The International Powered Lift Conference (IPLC) rotates between and is jointly supported by the American Institute of Aeronautics & Astronautics, the Royal Aeronautical Society, SAE International and VFS. This year it is hosted by VFS and integrated into the technical paper tracks with the Aeromechanics Technical Meeting.
### Monday, January 20, 2020: Badge Pick-up Hours: 3:00 pm – 5:00 pm (Gateway Foyer)
- 7:00 am – 9:00 am: Short Course on Electric VTOL Fundamentals, Short Course Badge Pick-up (Donner Foyer)
- 8:00 am – 5:00 pm: Short Course on Electric VTOL Fundamentals, Dr. Anubhav Datta, Dr. Brad Paden, Bob Hess, Dr. James Baeder (Donner Foyer)

### Tuesday, January 21, 2020: Badge Pick-up Hours: 7:00 am – 5:00 pm (Gateway Foyer)
**Tuesday – Thursday:** Exhibits (Bayshore Foyer)

#### Opening Plenary and eVTOL Symposium Online Q&A
Please go to [bit.ly/tvf2020](http://bit.ly/tvf2020) to ask and vote on questions for the speakers during the Opening Plenary and eVTOL Symposium. While you’re there, please take a minute to answer a few survey questions about what part of the industry you’re in, your research priorities, and potential interest in NASA tools and collaboration!

#### Transformative Vertical Flight 2020  Moderator: Colin Theodore, NASA

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>0800 – 0810</td>
<td>Welcome and Introductions, Colin Theodore, NASA, &amp; Mike Hirschberg, VFS</td>
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<tr>
<td>0835 – 0900</td>
<td>Parimal Kopardekar, Director of NASA Aeronautics Research Institute, NASA</td>
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<tr>
<td>0900 – 0930</td>
<td>Mike Romanowski, Aircraft Certification Service (AIR), Director of the Policy &amp; Innovation Division, Federal Aviation Administration (FAA)</td>
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<tr>
<td>0930 – 1000</td>
<td>Nathan Diller, Assistant Director of Aeronautics, White House Office of Science and Technology Policy (OSTP)</td>
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<tr>
<td>1000 – 1030</td>
<td>Networking Break in Exhibits (Bayshore Foyer)</td>
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<tr>
<td>1030 – 1100</td>
<td>Glenn Isbell, Vice President, Rapid Prototyping &amp; Manufacturing Innovation, Bell Flight</td>
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<tr>
<td>1100 – 1130</td>
<td>Rick Mango, F-35 Chief Engineer, Lockheed Martin</td>
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<tr>
<td>1130 – 1200</td>
<td>Mark Moore, Engineering Director of Aviation, Uber</td>
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<tr>
<td>1200 – 1330</td>
<td>Lunch in Exhibits (Bayshore Foyer)</td>
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#### Electric VTOL Symposium (Oak-Fir)  Moderator: Carl Russell, NASA

<table>
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<tr>
<th>Time</th>
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</table>
| 1330 – 1500 | Ride-Sharing Panel  
In a few areas, Urban Air Mobility is already a reality. This session provides insights from operators who are moving urban passengers from place to place within the current airspace system.  
**Moderator:** Carl Russell, NASA  
Kolin Schunck, Lufthansa Innovation Hub  
Brandon Keene, Blade  
Luke Fischer, UberCopter  
Danny Sitnem, HeliJet |
| 1500 – 1530 | Networking Break in Exhibits (Bayshore Foyer) |

#### Electric VTOL Symposium (Oak-Fir)  Moderator: Graham Warwick, Aviation Week

<table>
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<tr>
<th>Time</th>
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| 1530 – 1710 | eVTOL Industry Updates  
The first eVTOL/Urban Air Mobility vehicles are in flight testing – getting the flight characteristics correct, and working out the bugs.  
As more companies announce solutions to this emerging market, they will encounter similar issues and challenges. This session provides valuable information from systems / flight test of various eVTOL platforms configurations.  
**Vahana’s Successful Flight Test Campaign Completion,** Zach Lovering, Vice President of Urban Air Mobility Systems, Airbus A²  
**Eradicating Pilot Error,** Justin Paines, Chief Test Pilot, Joby Aviation  
**Delivering Bulk and Standard-Container Cargo to Impossible Locations,** Ed De Reyes, Chairman and CEO, Sabrewing Aircraft  
**PA890 eVTOL Program Update,** John Piaskeci, President & CEO, Piaskeci Aircraft  
**Certification and event Updates from Europe and China,** Willi Tacke, Flying Pages GmbH |
| 1710 – 1730 | Networking Break in Exhibits (Bayshore Foyer) |
| 1730 – 1830 | Reception in Exhibits (Bayshore Foyer) |

### Wednesday, January 22, 2020: Badge Pick-up Hours: 7:00 am – 5:00 pm (Gateway Foyer)

#### Electric VTOL Symposium (Oak-Fir)  Moderator: Parimal Kopardekar, NASA

<table>
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<tr>
<th>Time</th>
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| 0800 – 1000 | Manufacturing & Lightweighting Opportunities  
Managing the supply chain for eVTOL / UAM will provide unique challenges for most aerospace developers. This along minimizing structural weight to enable longer flight time will be critical to eVTOL success. This session will cover these topics in detail. |
| 0800 – 0830 | Supply Chain Management Considerations for UAM and the Aerospace Ecosystem, Parimal Kopardekar, NASA |
| 0830 – 0840 | Thermoplastics Impact on Scaling eVTOL Production Costs and Rates, Jay Wakenshaw, Toray-TAC |
| 0840 – 0910 | How Lightweight Thermoplastic-Based Solutions for Commercial Aerospace Can Support eVTOL, Gilles Larroque, Victrex |
| 0910 – 0930 | Designing Light Weight Products Faster and Cheaper — History and Future, Dhiren Marjadi, Altair |
| 1000 – 1030 | Networking Break in Exhibits (Bayshore Foyer) |
| 1030 – 1050 | UAM and Composite Materials & Structures, Colleen Pritchett, Hexcel |
| 1050 – 1200 | eVTOL Cargo Delivery Panel  
This session will explore the use of eVTOL vehicles in package delivery and cargo movements.  
**Moderator:** Ajay Sehgal, KBR  
Yu Ito, Yamato  
Edgar Valdez, UPS  
David Merrill, Elroy Air  
Nicholas Brodeur, Bell APT |
| 1200 – 1330 | Lunch in Exhibits (Bayshore Foyer) |
### Electric VTOL Symposium (Oak-Fir) Moderator: Justin Littell, NASA

**Crashworthiness Panel**
This session will discuss the market barriers for the eVTOL vehicles as the specifically pertain to crashworthiness and occupant protection. These market barriers include onboard safety systems, public perception, and certification obstacles.

<table>
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<th>Time</th>
<th>Panelists</th>
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</table>
| 1330 – 1500 | Justin Littell, NASA  
Ryan Naru, Uber  
Joseph Pelletiere, FAA  
Michael Smith, Bell  
Martin Peryea, Jaunt |

**Networking Break in Exhibits (Bayshore Foyer)**

### Electric VTOL Symposium (Oak-Fir) Moderator: Jim Sherman, VFS

**eVTOL Systems Development**
Modeling, simulation and utilization of technologies from other markets will be critical for aircraft designers’ success. This session will explore how established providers are addressing the eVTOL market.

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<th>Time</th>
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| 1530 – 1700 | Anubhav Datta, eVTOL TC Chair  
David Alexander, SAE International  
Christine DeJong, General Aviation Manufacturers Association (GAMA)  
Ajay Sehgal, KBR  
Anna Dietrich, Community Air Mobility Initiative (CAMI) |

**Advances in UAM Technologies, Larry Surace, Honeywell**

**Electrification of Aviation, Bob Hess, BAE Systems**

**Flight For All, Mark Blackwell, SkyDrive**

**eVTOL Aircraft Aerodynamic Analysis Tools, Dan Wachspress, Continuum Dynamics**

**eVTOL High Fidelity Simulation for Design, Ronald du Val, Advanced Rotorcraft Technology, Inc.**

### Wednesday, January 22, 2020: Reception and Banquet 6:00 pm – 7:30 pm (Bayshore Ballroom)

**AIAA Newbold Award**, presented by Dr. Geoffrey Jarem, US Army ADD  
Banquet Keynote Address, JoeBen Bevirit, Founder, Joby Aviation

### Thursday, January 23, 2020: Badge Pick-up Hours: 7:00 am – 4:00 pm (Gateway Foyer)

### Electric VTOL Symposium (Oak-Fir) Moderator: Anubhav Datta, University of Maryland, VFS eVTOL TC Chair

**Association Cooperative Activities Panel**
Various industry associations and societies are working toward achieving the goal of the UAM / eVTOL market introduction. This session will also summarize the association activities and their responsibilities.

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| 0800 – 0900 | Anubhav Datta, eVTOL TC Chair  
David Alexander, SAE International  
Christine DeJong, General Aviation Manufacturers Association (GAMA)  
Ajay Sehgal, KBR  
Anna Dietrich, Community Air Mobility Initiative (CAMI) |

**Toward Consensus on Community Noise Metrics for UAM, David Josephson, Josephson Engineering**

**Hazards and Failure Mode Analysis of Emerging (Hybrid) Electric Propulsion Systems, Patrick Darmstadt, Boeing**

### Electric VTOL Symposium (Oak-Fir) Moderator: Rex Alexander, Five-Alpha

**Infrastructure**
Experts in developing aviation infrastructure will explore and provide guidance on the requirements for eVTOL / UAM.

<table>
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<th>Time</th>
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</table>
| 1030 – 1200 | Powered for Take Off, Jagmeet Khangura, Black & Veatch  
Economics of and Investing in eVTOL Panel, Investing professionals will discuss strategies for investing in eVTOL / UAM.  
Innovations Needed for VTOL, Justin Littell, NASA |

**Power Storage: An Evaluation of Storage Requirements for VTOL Power Options, Teresa Peterson, Gannett Fleming**

**Designing Safe, Performance-based Infrastructure, Rex Alexander, 5-Alpha**

**Vertiports. It’s Airport Operations, Jim, But Not As We Know It, Darrell Swanson, Swanson Aviation Consultancy**

**Lunch in Exhibits (Bayshore Foyer)**

### Electric VTOL Symposium (Oak-Fir) Moderator: Parimal Kopaedar, NASA

**Economics of and Investing in eVTOL Panel**
Investing professionals will discuss strategies for investing in eVTOL / UAM.

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<th>Time</th>
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</table>
| 1315 – 1445 | Parimal Kopardekar, NASA  
Michael Dyment, NEXA  
Peter Shannon, Radius  
Sudip Mukhopadhy, Business Finland  
Kirsten Bartok, AirFinance |

** Networking Break in Exhibits (Bayshore Foyer)**

### Electric VTOL Symposium (Oak-Fir) Moderator: Carl Russell, NASA

**eVTOL Competitions and Funding Opportunities**
Many opportunities exist to advance eVTOL and UAM and this session will provide insight on how.

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| 1515 – 1700 | eVTOL Competitions and Funding Opportunities  
VFS / NASA TVF & UAM Working Groups  
WG2 – Yolanka Wulf, CAMI  
WG3 – Seren Weber, University of Hawaii  
UAM WGs – Michael Tsairides, NASA |

**Racing for the Advancement of eVTOL, Matt Pearson, Airspeeder**

**UAM Grand Challenge, Starr Ginn, NASA**


**VFS / NASA TVF & UAM Working Groups**

**Event Wrap-up, Carl Russell, NASA, and Jim Sherman, VFS**
### Aeromechanics and IPLC Technical Paper Presentations

**Tuesday, January 21, 2020: Badge Pick-up Hours: 7:00 am – 5:00 pm (Gateway Foyer)**

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<th>Time</th>
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<tr>
<td>(1330 – 1400)</td>
<td><strong>The Influence of Laminar-Turbulent Transition on Rotor Performance at Low Reynolds Numbers</strong> by Finbar Argus, University of Auckland; Geoffrey Ament and Witold Koning, NASA Ames Research Center</td>
</tr>
<tr>
<td>(1400 – 1430)</td>
<td><strong>Recent Efforts Enabling Future Mars Rotorcraft Missions</strong> by Shannah Withrow-Maser, NASA Ames Research Center; Witold Koning, Winnie Kuang, Science and Technology Corp.; and Wayne Johnson, NASA Ames Research Center</td>
</tr>
<tr>
<td>(1430 – 1500)</td>
<td><strong>An Experimental Investigation on the Dynamic Ice Accretion Process and Its Effects on the Aeromechanic Performance of Drive Propellers</strong> by Zhe Ning, Nianhong Han, Yang Liu, and Hui Hu, Iowa State University</td>
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**Networking Break in Exhibits (Bayshore Foyer)**

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<tr>
<td>(1500 – 1530)</td>
<td><strong>Aeromechanics – Aerodynamics 2 (Cedar)</strong> by Dr. Ram JanakRam, Boeing</td>
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<tr>
<td>(1530 – 1600)</td>
<td><strong>Vertical Climb Testing of a Full-Scale Proprotor on the Tiltrotor Test Rig</strong> by C.W. Acree, Jr., NASA Ames Research Center</td>
</tr>
<tr>
<td>(1600 – 1630)</td>
<td><strong>Impact of Configuration Changes on the Wake Breakdown of Hovering Rotors</strong> by Jennifer N. Abras and Nathanael Harihar, HPCMP CREATE™ Quality Assurance Group</td>
</tr>
<tr>
<td>(1630 – 1700)</td>
<td><strong>Aerodynamic Analysis of an Asymmetric Lift-Offset Compound Helicopter in Forward Flight using the Mercury CFD Framework</strong> by Jan-Arun Faust, Technical University of Munich; Yong Su Jung, James Baeder, University of Maryland; and Jürgen Raulder, Technical University of Munich</td>
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<tr>
<td>(0800 – 0830)</td>
<td><strong>A Quiet Helicopter for Air Taxi Operations</strong> by Wayne Johnson, NASA Ames Research Center</td>
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<tr>
<td>(0830 – 0900)</td>
<td><strong>Parametric Aeroacoustic Analysis of Two Fans in Hover Flight Condition</strong> by Bernardo Pacini, University of Michigan; Giovanni Droandi and Monica Syal, A³ by Airbus</td>
</tr>
<tr>
<td>(0900 – 0930)</td>
<td><strong>Acoustic Testing of the Bell 699 Rotor in the National Full-Scale Aerodynamics Complex 40- by 80- Foot Wind Tunnel in Conversion and Airplane Configuration</strong> by Kelly Sheltz, Wichita State University/NASA Langley Research Center; and Natasha Schatzman, NASA Ames Research Center</td>
</tr>
<tr>
<td>(0930 – 1000)</td>
<td><strong>Development of Instrumentation and Methods for Time-Domain Measurement of Rotor-Type Noise Sources in a Hard Wall Wind Tunnel</strong> by Nathaniel Burnside and William C. Horne, NASA Ames Research Center</td>
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**Networking Break in Exhibits (Bayshore Foyer)**

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<tr>
<td>(1030 – 1100)</td>
<td><strong>Predictive Acoustic Modeling of Open Propellers Using Analytical Tools and RANS Simulations</strong> by Dominic Lallier-Daniels, F. Bolduc-Teasdale, S. Moreau, M. Lévesque-Leduc, D. Rancourt, Optis Consultants; P. Guillenot-Simon, Université de Sherbrooke; and M. Sanjoê, École de Technologie Supérieure</td>
</tr>
<tr>
<td>(1100 – 1130)</td>
<td><strong>Aeroacoustic Predictions of the Free-Wake, Vortex Particle Method, and Computational Fluid Dynamics for a Coaxial Rotor System</strong> by Kalki Sharma, Kenneth S. Brentner, Penn State University; Zhongqi Jia, Seongkyu Lee, Univ. of California, Davis; and Praveen J. Guruswamy, US Army CCDC ARL</td>
</tr>
<tr>
<td>(1130 – 1200)</td>
<td><strong>Investigation of Propeller-Wing Interaction Noise and the Potential Contribution to eVTOL Noise</strong> by Bhaskar Mukherjee and Kenneth S. Brentner, Penn State University</td>
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**Lunch in Exhibits (Bayshore Foyer)**

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<tr>
<td>(1200 – 1330)</td>
<td><strong>Rapid Vehicle Aerodynamic Modeling for Stability and Control Analysis</strong> by Javier E. Pascasio, Amanda Grubb, and Marilyn J. Smith, Georgia Institute of Technology</td>
</tr>
<tr>
<td>(1330 – 1400)</td>
<td><strong>An Integrated Simulation Tool for e-VTOL Aeromechanics and Flight Control Analysis</strong> by Jean-Pierre Theron, Joseph F. Horn, Penn State University; and Daniel A. Wachspies, Continuum Dynamics</td>
</tr>
<tr>
<td>(1430 – 1500)</td>
<td><strong>Computational Studies to Understand Flight Stability and Control of a Robotic Hummingbird</strong> by Xuan Yang and Mobile Benedict, Texas A&amp;M University</td>
</tr>
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**Aeromechanics – Aerodynamics 1 (Cedar)** by Prof. Jim Gregory, Ohio State University

**Chair:**

- *Aeromechanics – Aerodynamics 1 (Cedar)*
  - Prof. Jim Gregory, Ohio State University
- *Aeromechanics – Aerodynamics and Flight Dynamics (Pine)*
  - Dr. Chris Brackbill, US Army CCDC AED

**Aeromechanics – Aerodynamics 2 (Cedar)** by Dr. Ram JanakRam, Boeing

**Chair:**

- *Aeromechanics – Aerodynamics 2 (Cedar)*
  - Dr. Ram JanakRam, Boeing
- *Aeromechanics – Aeroelasticity (Pine)*
  - Mr. Tom Parham, Jr., Bell

**Aeromechanics – Acoustics 1 (Cedar)** by Prof. Ken Brenner, Penn State University

**Chair:**

- *Aeromechanics – Acoustics 1 (Cedar)*
  - Prof. Ken Brenner, Penn State University
- *IPLC – UAM Design and Configurations (Pine)*
  - Chair: Dr. Peter Bi, NSWC Carderock

**Aeromechanics – Acoustics 2 (Cedar)** by Prof. Eric Greenwood, Penn State University

**Chair:**

- *Aeromechanics – Acoustics 2 (Cedar)*
  - Prof. Eric Greenwood, Penn State University
- *IPLC – eVTOL Performance (Pine)*
  - Chair: Prof. Jayant Sirohi, University of Texas, Austin

**IPLC – UAM Design and Configurations (Pine)**

**Chair:**

- *IPLC – UAM Design and Configurations (Pine)*
  - Chair: Dr. Peter Bi, NSWC Carderock
- *IPLC – eVTOL Performance (Pine)*
  - Chair: Prof. Jayant Sirohi, University of Texas, Austin

**IPLC – eVTOL Performance (Pine)**

**Chair:**

- *IPLC – eVTOL Performance (Pine)*
  - Chair: Prof. Jayant Sirohi, University of Texas, Austin
Aeromechanics – Interactional Aerodynamics 1 (Cedar)
Chair: Mr. Marvin (Marty) Moulton, US Army CCDC AvMC ADD
(1330 – 1400) Simulation of Airfoil Interaction in Co-Rotating Coaxial Rotors with Uncertainty Quantification
Miranda Costenoble, James Baeder, University of Maryland; Rajneesh Singh and Phurwah Tiwana, US Army CCDC ARL
The Realization of the High Specific Power ACTS Motor for VTOL and Other Airborne Applications
Oved Zucker, Polaris Boyd, NASA Langley Research Center
(1400 – 1430) Impact of Vortex-Wake Interference on Rotor Trim
Berend G. van der Wall, German Aerospace Center
Characterization and Modeling of Brushless DC Motors and Electronic Speed Controllers with a Dynamometer
Robert Brown, Anubhav Datta, and Inderjit Chopra, University of Maryland
(1430 – 1500) Modeling and Analysis of eVTOL Air Vehicle Interactional Aerodynamics and Mission Performance
Jeewoong Kim, Chengjian He, and Jan Goerckie, Advanced Rotorcraft Technology
Fundamental Studies of Variable-Voltage Hybrid-Electric Powertrains
Brent Mills and Anubhav Datta, University of Maryland
(1500 – 1530) Networking Break in Exhibits (Bayshore Foyer)

Aeromechanics – Cycloidal Rotors and Test Bed Design (Cedar)
Chair: Prof. Inderjit Chopra, University of Maryland
(1530 – 1600) Mechanical Design of the Multiorotor Test Bed
Sarah Conley and Carl Russell, NASA Ames Research Center
Impact of Lithium Sulfur Batteries on Electric VTOL Aircraft
Emily Fisler and Anubhav Datta, University of Maryland
(1600 – 1630) Understanding Upward Scalability of Cycloidal Rotors for Large-Scale UAS Applications
Atanu Halder and Mobile Benedict, Texas A&M University
Acoustic Analysis of Urban Air Mobility Quadrotor Aircraft
Zhongqi Jia and Seongkyu Lee, University of California, Davis
(1630 – 1700) Prototype of Cycloidal Rotor with Elliptical Trajectory of Blade
Alexander Balitsky and Mykola Mallar
UQC-Quetly: A New Program to Predict Multi-Rotor eVTOL Broadband Noise
Sicheng Li and Seongkyu Lee, University of California, Davis
(1800 – 1930) Reception and Banquet (Oak-Fir-Pine)
Thursday, January 23, 2020: Badge Pick-up Hours: 7:00 am – 4:00 pm (Gateway Foyer)

Aeromechanics – Performance (Cedar)
Chair: Dr. Juergen Rauleider, Technical University of Munich
(0800 – 0830) Forward Flight Rotor Performance at Martian Atmospheric Densities and Sensitivity to Low Reynolds Numbers
Brenda Natalia Perez Perez, Science and Technology Corp.
An Approximate Finite State Dynamic Wake Model for Predictions of Inflow Below the Rotor
Feyyaz Guner, J.V.R. Prasad, Georgia Institute of Technology; and David A. Peters, Washington University in St. Louis
(0830 – 0900) Investigation of Stacked Rotor Performance in Hover Part 1: Experimental Measurements
Chloe Johnson, Jayant Sirohi, University of Texas at Austin; George Jacobellis, Rajneesh Singh, US Army CCDC ARL; and Rob McDonald, Uber
Coupled Inflow and Structural Dynamics of a Coaxial Rotor with Time Delays and Adjoint Variables Including Multiple Inflow States
Cory Seidel and David Peters, Washington University in St. Louis
(0900 – 0930) Investigation of Stacked Rotor Performance in Hover Part 2: Computational Validation
George Jacobellis, Rajneesh Singh, US Army CCDC ARL; Chloe Johnson, Jayant Sirohi, University of Texas at Austin; and Rob McDonald, Uber
Calibration of Velocity Potential Superposition Inflow Model using Computational Fluid Dynamics Data
Po-Wei Chen, Feyyaz Guner, Lakshmi N. Sankar, J.V.R. Prasad, Georgia Institute of Technology; and George Jacobellis, Rajneesh Singh, and Rob McDonald, Uber
(0930 – 1000) Investigation into Dynamic Calibration and Rotor-Body Interaction
Robert P. Thornburgh, Matthew L. Wilbur, Andrew R. Kreshock, US Army CCDC ARL; and Brenda D. Malovich, NASA Langley Research Center
Experiments and Computations Towards an Improved Understanding and Modeling of the Dynamic Inflow of Rotors in Hover
Stefan Platzer, Jürgen Rauleder, Manfred Hajek, Technical University of Munich; Patrick Mortimer, Palash Jain, and Jayant Sirohi, University of Texas at Austin
(1000 – 1030) Networking Break in Exhibits (Bayshore Foyer)

Aeromechanics – Interactional Aerodynamics 2 (Cedar)
Chair: Dr. Berend van der Wall, German Aerospace Center
(1030 – 1100) An Experimental Study on the Rotor-to-Rotor Interactions of Small Unmanned-Aerial-Vehicle Propellers
Wenwu Zhou, Zhe Ning, and Hui Hu, Iowa State University
Predicting Wake and Structural Loads in RPM Controlled Multiorotor Aircraft
Abhishek Shastray and Anubhav Datta, University of Maryland
(1100 – 1130) Prediction of the Aerodynamic and Acoustic Impact of Propeller-Wing Interaction
Jianhua Zhang, Kenneth S. Brentnert, and Edward C. Smith, Penn State University
Loads Correlation of a Full-Scale Proprotor on the Tiltrotor Test Rig
Sesi Kottapalli, NASA Ames Research Center
(1130 – 1200) Analysis of the Interactional Aerodynamics of the Vahana eVTOL Using a Medium Fidelity Open Source Tool
Davide Montagnani, Matteo Tognoli, Alex Zanotti, Politecnico di Milano; Monica Syal and Giovanni Dronandi, A² by Airbus
Machine Learning Based Aerodynamic Models For Rotor Blades
Daniel Martinez, Science and Technology Corp. (STC); Jay Sitaratam, Parallel Geometric Algorithms; Weslye brewer, US Army Engineer Research and Development Center; Peter Rivera, University of Puerto-Rico; and Dylan Jude, STC
(1200 – 1315) Lunch in Exhibits (Bayshore Foyer)

Aeromechanics – CFD Methods (Cedar)
Chair: Prof. Marilyn Smith, Georgia Institute of Technology
(1315 – 1345) Multiorotor Trim using Loose Aerodynamic Coupling
Austin D. Thai, Boston University; Beatrice Roget, Science and Technology Corp.; Jay Sitaratam, Parallel Geometric Algorithms; and Sheryl M. Grace, Boston University
Influence of Atmospheric Turbulence on Helicopter Elastic Rotor Hub Vibrations
Willem Rex and Manfred Hajek, Technical University of Munich
(1345 – 1415) Assessment of Different CFD Download Strategies with Helios
Andrew Wissink, US Army CCDC AvMC ADD; Vinod Lakshminarayan, Dylan Jude, Science and Technology Corp.; Buvana Jayaraman, US Army CCDC AvMC ADD; and Jayanarayanan Sitaraman, Parallel Geometric Algorithms
Quadcopter Rotor Phasing for Minimization of Aircraft Vibratory Loads
Nicholas Kopyt, Robert Niemiec, and Farhan Gandhi, Rensselaer Polytechnic Institute
(1415 – 1445) Improvements to Automated Strand Meshing Capabilities for Rotary Wing Applications
Vinod Lakshminarayan, Science and Technology Corp., Andrew Wissink, Rohit Jain, US Army CCDC AvMC ADD; and Jayanarayanan Sitaraman, Parallel Geometric Algorithms
Vibration Reduction Simulations for Rotor and Airframe of a Lift-offset Compound Helicopter Using Two Active Vibration Control Techniques
Ye-Lin Lee, Chungnam National University; Do-Hyung Kim, Korea Aerospace Research Institute; Jae-Sang Park and Sung-Boo Hong, Chungnam National Univ.
(1445 – 1515) Networking Break in Exhibits (Bayshore Foyer)
(1515 – 1700) Electric VTOL Symposium continues in Oak-Fir

Thank you for joining us here in San Jose for Transformative Vertical Flight 2020! We hope you learn much this week and translate that to your daily work.

Plan now for the VFS 9th Biennial Autonomous VTOL Technical Meeting and 8th Annual eVTOL Symposium, January 2021 in Mesa, AZ.

Keep up to date with the latest advances in VTOL technology. Our full list of upcoming events is online at www.vtol.org/events
VFS is successful only because of the efforts of our members who dedicate their time, working to advance vertical flight. Many thanks to all our TVF2020 conference organizers, especially:

- **General Meeting Chair**: Dr. Colin Theodore, NASA Ames Research Center
- **Aeromechanics for Advanced Vertical Flight Technical Chair**: Dr. Mark Fulton, US Army CCDC AvMC ADD
- **IPLC Technical Chair**: Dr. Michael Yu, Continuum Dynamics, Inc.
- **7th Annual Electric VTOL Symposium Technical Chair**: Mr. Carl Russell, NASA Ames Research Center