday, and from 7:00 a.m. – 3:00 p.m. on Thursday.

VFS Novelty Desk

Past VFS Forum proceedings, as well as VFS shirts, hats, mugs, ties and other new novelty items will be available for purchase at the Novelty Desk located in the VFS Registration area.

Technology Display

Be sure to allocate ample time to visit the Forum 78 Technology Display in the Exhibit Hall. More than 75 companies and organizations will be presenting the latest developments in vertical flight technology and showing the advancements in airframe, propulsion, avionics, systems integration, simulation technology and much more.

To maximize the opportunity to view exhibits, the Exhibit Hall Technical Briefings and social events such as lunches on Tuesday and Wednesday and the Exhibitor/Industry Reception are held in the Exhibit Hall. The technology display is open to all badged registrants. VFS reserves the right to make modest changes to the Exhibit Hall hours without advance notification to exhibitors or registrants.

Exhibitor/Industry Reception

Tuesday, May 10, 2022
5:00 pm – 7:00 pm

All exhibitors and Forum 78 full registrants will automatically receive tickets to this event.

78th Annual Grand Awards Breakfast Banquet

Thursday, May 12, 2022

The Grand Awards Breakfast Banquet will be held on Thursday morning from 7:30 am to 9:30 am. Distinguished guests from government agencies and military branches, as well as the international vertical flight industry, will be among the attendees. This exciting event will honor distinguished award recipients for their achievements. Seats are limited and all Forum registrants must RSVP when they register if they want to receive a ticket; additional tickets for guests may be purchased for $100 as long as they are available.

Exhibit Hall Luncheons

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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<tr>
<td>Tuesday, May 10, 2022</td>
<td>12:00 pm – 1:30 pm</td>
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<tr>
<td>Wednesday May 11, 2022</td>
<td>12:15 pm – 1:45 pm</td>
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The Hutchinson Group
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VFS Staff Members and Volunteers

The following VFS staff members and industry volunteers are here to assist you:

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**Opening General Session & Special Sessions:**
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**Audio Visual Oversight:**
Dr. Cliff Smith and Dr. Anita Tracy

**Forum 78 Scripts & Announcements:**
Dan Gettinger, Director of Communications & Publications, and Vertiflite Managing Editor

**VFS Novelty Desk:**
Alka Rathod, Administrative and IT Assistant

**Registration:**
Randy Johnson, IT Director (Onsite Registrar)
Valerie Sheehan, Director of Membership (Exhibitor Registration, Corporate Membership Contact, Awards POC)

**Betty Chen,** Academic Coordinator (Pre-Forum Registrar and Industry Tour Coordinator)

VFS offers its sincere thanks to the Forum 78 Chairs and Deputy Chairs

Mr. Michael Duffy, Electric Power Systems, Inc: Forum 78 Technical Chair
Dr. Mark D. White, University of Liverpool: Forum 78 Deputy Technical Chair

Dr. Seongkyu Lee, University of California at Davis: Acoustics Session Chair
Dr. James Baeder, University of Maryland: Acoustics Session Deputy Chair

Dr. Mobile Benedict, Texas A&M University: Advanced Vertical Flight Session Chair
Mr. Kit Borden, US Army DEVCOM AvMC: Advanced Vertical Flight Session Deputy Chair

Dr. Mark Calvert, US Army DEVCOM AvMC: Aerodynamics Session Chair
Dr. Manuel Kessler, University of Stuttgart: Aerodynamics Session Deputy Chair

Dr. Joon W. Lim, US Army DEVCOM AvMC: Aircraft Design Session Chair
Dr. Andreas Bernhard, Sikorsky, A Lockheed Martin Company: Aircraft Design Session Deputy Chair

Mr. Harold Tiedeman, Jr., Collins Aerospace: Avionics and Systems Session Chair
Mr. Daniel Cooper, Sikorsky, A Lockheed Martin Company: Avionics and Systems Session Deputy Chair

Mr. Lindley Bark, US Naval Air Warfare Center: Crash Safety Session Chair
Mr. Marv Richards, Safe, Inc.: Crash Safety Session Deputy Chair

Dr. Karen Feigh, Georgia Institute of Technology: Crew Stations Session Chair
Ms. Peggy Hardison, Bell: Crew Stations Session Deputy Chair

Dr. Ramin Modarres, Sikorsky, A Lockheed Martin Company: Dynamics Session Chair
Dr. Jonathan Rogers, Georgia Institute of Technology: Dynamics Session Deputy Chair

Dr. Jayant Sirohi, The University of Texas at Austin: Electric VTOL Session Chair
VFS offers its sincere thanks to the Forum 78 Chairs and Deputy Chairs

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Mr. Ernst Schmidt, German Federal Defense: Handling Qualities Session Deputy Chair

Mr. Dale Pluss, Collins Aerospace: HUMS Session Chair  
Mr. Casey Carter, PeopleTec, Inc.: HUMS Session Deputy Chair

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Mr. Jacques Virasak, Maglev Aero, Inc.: History Session Deputy Chair

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Mr. Jan Goericke, Advanced Rotorcraft Technology, Inc.: Modeling and Simulation Session Deputy Chair

Mr. Scott Swinsick, The Boeing Company: Operations Session Chair

Ms. Danielle Dutcher, US Army: Product Support Systems Technology Session Chair  
Mr. Shaun Stubbs, Boeing Global Services: Product Support Systems Technology Session Deputy Chair

Mr. John Mordosky, The Boeing Company: Propulsion Session Chair  
Ms. Anastasia Kozup, US Army DEVCOM AvMC: Propulsion Session Deputy Chair

Dr. Alexia Payan, Georgia Institute of Technology: Safety Session Chair  
Mr. Paul Inguanti, Sikorsky, A Lockheed Martin Company: Safety Session Deputy Chair

Mr. Larry Pilkington, Columbia Helicopters: Structures and Materials Session Chair  
Mr. Arild Barrett, Sikorsky, A Lockheed Martin Company: Structures and Materials Session Deputy Chair

Mr. James Garman, Sikorsky, A Lockheed Martin Company: Systems Engineering Session Chair  
Mr. Louis Fabre, Airbus: Systems Engineering Session Deputy Chair

Mr. Donald L. Byrne, Jr., The Boeing Company (Ret.): Test and Evaluation Session Chair  
Dr. Berend van der Wall, German Aerospace Center (DLR): Test and Evaluation Session Deputy Chair

Dr. Sandipan Mishra, Rensselaer Polytechnic Institute: Unmanned VTOL Aircraft and Rotorcraft Session Chair  
Prof. Jack Langelaan, Pennsylvania State University: Unmanned VTOL Aircraft and Rotorcraft Session Deputy Chair
As the nation’s leading AS9100-certified electroform manufacturer, GAR Electroforming – an AlphaCoin company – has the capabilities to fabricate the most complex and precise abrasion/erosion guards for the composite blade rotorcraft market. We can produce shapes and accuracies in metal products unmatched by other fabrication methods, creating complex shapes with tight dimensional tolerances and perfectly reproduced surface finishes. With relationships spanning decades, we help customers navigate their most difficult manufacturing challenges and know how to deliver products that meet their stringent specifications.

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Acellent Technologies Inc. .................... Booth 713
www.acellent.com

Acellent Technologies, Inc. is a global leader in the field of Structural Health Monitoring and Management (SHM) with over two decades of providing innovative solutions and systems for structural health monitoring. We design, manufacture, and support our SMART Layer Technology-based SHM systems to monitor the health and condition of diverse structures, ranging from aircraft, spacecraft, and rotorcrafts to pipelines, bridges, wind turbines, and automobiles. Our products are able to translate the condition of aging, degrading, and failing structures to an easy-to-understand metric on the health of the structure. Welcome to the age of Smarter Structures!

Acellent will showcase our State-of-the-art SHM systems for active damage detection and impact damage detection that can be used to increase safety in both military and commercial helicopters, fixed-wing aircraft, unmanned systems and various other platforms. We will also showcase our latest DARTTS system that integrates impact detection with active damage scanning and trajectory estimation to inform the pilot in real-time when an impact has occurred, the damage size, and trajectory of the impact through an object.

Advanced Rotorcraft Technology, Inc. ......... Booth 217
www.flightlab.com

ART is an aerospace consulting firm specializing in rotorcraft engineering solutions and simulation. Products include the FLIGHTLAB Development System, a simulation modeling and analysis tool; VVPM, a high fidelity rotor/wing wake modeling tool; and the FLIGHTLAB Run-time System, a distributed run-time environment for interfacing FLIGHTLAB models to simulator systems. ART offers consulting services including simulation model development and integration for engineering and research labs, full flight training devices, and simulators; accident investigation; and support for the design and development of rotorcraft and commercial multi-rotor electric vertical takeoff and landing (eVTOL) advanced air mobility (AAM) aircraft systems. ART has worked with the U.S. Army to develop the Rotorcraft Comprehensive Analysis System (RCAS) and provides ongoing support and enhancement of RCAS under an Army Cooperative Research and Development Agreement (CRADA). ART also provides a graphical interface to RCAS (GRCAS) as a commercial product. ART is supporting development of the next generation of rotorcraft and eVTOL designs using RCAS and GRCAS.

Advanced Torque Products. .................... Booth 626
www.advancedtorque.com

Advanced Torque Products (ATP), an ISO9001 certified company, proudly supports the aerospace industry with torque tools for both assembly and maintenance. Our line of Digital Torque Multipliers has an industry leading accuracy of +/- 0.4% and +/- 1% of total capacity, and is easy to use, durable, and interchangeable. ATP offers an extensive range of torque tools, including click-out and clutch-out wrenches, socket wrenches, torque checkers and rotary load cells.

AERISTO .................................................. Booth 1021
www.aeristo.com

Since 1991, AERISTO has been supplying the aviation industry with the finest technical leathers in the industry — formulated in the tanning process to meet all FAA/EASA regulations. AERISTO is based in the heart of the Dallas / Ft. Worth metroplex and houses one of the world’s largest inventories of aviation specific leathers, ready to ship the same day as order placement. AERISTO also operates a FAA authorized repair station focusing on enhanced customization options for interior applications. These services include custom pattern development specific to seat prototypes, along with custom leather and color development by our own in-house design team. Further in-house customization services include leather quilting, perforating, embossing, embroidery, laser etching, printing, etc.

Airbus .................................................. Booth 103
www.airbus.com

Airbus pioneers sustainable aerospace for a safe and united world. The company constantly innovates to provide efficient and technologically-advanced solutions in aerospace, defence, and connected services. Airbus Helicopters is the world’s number one helicopter manufacturer. The company’s mission is to provide the most efficient civil and military helicopter solutions to its customers who serve, protect and save lives, and safely carry passengers in highly demanding environments.

AlphaCoin.................................................. Booth 913
www.alphacoinllc.com

AlphaCoin, LLC, headquartered in Danbury, Connecticut, with two operating facilities in Connecticut (Connecticut Coining, GAR Electroforming) and one in New York (Gasser), offers a portfolio of high precision metal forming capabilities to aerospace, defense and medical imaging companies, providing drawn, electroformed, machined, ground, polished and welded components and assemblies. The company serves
the global aerospace industry, including original equipment manufacturers (OEMs) and Tier 1 and 2/3 suppliers. More information about AlphaCoin can be found on the company’s website at www.AlphaCoinLLC.com.

**Alpine Advanced Materials** .......................... **Booth 924**  
www.alpineadvancedmaterials.com

Alpine Advanced Materials is a leading expert in the design, manufacturing and supply of purpose-built parts for a variety of industries including defense, aviation, recreation, space and emerging transportation including eVTOL and UAVs. Offering services from initial concept to mass production, Alpine is a one-stop shop that produces high-performance components using innovative materials such as its flagship HX5® nanocomposite material, a lightweight alternative to aluminum engineered to withstand the harshest environments on Earth.

**American Helicopter Museum & Education Center** .......................... **Booth 1017**  
americanhelicopter.museum

The American Helicopter Museum & Education Center’s mission is to preserve rotary-wing aviation history, educate society on helicopters and their life-saving missions and inspire future generations of engineers, pilots, mechanics and scientists. We collect, preserve and exhibit rotorcraft and related artifacts and documents, and conduct educational programs and events designed to teach the principles of flight, celebrate the pioneers of aviation and inspire future generations of engineers, scientists, innovators, pilots and inventors! The museum is available for rent for corporate and family functions. It is located in West Chester, Pennsylvania. Learn more at www.americanhelicopter.museum.

**BAE Systems** .......................... **Booth 113**  
www.baesystems.com

BAE Systems, Inc. and its 33,000 people are part of a global defense, aerospace and security company with 87,800 employees worldwide. We deliver products and services for air, land, sea and space, as well as advanced electronics, security, information technology solutions, and customer support and services. Our dedication shows in everything we create and deliver — from advanced electronic systems to cyber operations and intelligence analysis, from combat vehicles to naval weapons, and from ship maintenance and modernization to vehicle upgrades and services. We push the limits of possibility to provide a critical advantage to our customers where it counts.

**Baldwin Safety & Compliance** .......................... **Booth 624**  
www.BaldwinSMS.com

Since 2004, Baldwin Safety & Compliance, the leader in safety management, has supported transportation organizations by crafting scalable and intuitive safety systems that are designed specifically for their operations and result in positive safety cultures. Supported by a team of experienced and credentialed aviation safety experts available 24/7, Baldwin supports all facets of transportation (commercial/ non-commercial, medical transport, DOD, FBOs, MROs, OEMs, UAS, firefighting, ground handling, ground transport vehicles, et al). For more information, visit www.BaldwinSMS.com or call 1-888-222-1212.

**Bell** .......................... **Booth 303**  
www.bellflight.com

Thinking above and beyond is what we do. For more than 85 years, we’ve been re-imagining the experience of flight — and where it can take us. We are pioneers. We were the first to break the sound barrier and to certify a commercial helicopter. We were a part of NASA’s first lunar mission and brought advanced tiltrotor systems to market. Today, we’re defining the future of advanced air mobility. Headquartered in Fort Worth, Texas — as a wholly-owned subsidiary of Textron, Inc. — we have strategic locations around the globe. And with nearly one quarter of our workforce having served, helping our military achieve their missions is a passion of ours. Above all, our breakthrough innovations deliver exceptional experiences to our customers. Efficiently. Reliably. And always, with safety at the forefront.

**The Boeing Company** .......................... **Booth 403**  
www.boeing.com

Boeing is the world’s largest aerospace company and leading manufacturer of commercial jetliners and defense, space and security systems. A top U.S. exporter, the company supports airlines and U.S. and allied government customers in 150 countries. Boeing products and services include commercial and military aircraft, satellites, weapons, C4ISR, electronic and defense systems, launch systems, and performance-based logistics and training. Boeing has a long tradition of aerospace innovation. Its broad range of capabilities includes creating new, more efficient members of its commercial airplane family, creating advanced technology solutions for military customers and integrating aircraft, defense systems and warfighters through network-enabled solutions.
Forum 78 Exhibitor Descriptions
May 10–12, 2022 • Fort Worth, Texas, USA • Exhibit Hall A & B

Collins Aerospace ......................... Booth 617
www.collinsaerospace.com

Collins Aerospace, a Raytheon Technologies business, is a leader in technologically advanced and intelligent solutions for the global aerospace and defense industry. Collins Aerospace has the extensive capabilities, comprehensive portfolio and broad expertise to solve customers’ toughest challenges and to meet the demands of a rapidly evolving global market. Come visit us at Booth 617 where we are showcasing our Rotorcraft Drive Systems, Perigon Vehicle Management Computer, HUMS Diagnostic Systems and Aerostructures Products. For more information, visit CollinsAerospace.com.

CeroBear GmbH .......................... Booth 820
www.cerobear.com

CeroBear supplies the vertical flight industry with advanced, custom-engineered, and build-to-print ball bearings (pure thrust, DGBB, ACBB), and roller bearings (pure thrust, cylindrical, spherical, tapered, needle, geared outer ring) in all-metal and hybrid-ceramic versions. CeroBear serves numerous vertical flight programs focusing on transmissions, gearboxes, drive train, and accessory applications with system-integrated, light-weight, long-life bearing design. Delivery is 16-20 weeks or less. Contact tony.tagliaalvare@cerobear.com

Calspan Systems Corporation .............. Booth 520
www.calspan.com

Calspan Systems Corporation is an industry leader in the engineering and manufacture of complex aerospace hardware and prototype systems for ground test and flight applications. The company has four primary business areas: Test Equipment and Systems with prototype and test hardware (rotary wing aircraft, fixed wing aircraft, and missiles); Force Measurement Systems (design and fabrication of precision balances for wind tunnel testing); Propulsion Systems with test rigs and components (fans, compressors, turbines and combustors); and Marine Systems (wide variety of prototype hardware). In composite materials, Calspan Systems Corp. develops and implements unique fabrication methodologies such as core forming and machining, as well as the fabrication of complex composite structures. The company continues to be a worldwide leader in the development of wind tunnel helicopter and VTOL systems, including whirl towers, rotor test systems, wind tunnel models and wind tunnel fan blades. Additionally, the company specializes in the design, manufacture and instrumentation of components such as rotor blades and aircraft structures, as well as precision machined metal components.

Continuum Dynamics, Inc. .............. Booth 413
www.continuum-dynamics.com

Continuum Dynamics, Inc. (CDI) has been providing high-quality R&D, licensable computer software, and analysis services to government and industry since 1979. CDI supports a wide range of vertical flight applications, including rotor/prop aerodynamics, dynamics and design; full aircraft interactional aerodynamics; advanced aerodynamic models for piloted flight simulations and trainers; noise prediction and reduction; brownout prediction and mitigation; vortex wake hazard prediction; stores and countermeasures release modeling; shipboard operations, and on-blade sensing and control. CDI is a leader in the analysis and design of distributed electric propulsion (DEP) and eVTOL aircraft, and is actively collaborating with numerous eVTOL advanced air mobility (AAM) vehicle developers and NASA. CDI uses and markets three primary software suites for analyzing vertical flight aircraft: the CHARM comprehensive VTOL and eVTOL aircraft analysis, including a real-time free-wake module for piloted rotorcraft flight simulations and trainers; the CGE adaptive grid URANS CFD solver with automatic grid generation; and the VTM/VorTran-M family of grid-based computational fluid dynamics (CFD)-based solvers. CDI also offers a wide variety of analysis and design services employing tools such as FUN3D, OVERFLOW and ANSYS, including hybrid coupling with CHARM and VorTran-M modules to reduce calculation times.

Crane Aerospace & Electronics .......... Booth 513
www.cranearc.com

Crane Aerospace & Electronics delivers mission-critical and innovative components, systems, and services for commercial aircraft, defense, and space markets. Products and services are organized into six integrated solutions:
Continuum Dynamics, Inc.
Specialists in eVTOL Aircraft Analysis and Design
Aerodynamics • Acoustics • Flight Dynamics • Flight Control • Flight Simulation
(www.continuum-dynamics.com)

If you can draw it, we can model it!
CDI’s staff has over 35 years of experience modeling VTOL aircraft for NASA, DoD, & industry
Our CHARM software is in use by dozens of eVTOL and VTOL aircraft developers worldwide
Electrical Power Solutions, Fluid Management, Landing Systems, Microwave Solutions, Sensing Components & Systems, and Cabin Systems. Crane, a trusted partner in powering next-generation, more electric, hybrid–electric, and all-electric aircraft. We’re focused on developing solutions that enable both traditional and disruptive technologies.

**Damping Technologies, Inc.**

Damping Technologies, Inc. (DTI) designs and manufactures premier noise and vibration control solutions and acoustic barrier materials. DTI can help mitigate vibration that leads to high cycle fatigue cracking or unacceptable cabin noise environments. We solve resonance vibration issues with application-specific passive damping systems and acoustic products. We utilize advanced computer modeling to predict the benefits of these systems and materials on the structure and verify with quick-turn prototypes and lab tests.

**Daniels Manufacturing Corporation**

Daniels Manufacturing Corporation® (DMC®) is the recognized world-leading crimp tool manufacturer for the aircraft, aerospace, and high-reliability electronic industries. Our products have been used on virtually every defense system, aircraft program, land- or sea-going transport system, and space exploration program for over 70 years. DMC® offers the tools you need for power distribution, avionics, sensors, and infotainment. Whether they are electric or hybrid, lift + cruise, vectored thrust, or wingless, our products ensure the safe and reliable performance of your electrical wire interconnection system.

**DARcorporation**

DARcorporation (Design, Analysis and Research Corporation) is an aeronautical engineering firm located in Lawrence, Kansas, that has been offering aeronautical engineering consulting services, software and books since 1991. DARcorporation works closely with several FAA Designated Engineering Representatives (DERs) whose specialties include mechanical equipment major alteration/major repair, structural major alteration/major repair, mechanical systems and equipment, structures, flammability, etc. Our projects include single and multi-engine propeller and jet powered aircraft, business jets, very light jets (VLJ), kit, LSA and experimental category aircraft, VTOL combat force insertion vehicles, VTOL aircraft, UAVs for civil and military applications, and hybrid air/ground vehicles. Experience in the design, detailed analysis and building of prototypes gives DARcorporation a unique advantage over other companies, since we can go from initial design all the way through full-size prototype manufacturing and testing. The unique tools we developed for design and analysis make DARcorporation the best choice for any new or existing aeronautical project. DARcorporation engineers can advise on what the best materials are for your design and what the best configuration is. We will work with you to design and optimize your aircraft for performance, manufacturability and cost.

**Dayton T. Brown, Inc.**

Dayton T. Brown, Inc. has been synonymous with the pursuit of excellence and customer service for over 70 years. As a leading product lifecycle services provider for the aerospace and defense, government agencies and commercial markets, we work 24/7 for your success. DTB is the largest independent test lab in the U.S. performing a full spectrum of testing and engineering services, including dynamic, environmental, electromagnetic and structural testing. DTB also offers logistics analysis, technical publications, test plan/procedure development and mission systems integration support services. Through communication and teamwork, we are an extension of your engineering team with a thorough understanding of product life cycle needs and customer requirements.

**DDC-I, Inc.**

DDC-I provides DO-178C certifiable software for safety critical avionics. Deos™ is a time and space partitioned RTOS that has been certified to DO-178 Design Assurance Level (DAL) A since 1998 and is flying in over 10,000 aircraft. Developed from day one using DAL A plans and procedures, Deos features hard real-time response, industry standard ARINC-653, FACE 3.1 Safety Extended / Safety Base Profiles, and shared resource partitioning to deliver the highest CPU utilization & performance in the industry. Additionally, Deos’s innovative SafeMC™ and cache partitioning technologies for multi-core processors best addresses the FAA CAST-32A objectives for minimizing and bounding multi-core interference.

**Deloitte Consulting**

Building on more than 175 years of service, our network of member firms spans more than 150 countries and territories. Together, Deloitte’s more than 330,000 people worldwide (over 121,000 US-based personnel) make an impact that
matters. We bring fresh perspectives to help you anticipate disruption, re-imagine the possible, and fulfill your mission promise. From cyber and logistics to visualization and mission analytics, we drive bold and lasting results. Come see us to discover how secure supply chain, digital engineering, model-based technical reviews, and digital collaborative environments are enabling the Future of Vertical Lift (FVL) and eVTOL technologies of the future.

**Drive System Design**  
**Booth 1013**  
www.drivesystemdesign.us

Drive System Design (DSD) specializes in the rapid engineering and development of electrified propulsion systems and associated technologies through decades of experience. It excels in power electronics, electromagnetic and thermal design, while offering unparalleled proficiency in propulsion and actuation systems integration, simulation lead design, efficiency enhancement and development testing. By leveraging this unique combination of expertise and state-of-the-art testing equipment, DSD can swiftly provide innovative and optimized solutions across the design, analysis and control of electrified propulsion and actuation systems.

**East/West Industries, Inc.**  
**Booth 703**  
www.eastwestindustries.com

For over 50 years, East/West has designed and manufactured innovative, cost-effective, high-quality critical systems such as aircraft seats, life support and ground support equipment for the aerospace industry. At VFS Forum 78, East/West is highlighting two of its many innovative product lines — our crash-attenuating seats and our Master Crane®. East/West is a woman-owned small business and is a registered AS 9100 Company.

**Elbit Systems of America**  
**Booth 323**  
www.ElbitAmerica.com

Elbit Systems of America (“Elbit America”) is a leading provider of airborne solutions and a global leader in the design, manufacture and support of core avionics systems for combat vertical lift aircraft around the world. Among these systems are mission and display computers, stores management computers, cockpit displays and helmet mounted displays (HMD). Furthermore, Elbit Systems of America possess the capability to design, develop, test, qualify, manufacture, field and support state of the art vertical lift avionics. For more information, please stop by Booth 323 or visit: www.ElbitAmerica.com.

**Electron Flight**  
**Booth 920**  
www.electronflight.com

Electron Flight is a Texas-based startup developing a simple yet efficient propulsion system for eVTOL aircraft. Our system is intended for distributed electric propulsion concepts and consists of a series of nacelles which can be attached to any aircraft. The unique nacelle design facilitates propeller reorientation and blade pitch changes to accommodate both vertical and horizontal flight modes without the use of actuators or complex mechanisms. This results in a lightweight, simple and robust system which can be applied to anything from small drones to large manned concepts.

**ESI Group**  
**Booth 1009**  
www.esi-group.com/industries/aerospace-defense

Founded in 1973, ESI Group envisions a world where Industry commits to bold outcomes, addressing high stakes concerns — environmental impact, safety and comfort for consumers and workers, adaptable and sustainable business models. ESI provides reliable and customized solutions anchored on predictive physics modeling and virtual prototyping expertise to allow industries to make the right decisions at the right time, while managing their complexity. ESI is present in more than 20 countries and employs 1,200 people around the world.

**Fatigue Technology, Inc.**  
**Booth 420**

Fatigue Technology (FTI) pioneered cold expansion technology more than 50 years ago to enhance the fatigue life in critical aircraft structure. The technology has advanced to encompass solutions for bushing installations, fastener applications, and aerospace fittings and hardware installations. FTI products can improve aircraft structural durability and reduce costs in manufacturing and maintenance flow-time. Our products can be installed in both metal and composite applications. Each application is engineered to optimize our product performance to achieve or exceed customer design goals.

**FCI Aerospace**  
**Booth 814**  
www.FCI Aerospace.com

FCI Aerospace provides flow, level, temperature and pressure measuring solutions for on-board aircraft installations. Recognizing that aircraft and sub-system manufacturers
have diverse and technical measurement and sensing requirements, FCI Aerospace is a world leading manufacturer of commercial off-the-shelf (COTS) and built-to-specification sensors with designs that meet and exceed specifications for performance, reliability and quality. Manufacturers and sub-system suppliers of commercial, business, defense and military aircraft throughout the world have specified and installed FCI sensors with confidence for more than three decades.

**Gastops Ltd. ......................... Booth 813**
**www.gastops.com**

Gastops is the world’s leading provider of intelligent condition monitoring solutions used in aerospace, defense, energy and industrial applications to optimize the availability, performance, and safety of critical assets. We offer peace of mind to our customers with innovative online monitoring sensors, at-line analysis, complex modeling and simulation, world class laboratory testing, engineering, design and MRO services that predict performance to enable proactive operating decisions. Gastops has been providing powerful insights into the condition of critical equipment since 1979.

**FlightSafety International ................. Booth 1014**
**www.flightsafety.com**

FlightSafety International is the world’s premier professional aviation training organization and supplier of flight simulators, visual systems and displays. We provide 1.7 million hours of training annually to aviation professionals at worldwide locations. Training is offered on 135 aircraft models using full flight simulators and other advanced technologies. As the leader in simulator-based helicopter training, we specialize in focused learning programs for airborne law enforcement, parapublic and others that serve the public need.

**G.W. Lisk Company ....................... Booth 116**
**www.gwlisk.com**

G.W. Lisk Company is a global leader in the design and manufacture of engineered solutions including solenoids, solenoid valves, linear and rotary position sensors, motors, electric actuators and flame arrestors. We serve hundreds of customers in diverse markets throughout the world with market-leading solutions enabled by our extensive design, test and manufacturing capabilities.

**Gamma Technologies ..................... Booth 1019**
**gtisoft.com**

Gamma Technologies (GT), a leading multi-physics CAE simulation software provider, develops a suite of integrated solutions that guides and accelerates the engineering transformation of today’s products. The trend toward electrified skies continues to accelerate and simulation solutions continue to evolve to manage the complexity that comes with electric strategies. Stop by our Gamma Technologies’ booth to learn how GT-SUITE can shorten development time for early concept propulsion architecture studies for optimizing range; battery, fuel cell, ICE, and hybrid concepts; maximize product life and performance; and perform real-time capable models for controls validation.

**Genuen, LLC. ........................... Booth 625**
**www.genuen.com**

As the world moves swiftly toward electric aircraft, Genuen partners with leading aerospace organizations to test designs of electric components early with HIL simulation and help them design end products with regulatory compliance, production test and in-service support in mind. We start with strategic planning for regulatory compliance and move to implementation — from Model-in-the-Loop (MIL) through Software-in-the-Loop (SIL) and Hardware-in-the-Loop (HIL) to type and production certification through maintenance and support, Genuen teams can sustain your organization throughout the entire product lifecycle with modular, scalable, maintainable test solutions.

**Georgia Institute of Technology ............ Booth 804**
**www.ae.gatech.edu**

The Georgia Institute of Technology (Georgia Tech) is consistently ranked as the top 10 engineering universities across all engineering and computer science disciplines. The Georgiat Tech Aerospace School has trained vertical lift engineers and performed research in the field since its inception in 1930, earning it the distinction as being a
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Vertical Flight Heritage Site. The Vertical Lift Research Center of Excellence (VLRCOE), now entering its 40th year, includes cutting-edge research and courses at the graduate and undergraduate level. Our VLRCOE is supported by other excellent Georgia Tech initiatives, including the Center for Urban and Regional Air Mobility (CURAM), Institute for Robotics and Intelligent Machines (IRIM), Strategic Energy Institute (SEI), and Manufacturing Institute. As a public university, Georgia Tech’s moderate costs make it a high return on investment for a highly diverse future workforce.

Green Hills Software, Inc. ................. Booth 817
www.ghs.com/integrity-178

For safety-critical avionics, Green Hills Software provides the world’s only operating system to be part of a multicore TSO authorization to DO-178C DAL A and CAST-32A multicore objectives. To aid in multicore certification, the INTEGRITY-178 tuMP safety-critical RTOS includes unique bandwidth allocation and monitoring (BAM) functionality to mitigate multicore interference — not just measure it. That mitigation enables maximum utilization of multicore resources and further consolidation of mix-criticality avionics onto a single multicore processor. INTEGRITY-178 tuMP is certified conformant to the FACE™ Technical Standard 3.0 for safety and security profiles running on Arm, Intel and Power Architectures.

Hexagon ..................................... Booth 714
www.hexagonmi.com/mscsoftware

Hexagon is a global leader in sensor, software and autonomous solutions. Hexagon’s Manufacturing Intelligence division uses data from design and engineering, production and metrology to make manufacturing smarter. Our CAE solutions, developed through the acquisition of the MSC Software portfolio, help engineers accelerate product innovation. For more information, visit www.hexagonmi.com/mscsoftware.

Honeywell .................................. Booth 313
www.honeywell.com/transform

Honeywell is a leading provider of avionics and propulsion systems for urban air mobility vehicles and unmanned aircraft. We provide vehicle management and fly-by-wire systems, detect-and-avoid technologies, miniaturized satellite communications devices, electric motors and controllers, guidance systems, turbogenerators and cooling systems specifically designed for these unique aircraft. Come by our booth and meet our advanced air mobility experts!

Howmet Fastening Systems ............... Booth 914
www.hfs.howmet.com

Howmet Fastening Systems, a business unit of Howmet Aerospace, is a leading worldwide designer and manufacturer of fastening systems, including specialty fasteners, fluid fittings, assembly components, and installation systems for aerospace and industrial applications. Headquartered in Torrance, California, the company has over 4,700 employees at 27 manufacturing and distribution/logistics locations in 10 countries. For more information, visit hfs.howmet.com.

Hutchinson Aerospace .................... Booth 808
www.hutchinson.com

For over 160 years, Hutchinson has improved consumer wellbeing in transport and everyday life by designing innovative solutions for the aerospace, automotive, railroad and energy industries. Hutchinson is a $4.2B company that employs more than 35,000 people at 96 sites and 23 countries. Hutchinson capitalizes on its diversity to maximize creativity, cross functionality and performance. Hutchinson’s aerospace technology encompasses anti-vibration, acoustic and thermal insulation, fluid transfer, sealing and transmission systems. More specifically, Hutchinson’s helicopter products include laminated-elastomeric bearings, viscoelastic and elasto-hydraulic dampers, pylon mounts and more. Each product is optimized for performance, life and reliability in order to achieve a safe and comfortable flight in the harshest environments. Hutchinson’s technology also utilizes active vibration controls systems (AVCS) and Health and Usage Monitoring Systems (HUMS) that further reduce airframe vibrations and maintenance costs. With a strategic approach focusing on the customer, Hutchinson’s expertise is anchored in the determination to create innovative solutions to anticipate tomorrow’s needs. We make it possible.

Inceptr a .................................. Booth 419
www.inceptr.a

Inceptr a supports engineering and manufacturing organizations across a variety of industries with solutions and services to digitally design, simulate, produce and manage their products and processes. Dedicated exclusively to the Dassault Systèmes portfolio of products and complementary solutions, the company combines its best-in-class product offerings with expert services to help customers achieve enhanced productivity and product innovation. Join one of our Forum 78 technical briefings to learn more about Dassault Systèmes’ Reinvent the Sky, an industry-specific software solution to accelerate the product development of VTOL aircraft. With many VTOL aircraft customers and the
most 3DEXPERIENCE implementations in North America by a Dassault Systèmes Platinum Partner, we can help with your product development needs.

**Intercomp.** ........................................... *Booth 1018*
[www.intercomcompany.com](http://www.intercomcompany.com)

Intercomp aircraft platform scales and top-of-jack weighing systems are used to weigh military and commercial aircraft varying in size from small planes and drones to the Airbus A380s. Intercomp customers benefit from our over 40 years of experience designing, manufacturing, installing, and maintaining weighing systems. Our scales are recognized by our customers to be the most robust and reliable aircraft weighing systems currently offered.

**ITPS** ........................................... *Booth 923*
[www.itpscanada.com](http://www.itpscanada.com)

International Test Pilots School (ITPS) Canada is an EASA-accredited test pilot and flight test engineer training organization providing high quality, cost-effective flight test training to air forces and industry globally. We offer UAS/UAM flight test courses dealing with the certification of piloted, remotely piloted and autonomous air vehicles. Flight Test Engineer training is recognized as Part 21 LFTE training requirements and is adapted to the needs of the vertical flight industry.

**Janicki Industries.** .................................. *Booth 918*
[www.janicki.com](http://www.janicki.com)

Janicki Industries is a privately owned, full-service engineering and manufacturing company with facilities in Washington and Utah. With Janicki's history of delivering complex solutions to our aerospace customers, we are vertically integrated to support your program from design, tooling, and prototype manufacturing all the way through to high-rate vehicle production utilizing our expertise in high precision determinate assembly. Additionally, our R&D lab is fully equipped to develop solutions for both our internal processes and developing future needs of the AAM market such as large thermoplastic part fabrication and assembly.

**Jaunt Air Mobility** ................................. *Booth 220*
[www.jauntairmobility.com](http://www.jauntairmobility.com)

Jaunt Air Mobility is a transformative aerospace company headquartered in Dallas, Texas, with design and manufacturing located in Montreal, Canada. Jaunt is building the next generation of eVTOL and hybrid-electric VTOL aircraft for faster, quieter and safer travel over urban areas, moving people and packages. Jaunt is the global leader in developing Slowed-Rotor Compound (SRC) technology. The Jaunt Journey is the world’s first electric aircraft combining helicopter and fixed-wing aircraft flight capabilities. Jaunt has teamed with Tier 1 aviation partners to develop the Journey and work with global operators to provide this new form of travel. Jaunt offers the most operationally efficient aircraft with a zero-carbon footprint.

**Kamatics Corporation.** ............................ *Booth 620*
[www.kamatics.com](http://www.kamatics.com)

With over 50 years of experience, our vast knowledge and understanding of self-lubricating bearings and engineered products enable our team of over 35 design and application engineers to work closely with each customer to develop and implement application-specific solutions. Kamatics’ proprietary KAflex™ flexible shafts and flexible coupling systems are frequently selected for critical rotating applications that demand a level of performance and safety that cannot be achieved with conventional greased coupling systems or standard flex-element couplings.

**L3Harris Technologies** ............................ *Booth 723*
[www.l3harris.com](http://www.l3harris.com)

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers’ mission-critical needs. The company provides advanced defense and commercial technologies across space, air, land, sea and cyber domains. L3Harris has approximately $18B in annual revenue and 47,000 employees, with customers in more than 100 countries.

**LogistiWerx, Inc.** .................................. *Booth 224*
[www.LogistiWerx.com](http://www.LogistiWerx.com)

LogistiWerx is a transformative logistics company operating under the approval by the US Department of Transportation and Federal Motor Carrier Safety Administration. The company provides digitally powered solutions through both its patented software and autonomous hardware, supporting the end-to-end intra-supply chain management. Solutions are easily accessible through the LogistiWerx’ cloud-based Service Catalog for all components of CRM, ERP, and TMS applications for freight forwarders, brokers, shippers, warehouses, carriers, and regulatory agencies. LogistiWerx provides its advanced technology to both current and emerging transformative carrier solutions including traditional, sustainable, and transformative vehicles for land, air, maritime, rail, bike, off-road and walking couriers. In addition to North America, LogistiWerx operates in parts of Africa, India, Thailand and Singapore. For more information, visit [www.logistiwerx.com](http://www.logistiwerx.com).
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**LUFTCAR LLC. ......................... Booth 1026**
www.luftcar.com

LuftCar is a Hydrogen powered, multi mode, ‘Autonomous Air and Road Mobility’ (AARM) eVTOL vehicle that will provide uninterrupted air and road connectivity. The vehicle will have a maximum flight distance of up to 500 miles, and 150 miles road travel, 3000 - 5000 ft flying altitude and 180 mph. max speed. LuftCar will serve as a last mile, door to door cargo vehicle and a low cost regional transport air vehicle. LuftCar will be a versatile warfighter logistics vehicle for US DOD. LuftCar LLC is also developing LuftPad [TM], which is a hydrogen refueling vertiport that will support LuftCar CONOPS. LuftCar LLC is based out of Orlando FL, USA

**M4 Engineering, Inc. .......................... Booth 523**
www.m4-engineering.com

M4 Engineering, Inc. works with inventors, startups, established companies and government agencies to solve “unsolvable” problems typically found in electric-, hybrid- and hydrogen-powered aircraft, eVTOL, AAM/UAM, as well as more conventional aircraft and spacecraft. We help move ideas from concepts to prototypes through design, analysis, optimization and fabrication services. We also develop specialized software using our expertise in multidisciplinary design analysis and optimization (MDAO) and are also a Siemens Digital Industries Software reseller. Our software solutions help our customers and can help you save time and reduce the costs associated with the design, analysis and optimization of high-performance systems and structures.

**MathWorks ......................... Booth 319**
www.mathworks.com

The MATLAB and Simulink product families are fundamental applied math and computational tools at the world’s educational institutions. Adopted by more than 6,500 universities and colleges, MathWorks products accelerate the pace of learning, teaching and research in engineering and science. MathWorks products also help prepare students for careers in industry worldwide, where the tools are widely used for data analysis, mathematical modeling and algorithm development in collaborative research and new product development. Application areas include data analytics, mechatronics, communication systems, image processing, computational finance and computational biology.

**MinebeaMitsumi Aerospace .................. Booth 818**
www.minebeamitsumi-aerospace.com

MinebeaMitsumi Aerospace offers a comprehensive line of bearing products, fasteners, machined parts and other advanced solutions for your most difficult applications.

Whether you need a high quality standard product, a customized assembly or an innovative solution that has never been seen before, we can help you take your project from initial idea to successful launch. With six product brands (NHBB, NMB, CEROBEAR, C&A, Mach Aero and myonic), MinebeaMitsumi Aerospace is uniquely positioned to deliver the transformative performance improvements that tomorrow’s technologies demand. MinebeaMitsumi Aerospace is Bringing Excellence Together.

**Napoleon Engineering Services .......... Booth 710**
www.nesbearings.com

NES manufactures precision aerospace bearings for high reliability applications, including aircraft engines, gearboxes, transmissions, swashplates, tail rotors, actuation systems and support equipment. NES is also the largest independent bearing inspection and testing facility in North America.

**Penn State Vertical Lift Research Center of Excellence .................. Booth 917**
www.vlrcoe.psu.edu

As one of the three US government-funded Vertical Lift Centers of Excellence (VLRCOEs), we work on 6.1 and 6.2 research programs with many government and industry partners. 50 graduate students work on dynamics, aerodynamics, acoustics, flight control and simulation, icing, HUMS, CBM, autonomy and UAS, repair, and advanced design of rotary-wing vehicles. Drivetrain technologies, advanced materials, CFD, safety and sustainment are also among our thrust areas. We have a large VFS student chapter, conduct STEM and educational outreach, and offer a week-long comprehensive rotorcraft short course every August.

**Perkins Aircraft Windows .................. Booth 1020**
www.perkinsaircraft.com

At Perkins Aircraft Windows, we manufacture and repair business, military and eVTOL aircraft windshields, side cockpit, cabin windows and canopies. We manufacture PMA windows for Citation, Cessna 400 series, Challenger, Embraer, Gulfstream, Hawker, King Air and Learjet aircraft, along with various fighter jet canopies and the development of eVTOL platform windows using stretched, cast acrylic and polycarbonate. Perkins has extensive repair capabilities to remove delamination from heated glass windshields and side cockpit windows; our proprietary process has been used successfully for over 25 years on windshields such as the Lear 45, ERJ120/145, Challenger/ CRJ and many more. If you have an interest in a new window manufacturing project, please contact us at sales@perkinsaircraft.com.
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Pratt & Whitney’s turnkey Carbon Offset Service offers customers an efficient, convenient, and cost-effective method of compensating for their carbon emissions. The service is available to all Pratt & Whitney-powered helicopter operators who are enrolled in an Eagle Service™ Plan (ESP™) or a Fleet Management Plan™ (FMP™) maintenance program. Feel good knowing that you are reducing your carbon footprint, while contributing to a more sustainable future. Join us as we ensure a healthier planet, and leave a legacy we can be proud of – together.

LEARN MORE ABOUT OUR CARBON OFFSET SERVICE AT PWC.CA/CARBONOFFSET
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**Pratt & Whitney** ........................................ Booth 223
www.prattwhitney.com

At Pratt & Whitney, we believe that powered flight has transformed — and will continue to transform — the world. It’s an engine for human progress and an instrument to rise above. That’s why we work with an explorer’s heart and a perfectionist’s grit to design, build and service the world’s most advanced and unrelenting aircraft engines. We do this across a diverse portfolio — including Commercial Engines, Military Engines, Business Aviation, General Aviation, Regional Aviation and Helicopter Aviation — and as a way of turning possibilities into realities for our customers. This is our mission, and a challenge to which we rise every day. It’s about more than transporting people reliably to their destinations. It’s about more than providing the care and intelligence to service aircraft engines expertly. It’s about innovating and engineering a new and exciting future for aviation — one in which the full potential of human progress can be unleashed. This is how we at Pratt & Whitney approach our work, and this is why we are inspired to go beyond.

**Qarbon Aerospace** ................................. Booth 603
www.QarbonAerospace.com

Qarbon Aerospace is a premier manufacturer of cutting-edge composite components and assemblies at all levels of complexity, with products installed on the industry’s most advanced commercial and military aircraft. As a U.S.-based company with a global footprint of more than 1,650,000 sq ft of state-of-the-art facilities, Qarbon Aerospace has the capabilities and resources to solve the market’s toughest challenges with Quality Assured. With more than 100 years of experience, we build quality into every fiber, letting your ideas take flight.

**RAMPF Composite Solutions Inc.** .............. Booth 728

RAMPF Composite Solutions is part of the RAMPF group of companies, and provides design engineering, prototyping, and manufacturing services for interior, exterior, structural or non-structural, thermoset carbon composite parts. We are located in a new 74,000 sq ft facility in Burlington, Ontario, Canada, and our sister companies are located in the USA, including: RAMPF Polymer Solutions, RAMPF Tooling Solutions, RAMPF Production Systems and RAMPF Machine Systems. Vacuum Assisted Resin Transfer Molding (VARTM) production methods allow us to offer customers low cost capital investment options. Our design expertise and use of Tailored Fiber Placement machines allow us to produce composite parts with the highest possible strength-to-weight ratios, enabling greater payloads and longer flights. Aerospace is our main industry served, and we are ISO9001, AS9100D, and Canadian Controlled Goods (CCG) certified. We also support other industries such as AAM, UAV, automotive, security & defense, medical and more.

**RDI Technologies, Inc.** ............................... Booth 618
www.rditechnologies.com

RDI Technologies is pioneering the camera as the sensor of the future. Our proprietary Motion Amplification® technology enables users to see and measure motion that is impossible to see with the human eye and could previously only be measured by contacting sensors. All of RDI’s products utilize standard video camera technology in conjunction with patented methods and processing algorithms to extract meaningful data. This technology virtually turns every pixel in the camera’s view into a sensor capable of measuring vibration or motion with sub-pixel accuracy. The results naturally lend themselves to a visualization of the motion and several unique market segments. By turning what used to be complex data into easy-to-understand videos, we enable our users to quickly and safely solve their toughest problems.

**Research in Flight** ................................... Booth 724
www.researchinflight.com

Research in Flight specializes in realistic assessments of airloads for a full complement of air vehicle architectures early in the design process. With a headquarters in Austin, Texas, Research in Flight serves the global aerospace industry at all tier levels, government laboratories, startups, and academia. The flagship tool for Research is FlightStream®, a fully validated aerodynamic analysis tool appropriate for a diversity of solution requirements including high lift, control surfaces, propeller system analysis, acoustic assessments and edgewise flight. FlightStream® is highly efficient computationally and develops a comprehensive assessment of air vehicle aerodynamic behavior in minutes, enabling the rapid maturation of vehicle concepts. FlightStream® is communicative with a diversity of geometry engines, aircraft design tools, finite element solvers and post processors. Learn more about Research in Flight and FlightStream® on the company website at [www.researchinflight.com](http://www.researchinflight.com) or stop by Booth 724.

**Siemens Industry Software, Inc.** .................. Booth 324
www.siemens.com/plm

Siemens Digital Industries Software is driving transformation to enable a digital enterprise where engineering, manufacturing and electronics design meet tomorrow. The Xcelerator portfolio helps companies of all sizes create and leverage digital twins that provide organizations with new insights, opportunities and levels...
of automation to drive innovation. For more information on Siemens Digital Industries Software products and services, visit [www.siemens.com/software](http://www.siemens.com/software) or follow us on LinkedIn, Twitter, Facebook and Instagram. Siemens Digital Industries Software — Where today meets tomorrow.

**Sikorsky, A Lockheed Martin Company** .... Booth 803
[www.lockheedmartin.com](http://www.lockheedmartin.com)

Headquartered in Bethesda, Maryland, Lockheed Martin is a global security and aerospace company that employs approximately 114,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. As a global security and aerospace company, the majority of Lockheed Martin’s business is with the U.S. Department of Defense and U.S. federal government agencies. Sikorsky (a Lockheed Martin Company) provides military and rotary-wing aircraft to all five branches of the U.S. armed forces, along with military services and commercial operators in 40 nations. The remaining portion of Lockheed Martin’s business is comprised of international government and commercial sales of products, services and platforms.

**Spectrum Associates** ................. Booth 613
[www.spectrumct.com](http://www.spectrumct.com)

Spectrum Associates, Inc. is a leader in the design, analysis and manufacture of a wide array of fluid pressure sensors, self-sealing crashworthy breakaway valves, hydraulic actuators, and various fuel system components serving ground and air applications for both commercial and military customers. Established in 1957 as a new product design and development company, Spectrum offers timely, creative alternatives solutions to demanding customer requirements.

**Supernal** .................................. Booth 824
[www.supernal.aero](http://www.supernal.aero)

At Supernal, we envision a scalable, clean energy advanced air mobility (AAM) ecosystem that will redefine how we move, connect and live. Our aim is to connect communities and enable passengers to save time by offering seamlessly integrated intermodal mobility solutions. We stand at the forefront of a transportation revolution — to democratize flight and enable a more sustainable future. Supernal is developing a family of electric air vehicles to connect more people to more places. Our team is diverse in thought and experience, and reflects the communities we wish to serve. Join Supernal and help us make the future.

**Survival Systems International** .......... Booth 314
[www.SSiaerostructures.com](http://www.SSiaerostructures.com)

Embracing a lean and efficient management philosophy SSI Aerostructures is ready to rapidly respond to our customers’ requirements, while staying competitive in cost and delivering superior quality products on time. Our exceptional customer service will provide you with a superior level of care that is focused on building long lasting relationships. As a previous recipient of the VFS Supplier Excellence Award in 2020, we are your solution provider for innovative manufacturing methods and techniques, from rotor blade cores to aircraft assemblies, to meet your quality and customer satisfaction requirements.

**Technology Marketing, Inc.** ............. Booth 609
[www.tmi-slc.com](http://www.tmi-slc.com)

Technology Marketing Inc. (TMI) is a prominent supplier of innovative quality materials, service and technology supporting the advanced composites industry for over 40 years. TMI offers products for tooling materials, composite cutting, mold releases, processing materials, preregs, woven and non-woven reinforcements, shop accessories and Rohacell ® structural foam core, and so much more.

**Texas A&M Engineering Experiment Station** ............ Booth 226
[tees.tamu.edu/research/initiatives/manufacturing.html](http://tees.tamu.edu/research/initiatives/manufacturing.html)

The Texas A&M Engineering Experiment Station (TEES) recognizes the transformation of manufacturing in the United States and supports innovation, technology and research that will chart the path forward. TEES also has several labs, centers and institutes at The Texas A&M University System’s RELLIS campus with capabilities to support existing and emerging markets related to aerospace and defense production. Low-cost attritable aircraft and urban air mobility (UAM) are future manufacturers and supply chains that can greatly benefit from the advanced materials, modeling and simulation, and technology development taking place at Texas A&M. Come meet with our Advanced Vertical Flight Laboratory, the SecureAmerica Institute and our researchers to learn about the interdisciplinary research spanning basic, applied and scale-up experimentation aimed at helping next generation vertical take-off and landing (VTOL) concepts.

**Toray Industries** ......................... Booth 717
[www.uam.toray](http://www.uam.toray)

Since 1926, Toray has been on the cutting edge of advanced materials development and production to support established and emerging industries with superior advanced materials. Toray’s extensive aerospace and high-performance automotive experience, broad portfolio of proven high caliber materials, and comprehensive databases allow us to
partner early in the design phase with AAM manufacturers, providing support and materials guidance from prototype to high volume production and beyond. Toray’s expansive carbon fiber, thermoset and thermoplastic composite portfolio supports structural applications at any production rate. Toray also produces a vast selection of non-structural materials such as textiles for seat fabrics and interior trims, optical fibers for lighting, films for windows and batteries, inks for sensors, resins for motors and cases, and fibers for bearings and bushings. Toray is fully committed to enabling the path from prototype to high-rate production for AAM manufacturers and emerging industries, supported by decades of success in automotive and commercial aviation applications with several partnerships with leading companies worldwide. For more information on Toray’s expansive portfolio of products, visit www.uam.toray.

U.S. Army Futures Command, DEVCOM Army Research Laboratory. ................. Booth 1024
www.arl.army.mil/opencampus

The US Army Combat Capabilities Development Command’s Army Research Laboratory (DEVCOM ARL) is the Army’s corporate research laboratory. DEVCOM ARL is responsible for performing disruptive and Army-unique foundational research and cultivating critically important knowledge and insight that can enable future Army force modernization capabilities. ARL leads the U.S. Army’s basic and exploratory research program in a broad range of technologies to enable the development of future vertical lift vehicle platforms, both manned and unmanned. We transition underpinning technologies to our U.S. Army developmental partners at the DEVCOM Aviation & Missile Center (AvMC), as well as PEO Aviation and the major OEM industrial partners to support the Future Vertical Lift modernization priority. We also actively seek productive collaboration with R&D partners throughout government, industry and academia.

UAM Geomatics, Inc. ....................... Booth 826
www.nexa-uam.com

UAM Geomatics is a spin-off of NEXA Capital Partners, created to focus on NEXA’s groundbreaking Advanced Air Mobility study: Urban Air Mobility 2021-2045: Infrastructure and Global Markets (nexa-uam.com), which has mapped 84 metropolitan areas around the world using ArcGIS to assist with vertiport sitting and flight route planning. For each market — and by year through 2045 — the study forecasts the numbers of vertiports, aircraft and passengers, along with vertiport and UTM CAPEX and OPEX costs, and eventual operator revenues. With our parent company NEXA Advisors, we produce UAM Economic Impact Assessments using Implan and Rims II to determine the thousands of new jobs, millions in tax revenues and billions in overall economic productivity that urban air mobility (UAM) will bring to a state or metropolitan area. We work closely with Crown Consulting, experts in flight route design and vertiport siting, and HMMH, noise analysis experts, to offer our clients a complete package of UAM service offerings. Our many clients include NASA, the Ohio Department of Transportation, the Walton Family Foundation, the Government Accountability Office (GAO), NUAIR, the Utah DOT, the Canadian Advanced Air Mobility (CAAM) Consortium, KPMG, eVTOL aircraft and vertiport developers, helicopter operators, global investment banks and more. Visit our booth for a demo of our interactive forecasting and mapping capabilities.

uAvionix Corporation ..................... Booth 1025
www.uavionix.com

uAvionix was founded with the mission of bringing safety solutions to the unmanned aviation industry in order to aid in the integration of unmanned aircraft systems (UAS) into the national airspace systems (NAS). uAvionix offers low SWaP TSO-certified and uncertified avionics for general aviation (GA), airport surface vehicles and the UAS markets. The team consists of an unparalleled engineering and management team with a unique combination of experience within avionics, surveillance, airport services, UAS aircraft development, radio frequency (RF) and semiconductor industries.

United Electronic Industries ................ Booth 119
www.ueidaq.com

United Electronic Industries (UEI) supplies data acquisition, control, and test system hardware to meet the stringent requirements needed for VTOL industry applications. Whether commercial or military, UEI has rugged and reliable solutions that are deployable in a variety of environments. With flexible 1-12 slot chassis and more than 85 I/O and avionic boards commercial-off-the-shelf (COTS), UEI has the right hardware and I/O to design, simulate, test, verify and deploy your VTOL craft. All our solutions are backed by a 10-year availability guarantee and 3-5 year hardware warranty. Learn more about how we can support your application at www.ueidaq.com.
University of Maryland — Alfred Gessow Rotorcraft Center ........... Booth 517
www.agrc.umd.edu

The Alfred Gessow Rotorcraft Center is a Vertical Lift Research Center of Excellence (VLRLCOE) designated by the U.S. Army, Navy and NASA since 1981. Its unique test facilities include the Glenn Martin 8x11-ft wind tunnel, hover tower, water tank, vacuum and anechoic chambers, and eVTOL, MAV and tiltrotor laboratories. Many high-fidelity comprehensive simulations are developed at the center covering CFD, CSD, handling qualities and design codes, including UMARC, X3D, DYMORE, GARFIELD, HAMSTR, and heliUM. Our students collaborate closely with both industry and government, with one recent example being the next-generation of Mars helicopter blades, whose internal structure was designed exclusively with 3D FEA by UMD students.

Vertical Flight Society ..................... Booth 118
www.vtol.org

Founded in 1943 as the American Helicopter Society, Inc., the Vertical Flight Society is the world’s only international technical society for engineers, scientists and others working to advance vertical flight technology, from traditional rotorcraft to next-generation electric and hybrid-electric powered VTOL aircraft. For over 78 years, the Society has continued to provide opportunities for technical data exchange and dissemination; promote awareness of vertical flight capabilities, challenges and development; and foster interest in vertical flight careers and professional advancement.

West Coast Industries ..................... Booth 614
www.Coldwork.com

West Coast Industries has been providing coldwork tools and engineering services since 1971. We provide fatigue life enhancement services around the world. We are proud to manufacture parts and tools in Seattle, Washington, USA.

wolfSSL .................................. Booth 1023
www.wolfssl.com

The wolfSSL embedded TLS library is a lightweight, portable, C-language-based TLS library targeted at IoT, embedded, and RTOS environments because of its size, speed, and feature set. It works seamlessly in desktop, enterprise, and cloud environments as well. wolfSSL supports industry standards up to the current TLS 1.3, DTLS 1.2, FIPS 140-2 for the wolfCrypt Crypto Module, and complete RTCA DO-178C Level A. wolfCrypt has been listed on the CMVP IUT List for FIPS 140-3! wolfSSL is the first software library on the FIPS 140-3 IUT list for embedded development. We are currently working with our testing lab to get validated as quickly as possible with the new FIPS standard from the NIST.

VFS Calendar of Events

Check out these exciting upcoming vertical flight technical events, and make your plans today to be part of tomorrow’s vertical flight technology!

July 23–24, 2022
Oshkosh, Wisconsin, USA, and virtual
16th Annual Electric Aircraft Symposium (EAS)
EAS discusses the latest in electric aircraft, propulsion systems, energy sources, certification, regional and urban use cases, and the current market opportunities. This hybrid event takes place the weekend before the EAA AirVenture fly in!

Sept. 6–9, 2022
Winterthur, Switzerland
47th European Rotorcraft Forum (ERF)
The European Rotorcraft Forum is one of the premier events in the rotorcraft community’s calendar bringing together manufacturers, research centers, academia, operators and regulatory agencies to discuss advances in research, development, design, manufacturing, testing and operation of rotorcraft.

Sept. 13–14, 2022
Huntsville, Alabama, USA
2022 Development, Qualification & Affordability of Complex Systems Technical Meeting
This meeting will investigate new standards, processes, methods and tools relevant to the qualification and fielding of complex systems applicable to future vertical flight platforms.

Sept. 20–22, 2022
Dayton, Ohio, USA
6th Workshop on eVTOL Infrastructure
This two-day workshop will focus on infrastructure operations and safety as they relate to eVTOL aircraft capabilities and performance. The sessions will include presentations from key players and experts from the industry.

Jan. 24–26, 2023
Mesa, Arizona, USA
10th Biennial Autonomous VTOL Technical Meeting & 10th Annual Electric VTOL Symposium
Call for abstracts: Papers are invited in the areas of autonomy-enabled VTOL aircraft and control station design, electric propulsion, human-system interface, simulation, testing and regulatory solutions. Applications includes civil and military platforms of all sizes, from micro air vehicles to full-scale crewed aircraft, and the full range of autonomy and associated enabling technologies. Abstracts due Sept. 15!

Find out more at www.vtol.org/events
Technical Session-at-a-Glance

**Tues. May 10, 2022**
8:00 am – 12:00 pm
Session Break 9:30 – 10:00 am

**Technical Session A**
Aerodynamics I, Room 201 B&C
Aircraft Design I, Room 202 A&B
Acoustics I, Room 201 A
Crash Safety, Room 202 C&D
eVTOL I, Room 200
Handling Qualities I, Room 204 A&B
Modeling & Simulation I, Room 203 B&C
Product Support, Room 100
Special Sessions, Ballroom A, B, C:
  1. International R&D
  2. Future Vertical Workforce

**Tues. May 10, 2022 @ 1:30 – 3:30 pm: Opening General Session**
Nikolsky Lecture @ 4:00 – 5:00 pm

**Wed. May 11, 2022**
8:00 am – 12:15 pm
Session Break 9:30 – 10:15 am

**Technical Session B**
Aerodynamics II, Ballroom C
Aircraft Design II, Room 202 A&B
Dynamics I, Room 201 A
eVTOL II, Room 200
Handling Qualities II, Room 204 A&B
Modeling & Simulation II, Room 203 B&C
Propulsion I, Room 202 C&D
Unmanned VTOL Aircraft I, Room 201 B&C
Systems Engineering / Avionics & Systems, Room 100
Special Sessions, Ballroom A, B, C:
  3. PEO Aviation MOSA
  4. US Army Programs

**Wed. May 11, 2022 @ 1:45 – 6:00 pm: Session Break 3:15 – 4:00 pm**

**Technical Session C**
Aerodynamics III, Ballroom C
Acoustics II, Room 100
Advanced Vertical Flight I, Room 202 A&B
Crew Stations I, Room 201 A
Dynamics II, Room 202 C&D
Modeling & Simulation III, Room 203 B&C
Safety, Room 200
Structures & Materials I, Room 204 A&B

**Wed. May 11, 2022 @ 3:00 – 3:30 pm: Session Break**

**Wed. May 11, 2022 @ 1:30 pm – 5:30 pm**

**Technical Session D**
Acoustics III, Room 100
Crew Stations II, Room 201 A
HUMS I, Room 202 C&D
Manufacturing & Tech. I, Room 200
Manufacturing & Tech II, Room 202 A&B
Operations, Room 201 A
Test & Evaluation II, Room 202 A&B
Unmanned VTOL Aircraft II, Room 201 B&C

**Wed. May 11, 2022 @ 6:00 pm – 8:00 pm**

**Technical Session E**
Aerodynamics IV, Room 201 B&C
Advanced Vertical Flight II, Room 203 B&C
History, Room 204 A&B
HUMS II, Room 202 B&C
Structures & Materials II, Room 204 A&B
Test & Evaluation I, Room 201 B&C
Unmanned VTOL Aircraft III, Room 201 B&C

**Thurs. May 12, 2022**
10:15 am – 12:15 pm
Session Break 3:00 – 3:30 pm

**Thurs. May 12, 2022 @ 1:30 – 3:30 pm: Opening General Session**
Nikolsky Lecture @ 4:00 – 5:00 pm

**Thurs. May 12, 2022 @ 7:30 – 9:30 am: Grand Awards Breakfast**

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