

Keynote Speakers

Piotr Kosmulski

Program Manager, Military Programs at Safran



Piotr (Peter) Kosmulski moved to the United States in 1992, shortly after graduating from electronic technical high school in Warsaw, Poland. He earned his bachelor’s degree in Electrical and Computer Engineering from Purdue University. He also holds an MBA from the University of Chicago.

Prior to joining Safran, Piotr held several engineering leadership positions at the United Technology Corporation, in their aerospace and industrial divisions. Between 2010 and 2012, Piotr led the creation of the Engineering Center of Excellence at Hamilton Sundstrand in Wroclaw, Poland. There he fostered a close cooperation with Wroclaw University of Technology and Poznan University of Technology.

Piotr has been with Safran Electrical and Power since April 2015 when he joined as a KC-390 RAT Program Manager. Currently he leads the U.S. Military Programs providing support for the power generation systems used in U.S. and international military aircrafts.

Ajay Misra

Deputy Director, Research and Engineering at NASA Glenn Research Center



Dr. Ajay Misra serves as the Deputy Director of Research and Engineering at NASA’s John H. Glenn Research Center in Cleveland. In this capacity he shares the responsibility with the Director of Research and Engineering for leading Glenn’s research and development competencies in propulsion, materials and structures for extreme environments, communications, power, and physical sciences. Prior to his current position, Dr. Misra served in multiple capacities at NASA, which include Chief of the Materials and Structures Division, Acting Director of the Fundamental Aeronautics Program, and Program Executive for Radioisotope Power Systems Program. He has authored four book chapters and more than sixty publications. For the last several years, Dr. Misra has been actively engaged in the planning and implementation of advanced technology development for electrified aircraft. He has received several prestigious awards including the Presidential Rank Award for Meritorious Executives in Federal Government.

Mirosław Sobaniec

Chief Consulting Engineer GE Aviation, EDC Poland



Mirosław Sobaniec is a master degree graduate from Warsaw University of Technology, Computer Aided Design. His professional career started in 2001 at the Warsaw Institute of Aviation as a Turbine Airfoils Design Engineer. In 2003, Mirosław joined GE. His first years were spent working on various GE commercial engine lines—specifically CF6 and aeroderrivative engines. He became an Airfoils Center of Excellence Manager in 2007.

In 2009, Mirosław became the Advanced Technology and Preliminary Design Manager, taking responsibility for the aerodynamics thermodynamics teams, as well as Advanced Mechanical Design. Two key projects executed at this time were Leap compressor and core test designs, as well as the technology demonstrator program, Pitch Change Mechanism for Open Rotor. In 2015, Mirosław took a Hot Section Manager role of Product Engineering Center, executing projects like GE9X or Catalyst. In early 2016, he was promoted to Chief Consulting Engineer role at the Engineering Design Center in Warsaw, Poland. During Mirosław’s career he worked with many design and production partners around the world, including SAFRAN, Avio and MTU.

About the Ohio State University

The Ohio State University is a public research university with the central campus located in Columbus, Ohio.

Originally founded in 1870 as a land-grant university, Ohio State is currently the third largest college campus in the United States. It has been designated the flagship institution of Ohio’s public universities by the newly centralized University System of Ohio. Research facilities include the Aerospace Research Center; the Center for Design and Manufacturing Excellence; home of the US Lightweight Modern Metals Institute; the Byrd Polar Research Center; Center for Automotive Research (Ohio State CAR); Chadwick Arboretum; Biological Research Tower; Electroscience Laboratory; Large Binocular Telescope (LBT, originally named the Columbus Project); Mershon Center for International Security Studies; Stone Laboratory on Gibraltar Island, Ohio; and Ohio Agricultural Research and Development Center. Ohio State has nearly 500,000 living alumni located around the world, and its graduates include Nobel Prize, Pulitzer Prize, and Medal of Honor recipients, ambassadors, Fortune 500 CEOs, and members of the Forbes 400 list of the world’s wealthiest individuals.



About the Institute of Aviation

Founded in 1926, the Institute of Aviation is one of the oldest research establishments in Europe.

Over the course of its 90+ years history, the Institute has become a permanent feature on the economic landscape of Poland and Europe. Its main assets are its highly qualified staff and modern laboratories accredited by internationally recognized institutions. The Institute of Aviation is a member of a number of international organizations and associations concerned with aviation, such as EREA (Association of European Research Establishments in Aeronautics). The institute is also active in organizing international conferences and symposia as well as coordinating global research projects. It consists of four research centers: New Technologies Center, Materials and Structures Research Center, Center of Space Technologies, and Engineering Design Center.



Organizing Committee

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|---|-------------------------------------|
| M.J. Benzakein, The Ohio State University | T. Osypowicz, Institute of Aviation |
| H. Spisak, The Ohio State University      | P. Stężycki, Institute of Aviation  |
| A. Olejniczak, Institute of Aviation      |                                     |

XIX<sup>TH</sup>  
POLISH-AMERICAN  
CONFERENCE ON SCIENCE  
AND TECHNOLOGY

April 16-17, 2019 • Blackwell Inn, Columbus, OH  
Hosted by The Ohio State University and the Institute of Aviation



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# Welcome

The 19th Polish-American Science and Technology Conference is a collaboration forum for the advancement of Science and Technology. The conference is organized by the Ohio State University and the Institute of Aviation in Warsaw. It brings together high-level scientists and engineers from the United States and Poland who are committed to strengthening Polish-American ties. Our collective goal is to exchange ideas and bring forth partnerships in the areas of innovation and technologies.

## Agenda

### Tuesday, April 16

### Pfahl Hall 140


7:00 a.m. - 8:00 a.m.	<b>Breakfast and Registration</b>	
8:00 a.m. - 8:30 a.m.	<b>Welcome Addresses</b>  Dr. M.J. Benzakein      Dr. Paweł Stężycki  Dr. Morley O. Stone	
8:30 a.m. - 10:00 a.m.	<b>Manufacturing of Composites</b> Chair: Farhang Pourboghrat, Professor and Chair, Department of Integrated Systems Engineering, The Ohio State University  Mateusz Michalski, Design Engineer, Center for Composite Technologies, Institute of Aviation “Smart approach of innovative composite technologies application for CS 23 class aircraft”  Michał Sałaciński, Deputy Head of Department of Composite Aircraft Structures, ITWL Air Force Institute of Technology “Approach for repair’s substantiation of composite skin MiG-29”  Tomasz Babul, Director, Institute of Precision Mechanics “Graphene application as composite structures properties improvement”  Farhang Pourboghrat, Professor and Chair, Department of Integrated Systems Engineering, The Ohio State University “Composite Thermo-Hydroforming – A Novel Process For Manufacturing of Lightweight Structures”	
10:00 a.m. - 10:15 a.m.	<b>Break</b>	
10:15 a.m. - 12:15 p.m.	<b>Advanced Manufacturing Session 1</b> Chair: Michael Groeber, Associate Professor of Integrated Systems Engineering and Mechanical and Aerospace Engineering, The Ohio State University  Hamish Fraser, Director, Center for the Accelerated Maturation of Materials, Department of Materials Science and Engineering, The Ohio State University “Optimizing the Performance of Additively Manufactured Ti Alloy Components”  Sebastian Szałkowski, Research Assistant, Center of Transportation and Energy Conversion, Institute of Aviation “Energy absorption characteristics of hybrid composite-3D printed lattice structure Static tests and numerical analysis”  Michael Groeber, Associate Professor of Integrated Systems Engineering and Mechanical and Aerospace Engineering, The Ohio State University “Data Analytics and Modeling for Optimization of Additive Manufacturing”	

	Michał Fedasz, Advanced Lead Engineer, Institute of Aviation, Engineering Design Center, Aviation Systems Mechanical “Powder Bed 3D printing (Laser based): Selected process challenges and good practices”
12:15 p.m. - 1:45 p.m.	<b>Lunch and Keynote Speaker</b> (Ballroom A)  Piotr Kosmulski, Safran Program Manager for Electrical Power Generation Systems on Military Programs in the Americas
1:45 p.m. - 4:45 p.m.	<b>Advanced Manufacturing Session 2</b> Chair: Paul Orkwis, Interim Dean of the College of Engineering and Applied Science & Professor of Aerospace Engineering and Engineering Mechanics, University of Cincinnati  Antonio Ramirez Londono, Professor in Welding Engineering Program Department of Materials Science and Engineering, The Ohio State University “Microstructural Modeling of Ni-based alloys Additive Manufactured Components”  Glenn Daehn, Mars G. Fontana Professor of Metallurgical Engineering, Department of Materials Science and Engineering, The Ohio State University “Impulse Manufacturing and Joining: How and Why”  Tomasz Zakrzewski, Design Lead, General Electric Company Polska, GE Aviation Systems “SLS/SLM process optimization in order to minimize product inaccuracy”  Francesco Simonetti, Ohio Research Scholar and Professor in the Department of Aerospace Engineering and Engineering Mechanics, University of Cincinnati “Ice-cold ultrasonic waves for the nondestructive inspection of additively manufactured components”  Ashley Paz y Puente, Assistant Professor in the Department of Mechanical and Material Engineering, University of Cincinnati “3D Printed Metal Lattice Structures: A Decoupled Approach”
4:45 p.m.	<b>Conclusion</b>

### Dinner Event

5:45 p.m.	<b>Bus Pickup at the Blackwell Inn</b> (transport to New Albany Country Club)	
6:30 p.m. - 7:30 p.m.	<b>Cocktail Hour</b>	
7:30 p.m. - 9:00 p.m.	<b>Dinner at New Albany Country Club</b> 1 Club Ln, New Albany, OH 43054  Mirek Sobaniec, Chief Consulting Engineer, General Electric Company Polska, GE Aviation Engines “Catalyst engine overview, additive content and federated Europe engineering team structure for catalyst & capability growth”	
9:00 p.m.	<b>Bus Departs for Blackwell Inn</b>	

### Wednesday, April 17

7:00 a.m. - 8:00 a.m.	<b>Breakfast</b>	
8:00 a.m.	<b>Bus Departs for Ohio State Airport</b>	
8:30 a.m. - 9:30 a.m.	<b>Introduction of Ohio State Airport and Tour</b>  Doug Hammon, Director, The Ohio State University Airport “The Ohio State University Airport”	

9:30 a.m. - 10:00 a.m.	<b>UAV’s and PAV’s Introduction</b>  Jim Gregory, Professor of Mechanical and Aerospace Engineering and Director of Aerospace Research Center, The Ohio State University; Matthew McCrink, Research Scientist of the Department of Mechanical and Aerospace Engineering, The Ohio State University “Unmanned Aircraft Traffic Management for Ohio”
10:00 a.m. - 11:30 a.m.	<b>Demonstration</b>
11:30 a.m.	<b>Bus Departs for Blackwell Hotel</b>
12:00 p.m. - 1:30 p.m.	<b>Lunch and Keynote Speaker</b> (Ballroom A)  Dr. Ajay K. Misra, Deputy Director of the Research and Engineering Directorate, NASA Glenn Research Center “Energy Storage for Electrified Aircraft – Challenges and Opportunities”
1:30 p.m. - 3:10 p.m.	<b>UAV’s and PAV’s</b> Chair: Dr. M.J. Benzakein, Assistant Vice President for Aerospace and Aviation, The Ohio State University  Kelly Cohen, Interim Head, Department of Aerospace Engineering & Engineering Mechanics, Brian H. Rowe Endowed Chair in Aerospace Engineering Co-Director, UAV MASTER Lab, University of Cincinnati “UAV Research at the University of Cincinnati”  Michał Sałaciński, Deputy Head of Department of Composite Aircraft Structures, ITWL Air Force Institute of Technology “Conception of Health Using Monitoring System for UAS”  Julia Zhang, Assistant Professor in the Department of Electrical and Computer Engineering, The Ohio State University “Doubly-fed Brushless Machines for Aircraft Propulsion”  Marcello Canova, Associate Professor, Department of Mechanical and Aerospace Engineering & Associate Director for Graduate and Continuing Education, Center for Automotive Research, The Ohio State University; Matilde D’Arpino, Senior Research Associate, Center for Automotive Research, The Ohio State University “Energy storage systems design and control optimization for commercial vehicles and aviation”  Mikołaj Jarkowski, Head of Department of Aerodynamics, Institute of Aviation “Joined Wing Aircraft as a Test Bed for Distributed Propulsion Technology”
3:10 p.m. - 3:25 p.m.	<b>Break</b>
3:25 p.m. - 5:30 p.m.	Przemysław Drężek, Deputy Head of Department of Aerodynamics, Institute of Aviation “Urban Air Mobility – Leave the Box for the Third Dimension”  Adam Liberacki, Design Engineer, Center of Transportation and Energy Conversion, Institute of Aviation “Development of gasoline-electric hybrid power system for new generation VTOL Unmanned Aerial Vehicles”  Zdobysław Goraj, Professor, Institute of Aviation “Design, testing and optimization of UAV platforms”  Cezary Galiński, Professor, Institute of Aviation; Armand Olejko – Member of the Board of Polish UAV Society “UAVs in the urban environment - legal and city-planning considerations”
5:30 p.m.	<b>Closing Remarks</b>  Dr. M.J. Benzakein and Dr. Paweł Stężycki