

AHS International

The Vertical Flight Technical Society

Transforming Vertical Flight Technology



Forum 71 May 5-7, 2015
Virginia Beach, VA

Final Program

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Welcome to Forum 71



As the Chair of the Board of Directors of AHS International for 2014–2015, it is my pleasure to welcome you to the 71st Annual Forum & Technology Display! For more than 70 years, the AHS Annual Forum has brought together the best technical minds with the world's leading vertical flight manufacturers and suppliers. This tradition and legacy is still unmatched today by any other event in the world.

Exploring the theme “Transforming Vertical Flight Technology,” Forum 71 features more than 225 technical papers, panel discussions among the leaders of vertical flight manufacturers and top officials of US military rotorcraft programs, and nearly 60 exhibitors showcasing their state-of-the-

art technologies and capabilities. Be sure to take time to explore the Exhibit Hall, packed with exciting advances in vertical flight technology. Coupled with the Grand Awards Banquet, the Nikolsky Lecture, our short courses and workshops, and tours of NASA Langley and Ft. Eustis, the AHS International Annual Forum continues its legacy as the biggest and best vertical flight technology conference in the world.

I encourage you to take advantage of all of the opportunities this week at Forum 71. When you leave here, I hope you will consider ways to give back to the technical community. AHS International is an excellent medium through which to advance your professional understanding and capabilities, as well as advance the future of vertical flight. The more that we support AHS International, the better the Society can support the technical community.

Ed Birtwell
VP/GM Turboshaft Engines
GE Aviation



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AHS gratefully thanks the following companies for their generous support of the 71st Annual Forum and Technology Display.

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Forum 71 Proceedings CD

AVX Aircraft
NASA Langley/Ft. Eustis Tour

GE Aviation
General Session Refreshment Break

Sikorsky Aircraft
Exhibitor/Industry Reception



Forum 71

Final Program

All events will take place at the
Virginia Beach Convention Center
unless otherwise noted.

Sunday, May 3, 2015

9:00 a.m. - 5:00 p.m.	Exhibitor Move-In (Exhibitors Only), <i>Exhibit Hall A/B</i> Exhibitor Registration , <i>Exhibit Hall A/B Pre-function</i>
2:00 p.m. - 5:00 p.m.	Attendee Registration Open , <i>Exhibit Hall A/B Pre-function</i>

Monday, May 4, 2015

6:00 a.m. - 5:00 p.m.	Show Office , <i>Show Office A/B</i> Student Volunteer Office , <i>Suite 3A</i>
7:00 a.m. - 5:00 p.m.	Registration Open (Exhibitors and Registrants), <i>Exhibit Hall A/B Pre-function</i> Speaker Ready Room , <i>Suite 3B</i>
8:00 a.m. - 5:30 p.m.	Exhibitor Move-In (Exhibitors Only), <i>Exhibit Hall A/B</i>
8:00 a.m. - 12 noon	AHS Technical Council Meeting , <i>Suite C3</i>
8:00 a.m. - 3:45 p.m.	NASA Langley / Ft. Eustis Tour (Reservations Required)
9:00 a.m. - 4:00 p.m.	Short Course on Rotorcraft Flight Dynamics Model Identification and Flight Control Design Using CIPHER® and CONDUIT® , <i>Suite 1B</i> Presented by Dr. Mark B. Tischler (Additional registration required) Short Course on Aerodynamics of Helicopter Accidents , <i>Suite 1C</i> Presented by John (Jack) Cress (Additional registration required)
12 noon - 1:30 p.m.	Journal Editors Meeting , <i>Suite C3</i>
1:30 p.m. - 2:30 p.m.	Session Chair Meeting , <i>Suite C3</i>
1:30 p.m. - 4:00 p.m.	Community Noise/Civil Operations Workshops , <i>Suite 3D</i>
2:30 p.m. - 4:00 p.m.	Student Volunteer Meeting , <i>Suite 5A-B</i>
4:00 p.m. - 6:00 p.m.	3rd Annual MAV Student Competition , <i>Ballroom 1</i> <i>Organized by Dr. Jack Langelaan, University of Pennsylvania, Chair of the MAV Competition</i> Eight university teams are competing for \$10,000 in prizes against the challenging rules established by the AHS International Unmanned VTOL Aircraft and Rotorcraft Technical Committee.
4:00 p.m. - 5:00 p.m.	Aerodynamics Technical Committee , <i>Suite 3E</i>



Tuesday, May 5, 2015

6:00 a.m. - 5:00 p.m.	Show Office , <i>Show Office A/B</i> Student Volunteer Office , <i>Suite 3A</i>
7:00 a.m. - 5:00 p.m.	Registration Open , <i>Exhibit Hall A/B Pre-function</i> Speaker Ready Room , <i>Suite 3B</i>

Tuesday, May 5, 2015 (Continued)

8:00 a.m. - 12 noon	Special Session: US Navy/Marine Corps Aviation Program Manager Briefings, Suite 1A <i>Facilitated by M.E. Rhett Flater, M.E. Rhett Flater & Associates</i> • Rear Admiral CJ Jaynes, Navy PEO for Air ASW, Assault & Special Mission Programs • Col Hank Vanderborgh, Program Manager, PMA-261, H-53 Heavy Lift Helicopters • Col Robert Pridgen, In-Service IPT Lead, PMA-274, Presidential Helicopters • Col Dan Robinson, Program Manager, PMA-275, V-22 Joint Program • Col Steve Girard, Program Manager, PMA-276, USMC Light/Attack Helicopters • Holli Galletti, Deputy Program Manager, PMA-299, H-60 Multi-Mission Helicopters
8:00 a.m. - 12 noon	Technical Session A • Aerodynamics I, Suite 4C-E • Aircraft Design I, Suite 2A-B • Crash Safety I, Suite 1B • Dynamics I, Suite 5C • Handling Qualities I, Suite 1C • Structures & Materials I, Suite 5D • Unmanned VTOL, Suite 1D • Wind Energy, Suite 5A-B 
9:00 a.m. - 12 noon	AHS Board of Directors Meeting, Suite 3C
9:00 a.m. - 10:00 a.m.	Manufacturing Technology and Processing Technical Committee, Suite 3D
9:30 a.m. - 10:00 a.m.	Refreshment Break – Sponsored by CAE, Meeting Room Corridors
11:00 a.m. - 7:00 p.m.	Exhibit Hall Open, Exhibit Hall A&B
11:00 a.m. - 12 noon	Modeling and Simulation Technical Committee, Suite 3D
12 noon - 1:30 p.m.	Exhibit Hall Luncheon – Sponsored by Bell Helicopter, Exhibit Hall A&B
1:30 p.m. - 3:30 p.m.	Opening General Session, Ballroom 2&3 Welcome Mike Hirschberg, AHS International Executive Director Keynote Address Dr. Bill Lewis, Director, Aviation Development Directorate, U.S. Army Aviation and Missile Research, Development & Engineering Center (AMRDEC) Straight Talk from the Top: “Transforming Vertical Flight Technology” Panel <i>Moderated by Frank Colucci, Vertiflite</i> • Bill Hunt, CEO – AgustaWestland Philadelphia • Jean-Brice Dumont, CTO/EVP Engineering – Airbus Helicopters • John Garrison, CEO – Bell Helicopter Textron • Leanne Caret, President – Boeing Global Services & Support • Mark Miller, VP Engineering – Sikorsky Aircraft Corporation 
3:30 p.m. - 4:00 p.m.	General Session Refreshment Break – Sponsored by GE Aviation
4:00 p.m. - 5:00 p.m.	Alexander Nikolsky Honorary Lectureship, Ballroom 2&3 “Revitalizing Research for the Next Generation of Advanced Rotorcraft” Dr. Robert A. Ormiston, US Army Emeritus Scientist
4:00 p.m. - 5:00 p.m.	History Committee, Suite 3D
4:00 p.m. - 5:00 p.m.	Manufacturing Technology & Processing Technical Committee, Room 510 A
5:00 p.m. - 7:00 p.m.	 Exhibitor/Industry Reception, Exhibit Hall A&B Sponsored by Sikorsky Aircraft Corp.
7:00 p.m. - 7:30 p.m.	International Chapter Meeting, Suite 3C

Wednesday, May 6, 2015

6:00 a.m. - 5:00 p.m.	Show Office, Show Office A/B Student Volunteer Office, Suite 3A
7:00 a.m. - 5:30 p.m. 7:00 a.m. - 5:00 p.m.	Registration Open, Exhibit Hall A/B Pre-function Speaker Ready Room, Suite 3B
7:30 a.m. - 9:00 a.m.	Safety Technical Committee, Suite 3D
8:00 a.m. - 12:15 p.m.	Special Session: US Army Aviation Program Manager Briefings, Suite 1A <i>Facilitated by M.E. Rhett Flater, M.E. Rhett Flater & Associates</i> • Mr. Rusty Weiger, U.S. Army Deputy-PEO for Aviation • COL Rob Barrie, PM-Cargo • LTC Tal Sheppard, PM Production and Fielding, Apache • COL Thomas Todd, PM Utility • Mr. Mark Jeude, Chief Technical Management, Utility • Mr. Rich Kretzschmar, UAS Deputy Project Manager • COL Gerald Davis, PM-Aviation Systems • COL Steven Braddom, Commander, Aviation Applied Technology Directorate (AATD) • Mr. Dan Bailey, PD-Future Vertical Lift (FVL) 
8:00 a.m. - 12:15 p.m.	Technical Session B • Advanced Vertical Flight I, Transformative Concepts, Suite 1D • Aerodynamics II – Suite 4C-E • Aircraft Design II, Suite Suite 2A-B • Handling Qualities II, Suite Suite 5C • HUMS/CBM I, Suite 5D • Modeling & Simulation I, Suite 1B • Propulsion I, Suite 1C • Test & Evaluation I, Suite 5A-B 
9:00 a.m. - 10:30 a.m.	Product Support Technical Committee, Room 512 A
9:00 a.m. - 5:00 p.m.	Exhibit Hall Open
9:30 a.m. - 10:15 a.m.	Refreshment Break – Sponsored by Lockheed Martin, Exhibit Hall Prize Drawing – Sponsored by AHS at 10:00 a.m. (Must be present to win)
9:30 a.m. - 10:00 a.m.	PIC Wire & Cable Technical Briefing, Booth 520
9:30 a.m. - 11:00 a.m.	Structures & Materials Technical Committee, Suite 4A
10:00 a.m. - 11:00 a.m.	Avionics & Systems Technical Committee, Suite 3D
10:00 a.m. - 11:30 a.m.	Crash Safety Committee, Suite 3E
10:45 a.m. - 12:15 p.m.	RCAS User's Meeting (By Invitation Only), VBCC Boardroom
11:00 a.m. - 12:00 noon	Acoustics Technical Committee, Suite 4B
11:15 a.m. - 12:15 p.m.	Dynamics Technical Committee, Suite 3D
12:00 noon - 6:00 p.m.	VLC Meeting, Suite 3C
12:15 pm - 1:45 p.m.	Exhibit Hall Luncheon – Sponsored by Bell Helicopter
1:00 p.m. - 1:30 p.m.	Continuum Dynamics Technical Briefing, Booth 513
1:45 p.m. - 6:00 p.m.	Special Session: Suppliers & Subsystems Technology Panel, Suite 1A <i>Moderated by Ed Birtwell, VP for Turbohaft Engines, GE Aviation</i> • Bruce Bailey, VP Engineering & Programs – Eagle Aviation Technologies • Pat Coward, President – Triumph Gear Systems • Ike Song, Vice-President – Northrop Grumman Electronic Systems • Dan Curry, Dir. Army Aviation & Sustainment Programs – Lockheed Martin • Jason Rios, CBM Business Leader – Honeywell Aerospace 

Wednesday, May 6 Continued

1:45 p.m. - 6:00 p.m.	Technical Session C • Aerodynamics III, Suite 4C-E • Crash Safety II/Awards, Suite 1B • Dynamics II, Suite 1D • HUMS/CBM II, Suite 5D • Modeling & Simulation II, Suite 5A-B • Operations I, Suite 5C • Product Support, Suite 1C • Structures & Materials II, Suite 2A-B 
1:45 p.m. - 3:15 p.m.	Aircraft Design Technical Committee, Suite 4A
2:00 p.m. - 3:30 p.m.	Advanced Vertical Flight Technical Committee, Suite 4B
2:00 p.m. - 3:30 p.m.	Handling Qualities Technical Committee, Suite 3E
2:00 p.m. - 3:00 p.m.	Propulsion Technical Committee, Suite 3D
3:00 p.m. - 4:00 p.m.	Award Recipient Orientation (By Invitation Only), Ballroom 2&3
3:00 p.m. - 4:00 p.m.	Student Design Competition Steering Committee, Suite 4A
3:15 p.m. - 4:00 p.m.	Refreshment Break – Sponsored by Automated Dynamics, Exhibit Hall Prize Drawing – Sponsored by AHS at 3:45 p.m. (Must be present to win)
3:30 p.m. - 4:00 p.m.	BETA CAE Systems Technical Briefing, Suite 2C
4:00 p.m. - 5:30 p.m.	Test & Evaluation Technical Committee, Suite 3E
6:00 p.m. - 7:00 p.m. <i>Ballroom 2&3</i> <i>Prefunction</i>  7:00 p.m. - 9:30 p.m. <i>Ballroom 2&3</i>	Vertical Flight Foundation Cocktail Reception Sponsored by The Boeing Company  AHS Grand Awards Banquet Sponsored by The Boeing Company 

Thursday, May 7, 2015

6:00 a.m. - 5:00 p.m.	Show Office, Show Office A/B Student Volunteer Office, Suite 3A
7:00 a.m. - 3:00 p.m.	Speaker Ready Room, Suite 3B
7:30 a.m. - 1:00 p.m.	Registration Open, Exhibit Hall A/B Prefunction
7:30 a.m. - 9:00 a.m.	Technical Committee Chair/Session Chair Meeting, Suite 3C
 8:00 a.m. - 12:15 p.m.	Special Session: Future VTOL Demonstrations, Suite 1A Moderated by Mike Hirschberg , AHS International • Dan Bailey, US Army Aviation Development Directorate: "Future Vertical Lift (FVL) and the Joint Multi-Role (JMR) Technology Demonstrations" • Dr. Ashish Bagai, DARPA: "DARPA VTOL Programs" • Susan Gorton, NASA: "NASA Vertical Flight Research" • Dr. James Wang, AgustaWestland: "Next Generation Civil TiltRotor for Clean Sky 2" • Tomasz Krynski, Airbus Helicopters: "Low Impact Fast & Efficient RotorCraft (LifeRCraft) for Clean Sky 2" • Dr. Jai Moo Kim, Korea Aerospace Research Institute: "KARI Tiltrotor UAV Demonstrators and Performance Enhancement Tests"

Thursday, May 7 Continued

8:00 a.m. - 12:15 p.m.	Technical Session D • Acoustics, Suite 1C • Aerodynamics IV, Suite 4C-E • Crew Stations & Human Factors, Suite 1B • History, Suite 5A-B • Modeling & Simulation III/System Engineering, Suite 2A-B • Operations II, Suite 5C • Propulsion II, Suite 5D • Test & Evaluation II, Suite 1D 
8:00 a.m. - 9:00 a.m.	Education Committee, Suite 3E
8:30 a.m. - 10:00 a.m.	System Engineering Technical Committee, Suite 3D
9:00 a.m. - 12 noon	Exhibit Hall Open
9:30 a.m. - 10:15 a.m.	Refreshment Break – Sponsored by CD-adapco, Exhibit Hall Prize Drawing – Sponsored by AHS at 10:00 a.m. (Must be present to win)
11:00 a.m. - 12 noon	Unmanned VTOL Aircraft & Rotorcraft Technical Committee, Suite 3D
12:15 p.m. - 1:30 p.m.	Voucher Lunch – Sponsored by Bell Helicopter
1:00 p.m. - 2:30 p.m.	AHS Membership Committee, Suite 4B
1:30 p.m. - 5:30 p.m.	Special Session: Vertical Lift Consortium (VLC) <i>Moderated by Nick Lappos, VLC Chair</i>
1:30 p.m. - 5:30 p.m.	Technical Session E • Advanced Vertical Flight II, Suite 2A-B • CFD/CSD/Icing, Suite 4C-E • Avionics & Systems, Suite 1C • Manufacturing Technology & Processing, Suite Suite 5C • Structures & Materials III, Suite 1B • Test & Evaluation III, Suite 1D • Unmanned VTOL II, Suite 5D • Special Session: Safety, Suite 5A-B 
1:30 p.m. - 2:30 p.m.	Crew Stations & Human Factors Technical Committee, Suite 3D
1:30 p.m. - 2:30 p.m.	Operations Technical Committee, Suite 3E
3:30 p.m. - 4:00 p.m.	Refreshment Break – Sponsored by Lockheed Martin, Meeting Room Corridors

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Forum 71 Technical Briefings

Wednesday, May 6 9:30 a.m. – 10:00 a.m. Booth 520
PIC Wire & Cable

Title of Briefing:

Advancements in Aircraft High Speed Data Transfer

Briefing Description:

Current specifications and regulations being used in aircraft industry and how PIC Wire & Cable uses them to keep at the forefront of new technology.

Wednesday, May 6 1:00 p.m. – 1:30 p.m.
Booth 513
Continuum Dynamics, Inc.

Title of Briefing:

Advanced Applications of the CHARM Module for Simulations

Briefing Description:

In recent work, CDI has studied multiple uses of its CHARM Module software for tasks supporting real-time simulations. In this technical briefing, CDI will outline the application of the Module to the modeling of crew station vibratory loading as well as to simulation of external store release events.

Wednesday, May 6 3:30 p.m. – 4:00 p.m.
Suite 2C
BETA CAE Systems USA, Inc.

Title of Briefing:

ANSA & μETA Advanced Pre-processing for Aerospace Applications

Briefing Description:

This brief presentation will showcase some of the advanced CAE functionality of ANSA & μETA as being used currently in the Aerospace Industry. It will cover both structural and fluid applications, covering advanced surface and volume meshing tools, data management, morphing and solver tools.



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Prize drawings to be held in the Exhibit Hall during the Forum 71 Technical Session Refreshment Breaks . . .

Wednesday, May 6 at 10:00 a.m.

Wednesday, May 6 at 3:45 p.m.

Thursday, May 7 at 10:00 a.m.



Forum 71 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 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.

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Forum 71 General Information

All Forum 71 attendees must register to receive a badge. Badges must be visibly displayed to gain admittance to both the Exhibit Hall and the technical sessions. FULL THREE-DAY REGISTRATION includes:

- Admittance to all sessions and coffee breaks
- Entry to the Exhibit Hall during scheduled hours
- Tickets to Luncheons, the Exhibitor/Industry Reception, Vertical Flight Foundation Reception and Grand Awards Banquet
- Forum 71 Proceedings CD-ROM

Registration Hours

Sunday, May 3	2:00 p.m. – 5:00 p.m.
Monday, May 4	7:00 a.m. – 5:00 p.m.
Tuesday, May 5	7:00 a.m. – 5:00 p.m.
Wednesday, May 6	7:00 a.m. – 5:30 p.m.
Thursday, May 7	7:30 a.m. – 1:00 p.m.

Forum 71 Proceedings

Proceedings will be available in two formats – printed or the CD-ROM version – and contain all papers presented at the technical sessions. Printed Proceedings will not be available until after the Forum. The CD-ROM is complimentary for all Full Three-Day Registrants! Other registrants may purchase it onsite at the reduced rate of \$205.00.

Publication Bins

Publication bins will be located in the registration area stocked with the May/June 2015 issue of *Vertiflite* and industry relevant periodicals and literature.

Speaker Ready Room

Speakers may organize and review their presentations in the Speaker Ready Room. Hours are from 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.

AHS Novelty Desk

AHS publications, shirts, hats, mugs, key chains, golf balls and other new novelty items will be available for purchase at the Novelty Desk located in the AHS Registration area.

Technology Display

Be sure to allocate ample time to visit the Forum 71 Technology Display in the Exhibit Hall. Scores of 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, social events such as lunches on Tuesday and Wednesday, the Exhibitor/Industry Reception and most Technical Briefings are held in the Exhibit Hall. The technology display is open to registrants. AHS reserves the right to make modest changes to the Exhibit Hall hours without advance notification to exhibitors or registrants.

Exhibit Hall Hours and Events

Tuesday, May 5, 2015

Exhibit Hall Open	11:00 a.m. – 7:00 p.m.
Exhibit Hall Luncheon	12 noon – 1:30 p.m.
Exhibitor/Industry Reception	5:00 p.m. – 7:00 p.m.

Wednesday, May 6, 2015

Exhibit Hall Open	9:00 a.m. – 5:00 p.m.
Refreshment Break	9:30 a.m. – 10:15 a.m.
Exhibit Hall Luncheon	12:15 p.m. – 1:45 p.m.
Refreshment Break	3:15 p.m. – 4:00 p.m.

Thursday, May 7, 2015

Exhibit Hall Open	9:00 a.m. – 12:00 noon
Refreshment Break	9:30 a.m. – 10:15 a.m.

Exhibit Hall Technical Briefings

Industry technical briefings from exhibiting companies will be held at the company's booth in the Exhibit Hall. Some briefings will also be conducted in meeting rooms. These briefings will provide attendees with a more comprehensive overview of the company's capabilities and services. Exhibitors are invited to contact AHS International to arrange briefings and have the announcement published in the AHS International Forum 71 Final Program. This is a genuine value-added benefit offered to exhibiting companies and attendees.

Exhibitor/Industry Reception

Tuesday, May 5, 2015	5:00 p.m. – 7:00 p.m.
Exhibit Hall	

All exhibitors and Forum 71 attendees registered for Tuesday will automatically receive tickets to this event.

Vertical Flight Foundation (VFF) Reception and Grand Awards Banquet

Wednesday, May 6, 2015

The VFF Reception will be held 6:00 p.m. – 7:00 p.m. and the Grand Awards Banquet 7:00 p.m. – 9:30 p.m. 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. Attendees will enjoy an excellent dinner and entertainment. Full registration includes a ticket to this event; all others must purchase tickets in advance. The event is business attire and military uniforms.

Exhibit Hall Luncheons

Tuesday, May 5, 2015	12 noon – 1:30 p.m.
Wednesday, May 6, 2015	12:15 p.m. – 1:45 p.m.





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(Onsite Registrar);

and **Vernon Hemphill**, Director of Membership (Exhibitor Registration, Corporate Membership Contact, Awards POC)

AHS Novelty Desk:

Betty Chen, Director of Administration (Pre-Forum Registrar, Novelty Sales, Proceedings, Speaker Briefing Drop-Off)

AHS International offers its sincere thanks to the Forum 71 Chairs:

Mme. Blanche Demaret, ONERA, AHS Forum 71 Technical Chair

Dr. Glen Whitehouse, Continuum Dynamics, Inc., AHS Forum 71 Deputy Technical Chair

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Mr. Michael Strauss, Sikorsky Aircraft Corporation, Advanced Vertical Flight Forum Session Chair

Dr. Hao Kang, Army Research Lab, Advanced Vertical Flight Forum Session Deputy Chair

Mr Edward Reed, Sikorsky Aircraft Corporation, Aerodynamics Forum Session Chair

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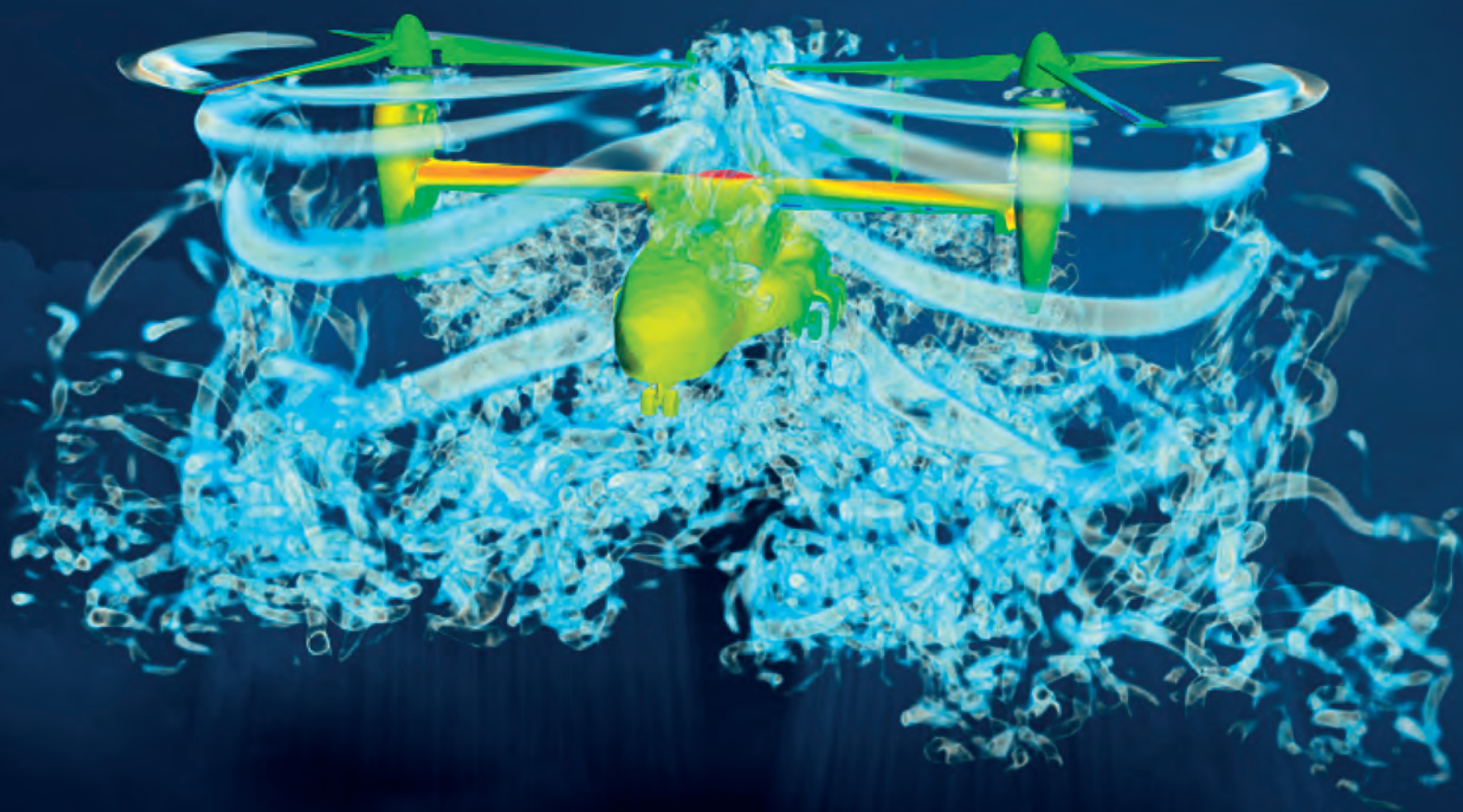
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✉ info@cd-adapco.com
🌐 www.cd-adapco.com



Forum 71 Booth Listing

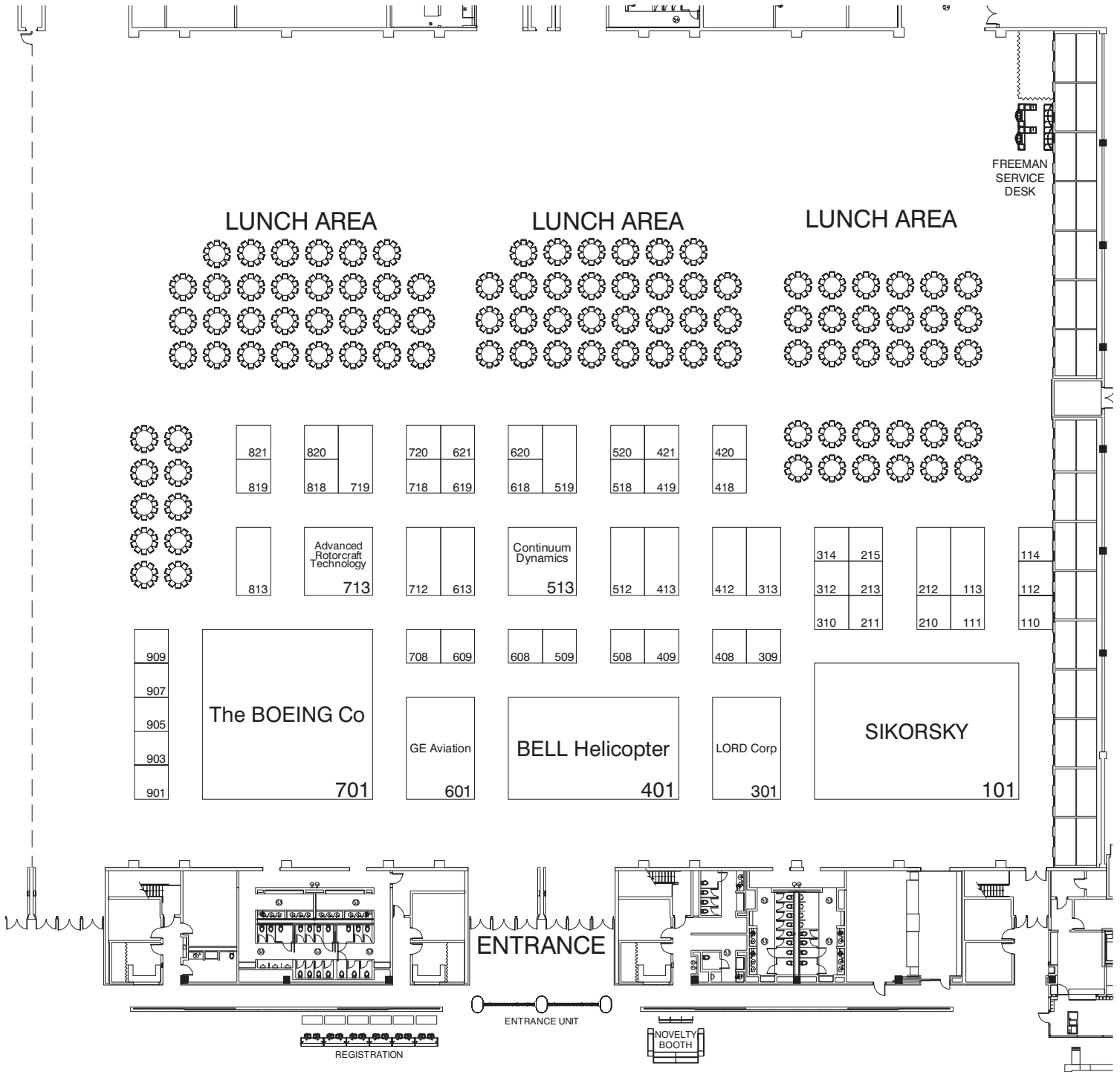


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Forum 71 Exhibit Hall

American Helicopter Society May 5-7, 2015

Virginia Beach Convention Center - Exhibit Hall A&B
Virginia Beach, VA



Forum 71 Exhibitors

Advanced Rotorcraft Technology, Inc., Booth 713

www.flightlab.com

ART is an aerospace consulting firm specializing in rotorcraft engineering and simulation. Products include FLIGHTLAB, a simulation modeling and analysis tool; SIMphony, a distributed run-time environment for interfacing FLIGHTLAB models to simulator systems; and HeliFlight, turnkey aircraft-specific or reconfigurable helicopter simulators.

Advanced Torque Products, Booth 409

advancedtorque.com

Advanced Torque Products (ATP), a Veteran-Owned Small Business located in Newington, Connecticut, has proudly supported the armed services and other heavy industries for nearly two decades. An ISO9001 certified company, Advanced Torque develops products that are not only right for the job, but are more accurate, easier to use and easier to maintain than anything else on the market. ATP wrenches are built to last. An emphasis on durability ensures longevity and reliability in the field. An all-mechanical design also reduces the adverse effects of temperature, allowing Advanced Torque's family of wrenches to be accurate to +/- 1% of total capacity throughout a variety of operating conditions. The implementation of strain gauging and relevant circuitry in each wrench's design makes Advanced Torque the provider of the only truly digital torque multiplier on the market. Digital controllers are added to the package to enable real-time torque tracking, break-away capturing, and an over-torque warnings. The design and production of customizable tooling allows each wrench to support multiple applications. Calibration is fast and easy, entailing a quick, 10 minute process that reduces operating down-time. A leader through innovation, Advanced Torque Products designs and manufactures its entire product line within the United States for the U.S. military, Boeing, Bell, Sikorsky, Honeywell, Rolls-Royce and Pratt & Whitney. Advanced Torque has been named the sole source by the U.S. Army and U.S. Navy for all high-torque applications on the CH-47 and CH-46 helicopters, by Sikorsky on their new CH-53K helicopter, and by Pratt & Whitney on their 1100-series turbine engines.

Advanced Turbine Engine Company (ATEC), Booth 519

www.atecpower.net

The Advanced Turbine Engine Company (ATEC) is a joint venture between Honeywell and United Technologies Corporation's Pratt & Whitney. In 2007, Honeywell and Pratt & Whitney formed ATEC to participate in the U.S. Army's effort to develop an advanced turboshaft engine to achieve the aggressive performance goals of a 50 percent more powerful and 25 percent more fuel-efficient engine for its Black Hawk and Apache fleets. The HPW3000, ATEC's engine for the Improved Turbine Engine Program (ITEP), is being developed as a potential replacement for the T700 engine now powering the UH-60 Black Hawk and the AH-64 Apache helicopters. Today's investment supports the next generation helicopter fleet.

Aerotim Engineering LLC., Booth 421

www.aerotim.com.tr

Aerotim Engineering specializes in dynamic modeling, simulation and control system development for aerospace applications and has substantial experience in rotorcraft, turbine engines and wind turbines. Product lines include high-fidelity simulation models for rotorcraft simulators, including FFS Level D simulation, GPU-based Ultra-Fast Free Wake Solvers, and Engine Control Units for small-scale UAV turbine engines. Aerotim

Engineering is the developer for Heli-Dyn+, a low cost rotorcraft simulation and analysis tool.

AHS International, Booth 113

www.vtol.org

AHS International – *The Vertical Flight Technical Society* – is the world's only international technical society for engineers, scientists and others working on vertical flight technology. AHS brings together industry, academia and governments to tackle the toughest challenges in vertical flight. Since 1943, AHS has led technology, safety, advocacy and other initiatives, and has been the primary forum for interchange of information on vertical flight technology. Stop by the booth to learn more about new initiatives and benefits, and find out how you can help shape the future of the vertical flight technical community.

Alcoa Fastening Systems & Rings, Booth 210

www.alcoafasteners.com

Alcoa Fastening Systems & Rings, a business unit of Alcoa, is a leading worldwide designer and manufacturer of fastening systems and rings, including specialty fasteners, fluid fittings, assembly components, installation systems, and seamless rings for aerospace and industrial applications. Headquartered in Torrance, California, the company has over 8,300 employees at 39 manufacturing and distribution/logistics locations in 13 countries.

Altair, Booth 211

www.altair.com

Altair's corporate culture thrives on seeking out business and technology firsts to radically change the way organizations design products and make decisions. Altair is focused on the development and broad application of simulation technology to synthesize and optimize designs, processes and decisions for their clients' improved business performance. Founded in 1985, Altair is headquartered in Troy, Michigan with regional operations throughout 22 countries and a staff of more than 2,000 innovative employees. There is an entrepreneurial spirit that flows and is encouraged throughout a global workforce to develop and gather technology that is relevant to engineering and business – including employing it within their own organization. In this way, their passion in developing and applying technology in new and inventive ways allows Altair to help their clients increase their level of innovation intelligence as well as their own.

American Institute of Aeronautics and Astronautics (AIAA), Booth 708

www.aiaa.org

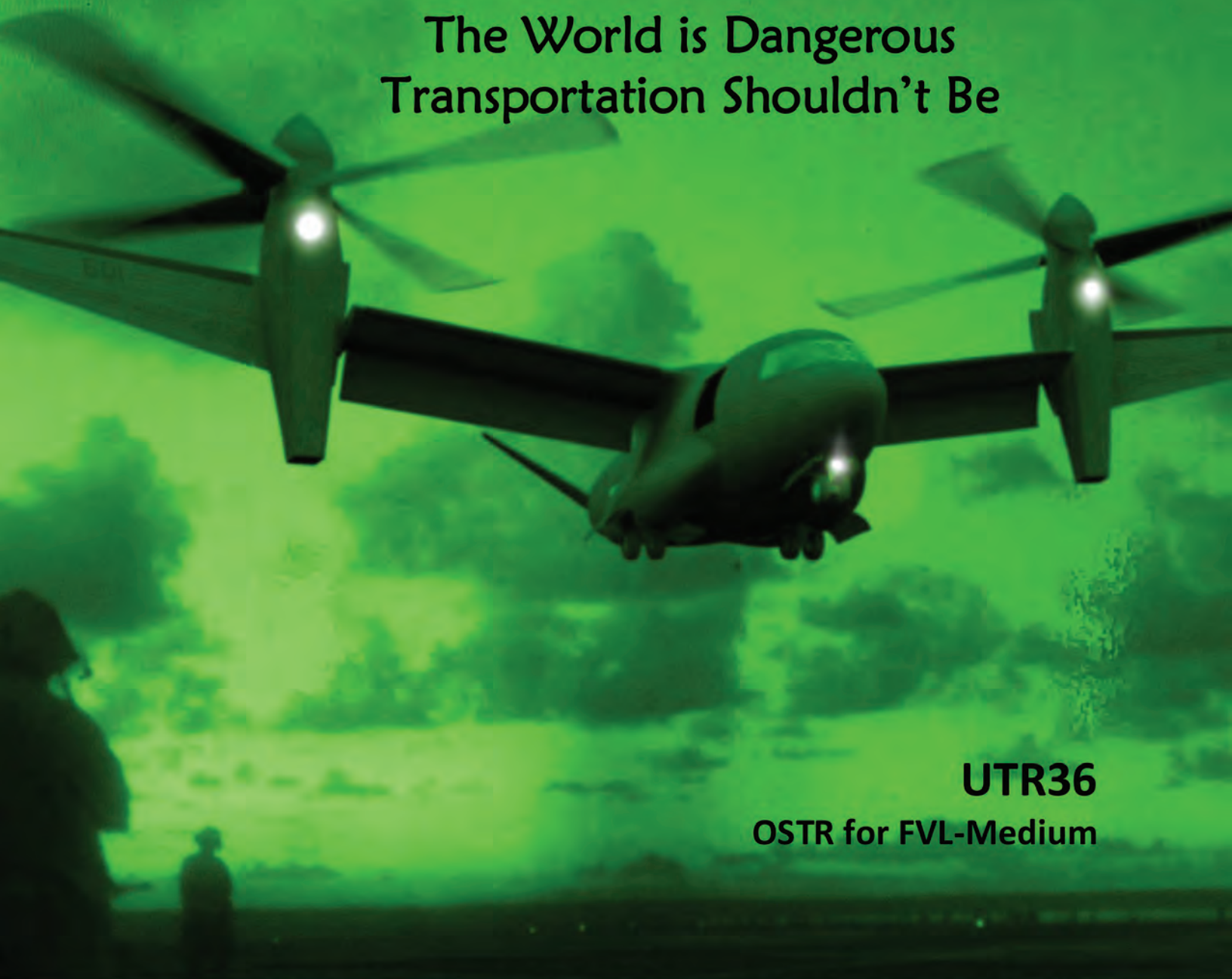
The American Institute of Aeronautics and Astronautics (AIAA) is more than 30,000 engineers and scientists from 88 countries dedicated to the global aerospace profession. AIAA convenes five yearly forums; publishes books, technical journals, and *Aerospace America*; hosts a collection of 140,000 technical papers; develops and maintains standards; honors and celebrates achievement; and advocates on policy issues. AIAA serves aerospace professionals around the world—who are shaping the future of aerospace—by providing the tools, insights, and collaborative exchanges to advance the state of the art in engineering and science for aviation, space, and defense.

Automated Dynamics, Booth 901

www.automateddynamics.com

For 30 years, Automated Dynamics has provided advanced solu-

The World is Dangerous Transportation Shouldn't Be



UTR36

OSTR for FVL-Medium

Optimum Speed Tiltrotor (OSTR) Technology eliminates failure modes that plague all other rotorcraft. Dozens of patented safety innovations make OSTR the clear favorite when lives are at stake. UTR36, Karem's OSTR design for FVL-M, is more damage-tolerant than any other helicopter, compound, or tiltrotor. And in the event of a mishap, UTR36's robust cabin structure, external sponsons, and wing-mounted engines separate personnel from fuel, heavy machinery, and moving elements. UTR36 is more agile in the LZ than traditional helicopters, yet climbs faster and cruises higher than most corporate jets.

Get there faster. Fight harder. Come home safer.
Optimum Speed Tiltrotor

www.karemaircraft.com



tions to extreme applications worldwide. The company manufactures advanced fiber placed composite structures and high performance composite processing equipment. Through their engineering services and automated fiber placement and tape laying processes they deliver strong, lightweight structures that solve complex problems. As a recognized innovation leader, Automated Dynamics has produced tens of thousands of composite structures and their automation equipment is in 17 countries.

Avion Solutions, Inc., Booth 905

www.avionsolutions.com

Avion Solutions specializes in the solution of technical and operational problems through the application of research, analysis, computer, and software technology. With teaming partner SONATS, Avion created a revolutionary Ultrasonic Shot Peening (USP) repair process for the U.S. Army, saving over \$20 million in a four month period. Shot Peening is a surface enhancement for metallic components that increases the service life, and USP provides additional applications and improves some existing processes where the target area is small or hard to access with conventional methods.

BAE Systems, Booth 712

www.baesystems.com

BAE Systems is a global defense, security and aerospace company delivering a full range of products and services for air, land and naval forces, as well as advanced electronics, information technology solutions and customer support services.

Bell Helicopter Textron, Inc., Booth 401

www.bellhelicopter.com

Headquartered in Fort Worth, Texas, Bell Helicopter has additional plants in Amarillo, Texas and Mirabel, Canada. The company maintains key logistics supply and service centers in Europe, Canada, and Singapore as well as in the United States. As the world's premier provider of vertical lift aircraft, Bell Helicopter continues to provide every customer with products, service and support second to none.

BETA CAE Systems USA, Inc., Booth 418

ansa-usa.com

BETA CAE Systems is an engineering services company that distributes and supports the industry-leading ANSA and μ ETA software. The company provides full model build services from CAD data and scan data for reverse engineering projects for all disciplines, as well as model setup for optimization. ANSA is a CAE pre-processing tool for FE and CFD Analysis, for full-model build from CAD to solver input file, in one integrated environment. μ ETA is a post-processor for analyzing results from ANSYS, NAS-TRAN, ABAQUS, LS-DYNA, PAMCRASH, RADIOSS, MADYMO, FLU-ENT, STAR CCM, CFD++ and other solvers.

Boeing Company, Booth 701

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 air-

craft, defense systems and warfighters through network-enabled solutions.

CAE, Booth 618

www.cae.com

CAE is a global leader in providing comprehensive training solutions based on world-leading simulation technology and integrated training services. The company employs 8,000 people at more than 160 sites and training locations in 35 countries. CAE's vision is to be their customers' Partner of Choice and take a long-term approach to customer relationships. The company has the broadest training services network in the world and offer civil aviation, military and helicopter training services in 67 locations worldwide and train more than 120,000 civil and military crewmembers annually.

CD-adapco, Booth 609

www.cd-adapco.com

CD-adapco is the world's largest independent CFD-focused provider of engineering simulation software, support and services. It has over 30 years of experience in delivering industrial strength engineering simulation to a wide range of industries and application.

CEROBEAR GmbH, Booth 819

www.cerobear.com

CEROBEAR is a specialized manufacturer of high performance hybrid and all-ceramic bearings with highly customized solutions for the aerospace industry. CEROBEAR's core capabilities include an extensive long-time hybrid and all-ceramic bearing design heritage, a high precision, fast and flexible production of steel and ceramic rings and rollers combined with a continuous drive for improvement and innovation. These capabilities together with short delivery times make CEROBEAR a perfect partner.

Continuum Dynamics, Inc., Booth 513

www.continuum-dynamics.com

Continuum Dynamics Inc. (CDI) is an industry leader in developing software products for advanced rotorcraft analysis and simulation, and in providing engineering services supporting rotor system design and re-blading as well as design of novel vehicle concepts, ranging from VTOL UAVs to multi-role compound rotorcraft. At Forum 71, CDI is featuring new variants of its family of software modules that plug into rotorcraft analyses, CFD solvers and real-time pilot-in-the-loop flight simulations to improve modeling of aerodynamically demanding environments including brownout, formation flight, refueling and shipboard operations. CDI will also be demonstrating novel methods for simulating store jettison events, as well as real-time computation of vibratory loads for enhancing simulator cockpit realism.

Curtiss-Wright Surface Technologies, Booth 112

www.metalimprovement.com

Curtiss-Wright Surface Technologies provides laser peening, shot peening, engineered coatings and metallurgical testing services through its Metal Improvement Company, E/M Coating Services and IMR Test Labs operating business units. The company's laser peening and shot peening services protect components against failure mechanisms such as fatigue, fretting fatigue and stress corrosion cracking. The coating services division is a pioneer and leader in the development and application of thermal spray coatings and solid film lubricant coatings. Curtiss-Wright Surface Technologies currently operates a network of 74 job shop facilities in North America, Europe and Asia.

Daniels Manufacturing Corp., Booth 821www.dmctools.com

Daniels Manufacturing Corporation is the recognized leading manufacturer for the aircraft, aerospace, and high-reliability electronics industries, with experience that spans six decades. The company's products have been used on virtually every defense system, aircraft program, land or sea going transport system, space exploration program, and in many other types of manufacturing and support activities. Products include, but are not limited to: Manual, Battery Powered, Pneumatic, Electric, and Hydraulic Crimping Tools, Backshell and Accessory Torque Tools, Contact Insertion and Removal Tools, EMI/RFI Shielding Band Tools, Alphasat® Wire Crimp Pull Testers, Fiber Optic Cleave Tools, Safe-T-Cable™ and Safe-T-Cable™ Tools, Wire Strip and Prep Tools, and Aircraft Maintenance Support Tool Kits. The company's website offers detailed tooling information on their product pages and offers over 8,000 standard items available for purchase from their online store. Can't find what you are looking for? Please contact them and they will be sure to get you the tooling you need.

Dayton T. Brown, Inc., Booth 314www.dtb.com

Since 1950, Dayton T. Brown, Inc. has established itself as a leader providing elite product lifecycle services to government, military, and commercial enterprises worldwide. The company offers tailored engineering, prototyping, testing, technical publications and logistics services. The company's Engineering Support Services include design, structural analysis and material development expertise. They develop prototypes of complex aerospace, heavy equipment, and rail components, while also testing and certifying components in their fully equipped Qualification Test Laboratory. DTB completes their product support suite with Logistic Services, including Technical Publications Development and Performance-Based Logistics Services. The company is committed to delivering innovative solutions and services that are superior, competitive and of the highest quality.

DIAB Americas, Booth 619www.diabgroup.com

DIAB is a leader in composite core material development serving the marine, wind energy and aerospace industries. As manufacturer of Divinycell Sandwich Core Materials for Rotorcraft Structures and Interiors, Divinycell HT has over a 30-year history in aerospace for structural parts. Divinycell F is fully FAR25.853 compliant for all 5 interior shell regulations. DIAB is a global supplier headquartered in Sweden, with manufacturing sites in the USA, Europe and China. The company invites you to stop by booth #619 to learn more.

Eagle Technologies, LLC, Booth 408www.eagleaviationtech.com

ETL is an aerospace company with engineering design, analysis and testing capabilities coupled with precision machining and composite fabrication. They are AS9100 Rev C: Design to Production certified. Contracts have included main rotor blades for the Sikorsky X2 and S-97 Raider, rotor/drive systems for the KARI Tilt Rotor Smart UAV, wind tunnel models for NASA and multiple OEMs, X2/S-97 Raider mock ups, and composite parts for Boeing, Northrop Grumman and Lockheed Martin. ETL has a unique and extensive blend of aerospace prototype and production capability. Production work includes Sikorsky S-76D Inlet Door and Engine Air System and Avionics Door for the UH-60A-L model. ETL provides certified clean rooms, 5' x 27' autoclave, ply cutter, and precision machining capabilities. The company can provide

you an efficient and streamlined approach to achieve your goals from concept to production.

East/West Industries, Inc., Booth 412www.eastwestindustries.com

For over 45 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 AHS Forum 71, East/West is highlighting two of its many innovative products – their Crash-Attenuating Seats and Master Crane®. East/West is a woman-owned small business and is a registered AS 9100 Company.

ESTECO, Booth 312www.esteco.com

ESTECO is a pioneer in numerical optimization solutions, specialized in the research and development of engineering software for all stages of the simulation-driven design process. The company's first-class technology, used worldwide, inspires decision making, increases design simulation tool efficiency and accelerates product innovation. As a desktop solution, modeFRONTIER® is a multidisciplinary and multiobjective optimization platform. It streamlines the engineering process through innovative algorithms and integration with leading simulation software. In numerous industries, modeFRONTIER® has become essential for increasing the understanding of cost/performance factors and reducing product development time. As an enterprise solution, SOMO is an enterprise collaborative and distributed execution framework aimed at managing the complexity of running multidisciplinary design projects. The SOMO web-based platform orchestrates simulation workflows and data by networking multiple departments and geographically distributed organizations, while utilizing shared computing resources on HPCs and private/public clouds.

Fatigue Technology, Inc., Booth 110www.fatigueotech.com

Fatigue Technology (FTI) pioneered Cold Expansion Technology over 45 years ago and has advanced this science to develop innovative solutions for bushing and fastener installations. FTI products enhance structural durability, improve damage tolerance, provide solutions for sustainment, reduce manufacturing time, and extend maintenance cycles in both metal and composite applications.

FCI Aerospace, Booth 111www.fluidcomponents.com

FCI Aerospace is a world-leading manufacturer of built-to-specification flow, level, temperature and pressure sensors. Whether rotary or fixed-wing aircraft, FCI Aerospace has designed and manufactured qualified, flight-worthy sensor system instrumentation to meet a broad range of applications. Manufacturers and sub-system suppliers of commercial, business, defense and military aircraft throughout the world have specified and installed FCI sensors with confidence for nearly 30 years.

FLIR Surveillance Inc., Booth 310www.flir.com

FLIR Systems, Inc. is a world leader in developing technologies that enhance perception and awareness. FLIR designs, engineers, produces, markets, and distributes solutions that detect personnel and objects that may not be perceived by human senses and improve the way people interact with the world around them. Founded in 1978, FLIR is a pioneer in advanced sensors and integrated sensor systems that enable the gathering, measurement,

and analysis of critical information through a wide variety of applications in commercial, industrial, government, and consumer markets worldwide.

GasTOPS Ltd., Booth 621

www.gastops.com

GasTOPS provides innovative fluid sensing and analysis solutions for aircraft health monitoring and prognostics. The company's MetalSCAN on-line oil debris sensor technology, originally developed for the engines of the F-22 Raptor, has also been selected as a key component of the health monitoring systems of the F-35 Joint Strike Fighter, Eurofighter Typhoon, S-61 Sea King, Pilatus PC-12 aircraft and more recently, for the Pratt & Whitney PurePower® Engines on the Airbus A320neo, Bombardier CSeries, Mitsubishi MRJ and Irkut MS-21 airliners. MetalSCAN's unique full-flow detection capability for both ferrous and non-ferrous metallic particles has set a new standard for early identification and monitoring of critical bearing and gear damage, including the ability to estimate the remaining service life of damaged components. The company also supplies advanced oil debris analysis products and services for at-line determination of the metallurgy of captured oil debris particles and the assessment of the criticality of suspected bearing and gear problems.

GE Aviation, Booth 601

www.geaviation.com

GE Aviation, an operating unit of General Electric Company (NYSE: GE), is a world-leading provider of commercial and military engines and components as well as integrated digital, electric power, and mechanical systems for aircraft. GE Aviation also has a global service network to support these offerings. Please visit their website to learn more.

Georgia Institute of Technology, Booth 212

www.ae.gatech.edu

Georgia Institute of Technology operates an internationally recognized Center of Excellence in Vertical Lift Technology. Georgia Tech performs research in Aerodynamics, Aeroelasticity, Dynamics, Engines, Composites, Structures, Flight Mechanics, Controls and System Design. They also provide a world-class education in rotorcraft for both undergraduate and graduate students. The School of Aerospace Engineering and Georgia Tech are ranked among the top engineering schools and universities both nationally and internationally.

Howell Instruments, Inc., Booth 820

Howell integrates proven experience with cutting-edge technology in manufacturing a diverse product line including cockpit engine instrumentation, portable testers and airborne engine monitors. The company provides engineering and repair services and complete repair and overhaul of ground support equipment.

Hutchinson Aerospace, Booth 413

www.hutchinson-aerospace.com

Hutchinson Aerospace & Industry, Inc. (formerly Barry Controls Aerospace) offers full engineering and manufacturing facilities for the design, testing and fabrication of products to control dynamic motion such as vibration, impact shock and structure-borne noise. Hutchinson products for helicopters include High Capacity Laminated Elastomeric Bearings, Lead Lag Dampers, elastomeric and fluid filled, plus other static and dynamic complex products designed specifically for use in helicopter rotors and the main transmission gear box suspension systems. Hutchinson also offers airframe/door/window seals, thermal/fire retardant/acoustic panels and films, composite panels and struc-

tural components and drive belts for helicopter/UAV applications. Hutchinson technology includes system solutions, namely Active Vibration Controls Systems and Health Usage Monitoring Systems which can greatly improve interior noise and vibration and enable helicopter operators to monitor and lower direct maintenance costs. Suitable for light, medium and heavy helicopters, these proven products offer excellent environmental and fatigue resistance while maintaining the best performance, in the smallest package, which allow for easy inspection. The company's latest silicone and elastomer compounds, plus fluid cells, meet specific customer requirements with zero maintenance and cost effective features to help satisfy the customers' desire for cost control. Market-based field representatives are geographically located to provide responsive cost-effective technical and commercial solutions.

ITT Enidine, Inc., Booth 419

www.enidine-defense.com

ITT Enidine designs and manufactures energy absorption and vibration isolation products for commercial, business and civil aviation as well as military and cargo aircraft. The company's products offer APU and engine mount isolation, helicopter cabin noise attenuation, avionics and electronics isolation as well as protect target sight systems, FLIR and cameras. ITT Enidine's extensive knowledge and experience enable us to provide their customers with superior analysis, products, services and support.

Kamatics, Booth 309

www.kaman.com/engineered

Kamatics manufactures Karon self-lubricating bearings, which are used on aircraft flight controls, landing gear, thrust reversers, engines and elsewhere. Kamatics bearings are used extensively throughout commercial jetliners, regional aircraft as well as business and personal aircraft. Kamatics holds PMA approval for thousands of bearings in support of these aircraft. Kamatics is also an FAA approved Repair Station completing repairs in many areas.

L-3 Telemetry & RF Products, Booth 518

www.L-3com.com/tw

L-3 Telemetry & RF Products is a leading manufacturer of missile and aircraft flight test instrumentation products, specializing in airborne and ground telemetry products, launch operations, and systems for aircraft and missile flight test. Additionally, L-3 T&RF Products is a premier provider of flight hardware and systems solutions for telemetry, tracking, command & control; flight termination; and secure mission data transmission in the satellite, launch vehicle, weapons, aircraft and UAV markets.

Lockheed Martin Thermal Protection Products, Booth 213

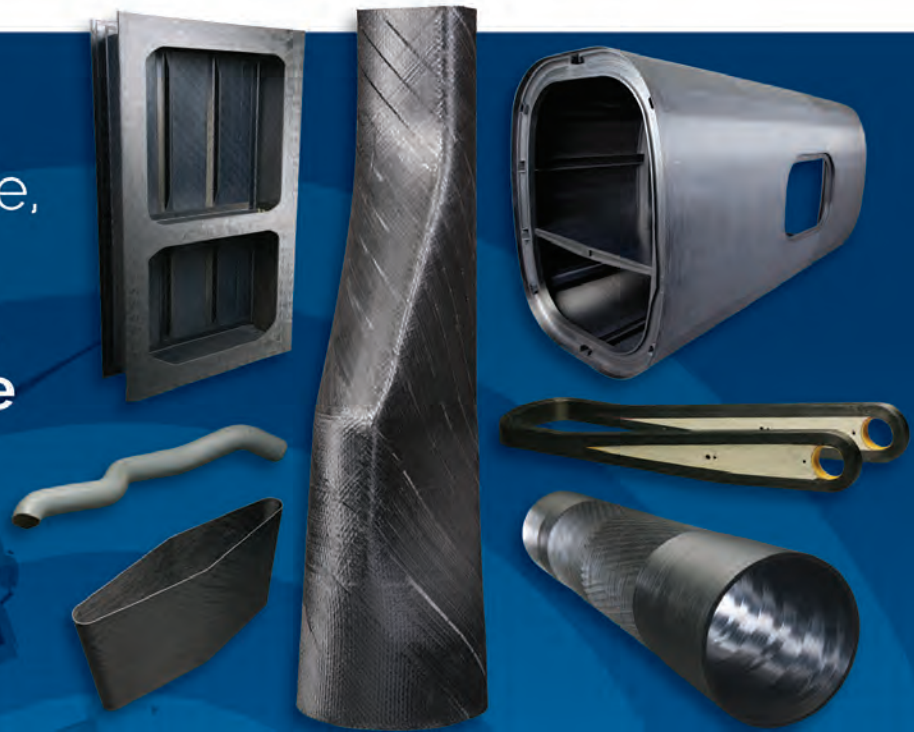
www.lockheedmartin.com/us/ssc/lockheed-martin-thermal-protection-materials-.html

Lockheed Martin Thermal Protection Products are lightweight, sprayable, repairable, fluid resistant, FAA fire test certified coatings: MA-25, MI-15, and Topcoat. Military applications include the USAF C-17 thrust reversers, and exhaust cowl composite thermal protection on the USCG HH-65C and US Army Apache Helicopters. A specialty conductive coating was developed for the PAC III Missile and SLA-220, and an RF transparent antenna coating is also available. Spray application training and field technical support services are on call. Engineering staff are available to assist with cost-effective heating protection solutions. A dedicated spray application facility is available in Huntsville, Alabama.

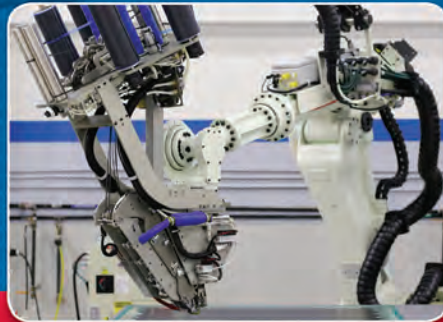
AUTOMATED DYNAMICS®

Performance in Composites

Empowering the world to conceptualize, manufacture and implement **advanced aerospace composite solutions.**



Composite Structures



Automation Equipment



Engineering Services



For 30 years, Automated Dynamics has provided advanced solutions to extreme applications worldwide. We manufacture advanced fiber placed composite structures and high performance composite processing equipment. Through our engineering services and our automated fiber placement and tape laying processes we deliver strong, lightweight structures that solve complex problems. As a recognized innovation leader, Automated Dynamics has produced tens of thousands of composite structures and our automation equipment is in 17 countries.

Come visit us in
Booth 901

automateddynamics.com

LORD Corporation, Booth 301

www.lord.com

LORD Corporation is a diversified technology and manufacturing company developing highly reliable adhesives, coatings, motion management devices, and sensing technologies that significantly reduce risk and improve product performance. For 90 years, LORD has collaborated with their customers to provide innovative aerospace & defense solutions. With revenues exceeding \$880 million, LORD has more than 3,000 employees in 26 countries and operates manufacturing facilities and R&D centers worldwide.

MDS Coating Technologies Corporation, Booth 720

www.mdscoating.com

MDS Coating Technologies designs and manufactures metallic-ceramic protective coatings for the aerospace industry. OEM certified BlackGold® Coating, sets new standards in erosion and corrosion protection for engine compressor parts and combined with ultra-polish MEERERTM finish improves engine performance. This proven and award winning nanotechnology has operated successfully for 20 years and has saved customers over \$100 million per year in maintenance, repair and fuel costs.

National Research Council of Canada, Booth 508

www.nrc-cnrc.gc.ca

The National Research Council of Canada (NRC) is Canada's premier research and technology organization. They support the aerospace industry with facilities, expertise and industry foresight to advance research and technology developments in the core areas of aerodynamics, flight research, gas turbines, structures and materials, and manufacturing. NRC's national facilities provide platforms to de-risk, validate and demonstrate new technologies, while their industry connections help companies remain competitive in the global market. NRC partners with the rotorcraft industry to develop leading-edge technology solutions in a variety of specialized areas, including: aerodynamics research, testing and evaluation; flight testing and evaluation; fly-by-wire systems; human factors engineering; modeling and simulation platforms; pilot training; sense and avoid technologies; structural testing and holistic structural integrity processes (HOLSIP). NRC also collaborates with the Royal Canadian Air Force and Royal Canadian Navy on issues relating to the aerodynamics of ship-helicopter interface. NRC's facilities include six wind tunnels, full-scale structural test rigs, manufacturing research facilities, materials characterization and testing equipment, engine and combustion test cells, air compressor/exhauster facilities, and nine research aircraft, both rotary- and fixed-wing. NRC's cutting-edge training fleet includes variable stability helicopters – a Bell 205 airborne simulator and a Bell 412 "advanced systems research aircraft". Both machines are equipped with systems that have the unique ability to simulate other aircraft in flight, from a Piper Cub to an Apache Attack Helicopter, and give the pilot a variety of flight experience. World-class research infrastructure and expertise, combined with customizable service options and high ethical standards, make them the ideal partner to support your vision with innovative services and solutions. NRC actively seeks clients, collaborators, and licensees for its services and expertise.

O'Neill Power Systems, Booth 215

oneillpower.com

O'Neill Power Systems is a development-stage company that has leveraged its patented, cam-driven helicopter engine technology toward eventual applications for the military, domestic security, and civilian markets. The revolutionary coaxial counter-rotational

unitized power system, called the NorEaster, is designed as a light-weight engine for unmanned rotorcraft with total lift capacity (airframe plus payload) of 400 pounds. A major advantage of the NorEaster cam engine is its simultaneous counter-rotating output. This eliminates the need for a tail rotor and its associated shaft, gearing, and airframe structure, constituting a significant weight savings as well as a reduction in complexity and overall vehicle size. Another advantage is that having multiple lobes on the cam provides an inherent gear reduction ratio between piston speed and output shaft rotational speed. The engine is essentially an integrated power source and a speed reduction unit. It does not need an external gearbox. O'Neill Power Systems' NorEaster will be configured as a multi-fuel (gasoline, biofuel and diesel) engine and will therefore fill a crucial niche in both non-military and military markets, allowing for the deployment of unmanned rotorcraft in a light-weight class that has not been economically or technically feasible to date.

Penn State University, Booth 512

www.engr.psu.edu/vlrcoe

As one of 3 NRTC Vertical Lift Centers of Excellence (VLRCOEs), Penn State works 6.1 and 6.2 programs with many government and industry partners. There are 60 graduate students who work on dynamics, aerodynamics, acoustics, flight control and simulation, icing, HUMS, CBM, UAS, repair, and advanced design of rotary-wing vehicles. Drivetrain technologies, advanced materials, CFD, safety and sustainment are also among the University's thrust areas. Penn State has a large AHS chapter, conducts STEM and educational outreach, and offers a rotorcraft short course in August.

PIC Wire & Cable, Booth 520

www.picwire.com

PIC Wire & Cable sells high performance electronic cables & assemblies to aerospace and defense system engineers who need lighter weight, lower loss, better EMI protection and long term reliability in harsh environments. The company provides a unique combination of product performance (technology), collaborative development support (service) and unsurpassed quality. With over 40 years of experience in aerospace and defense, PIC Wire & Cable offers a broad selection of specialized coaxial, triaxial, high speed data and custom cable options. This includes 50 ohm coaxial and triaxial cable (RF MATES & MicroMATES), 75 ohm coaxial and triaxial cable (VideoMATES), high speed data cable (DataMATES), data bus cable and application specific cables, including IFE, RF, TCAS and USB cables. PIC cables withstand high temperature conditions and other harsh environments. PIC cables are also much lighter weight than many comparative products, which is a competitive attribute for many aerospace applications.

QuesTek Innovations LLC, Booth 818

www.questek.com

QuesTek offers four high-performance Ferrium® steels: carburizable C61™ (AMS 6517) and C64® (AMS 6509) have superior fatigue and corrosion resistance, strength and toughness vs. Pyrowear® 53 or AISI 9310; S53® (AMS 5922, MMPDS) resists corrosion and SCC more than 300M, for use in helicopter rotor shafts; M54® (AMS 6516) is an economical, SCC-resistant, drop-in replacement for AerMet® 100. QuesTek is computationally designing Al, Ti, Fe, Ni, Cu, Mo, Co and Nb-based alloys to solve real-world material issues.

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REM Surface Engineering, Booth 608

www.remchem.com

Decrease friction and wear, reduce noise and vibration, increase power density, and extend mean time between maintenance with REM Surface Engineering's ISF® Process. REM's ISF Process creates a smooth, micro-textured surface without any metallurgical risk and is used to produce isotropic, superfinished gears, shafts, bearings and other related drive train components. Resulting finishes of Ra <2 micro inches are achieved via refinement of the actual metal surfaces. New transmission designs incorporating the ISF process have allowed power density increases of more than 20%.

Rensselaer Polytechnic Institute, Booth 620

www.mane.rpi.edu/aerospace

The RAMS (Rotorcraft, Adaptive and Morphing Structures) Laboratory at RPI engages in a wide range of activities in the areas of helicopter aeromechanics and advanced configurations. Current efforts focus on high speed configurations (including slowed rotor compound, coaxial rotors, and stopped rotor/wing), and active rotor control and morphing (including rotor span, chord, and camber/twist variation). Fundamental work on variable stiffness structures, bi-stable structures and cellular structures feed into adaptive rotor designs. Experimental facilities available include an instrumented micro-rotor test apparatus that is capable of testing up to 2-ft diameter rotors. The group currently has eight graduate students and a number of undergraduate research assistants. The RAMS lab collaborates with other faculty and researchers in the areas of controls, CFD, optimization and manufacturing to advance rotorcraft at Rensselaer.

Rotor & Wing Magazine, Booth 903

www.aviationtoday.com/rw

Rotor & Wing is the one-stop business intelligence source for those who own and operate rotorcraft throughout the world. They deliver insight into an analysis of new aircraft, products and technologies, regulations, safety, maintenance and other issues that impact commercial, military, government and public service sectors. The *Rotor & Wing* community gains the competitive edge that saves you time and money and keeps you abreast of key market trends and developments. For more information, please visit the *Rotor & Wing* website.

Sikorsky Aircraft Corporation, Booth 101

www.sikorsky.com

Sikorsky Aircraft Corporation is a world leader in the design, manufacture and service of military and commercial helicopters and fixed wing aircraft; spare parts and maintenance, repair and overhaul services; and civil helicopter operations. Sikorsky Aircraft employs 15,500 worldwide and is a subsidiary of United Technologies Corp. (NYSE:UTX).

Triumph Aerospace Systems and Engine Control Systems, Booth 909

www.triumphgroup.com

Triumph Aerospace Systems, located in Newport News, Virginia, is an industry leader in the engineering and manufacture of experimental aerospace hardware for both ground and flight test applications. Triumph Engine Control Systems, located in West Hartford, Connecticut, is a leading independent aerospace fuel control system supplier for the commercial and military aircraft markets.

University of Maryland, Booth 719

www.agrc.umd.edu

The Alfred Gessow Rotorcraft Center (AGRC) of the University of Maryland (UMD) conducts cutting-edge research in rotorcraft aerodynamics, dynamics, acoustics, structures, human-powered flight, flight mechanics, and autonomous vehicles. The AGRC is a designated Vertical Lift Research Center of Excellence by the US Army, Navy and NASA. Experimental facilities include two fully instrumented rotor rigs (a hover tower and a 10 ft vacuum chamber), an acoustic chamber, motion capture facilities, and two comprehensive particle image velocimetry (PIV) laboratories. Applied research on smart structures and composite materials is carried out. Another research focus includes the use of pneumatic actuators for primary control and vibration reduction of helicopter rotors, as well as active magnetorheological damping devices to enhance crash safety of crew seating and landing gear. Experimental and computational studies on rotorcraft brownout funded by the Air Force Office of Scientific Research focuses on the understanding of the underlying two-phase fluid dynamics and flow physics, as well as on possible brownout mitigation through rotorcraft design. The US Army-funded Collaborative Technology Alliance MAST on micro-system mechanics aims to enhance tactical situational awareness of micro air vehicles (MAVs) in urban and complex terrain by enabling the autonomous operation of an ensemble of multifunctional, mobile micro-systems through novel optic flow sensing capabilities and networked control strategies for parallel-platform operation.

UTC Aerospace Systems, Booth 813

www.utcaerospacesystems.com

UTC Aerospace Systems is a leading global supplier of systems and services to the aerospace and defense industry. The company designs, manufactures and services systems and components which enable rotorcraft to perform in challenging environments. Their products and support systems enhance aircrew safety and operational efficiency, providing a force multiplier for military and commercial operators alike.

West Coast Industries, Booth 509

www.coldwork.com

West Coast Industries has provided fatigue life enhancement solutions for over 45 years. Coldworking, or cold expansion, greatly enhances the life of fatigue-critical holes on the aircraft; WCI maintains a large stock of tooling for AOG situations. Additionally, the company provides the BushMax expanded bushing system, Advanced Drilling and Positioning technologies, and the revolutionary HaloSensor, a system that eliminates back drilling, resulting in greater accuracy and reduced scrap.

Yulista Holding, LLC, Booth 718

www.yulista.com

Yulista is an industry recognized leader in the modernization and service life extension of rotary wing and fixed wing aircraft. Yulista capabilities include aircraft technology insertion, modification and maintenance, and aircraft training simulators and devices. The company is certified as a Federal Aviation Administration (FAA) Certified Repair Station, meeting Combined Federal Regulations (CFR) Part 145 requirements for qualification of repair parts, authorized tools and equipment, calibration standards and procedures, training requirements, and FAA maintenance records.

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