Turbine Forum 2022

October 4-6, 2022 | Blackwell Inn at The Ohio State University | Columbus, Ohio

TURBINE FORUM

AGENDA

Monday, October 3rd

6:00 PM **Open house** at Quintus Technologies

Tuesday, October 4th

7:00 AM **Registration and welcome with continental breakfast**

8:00 AM **Opening Remarks**
Cal Lacasse, Turbine Forum

8:15 AM **Keynote: Materials for Turbines in the Green Energy World**
Dr. Jerry Gould, EWI

Session Chair: Matt Dodds, EWI

9:00 AM Presentation 1: *Solid-state Impact Welding for Turbine Repair and Manufacture,*
Dr. Glenn Daehn, The Ohio State University

9:30 AM Presentation 2: *Determining the Relationship of Input Parameters and Machine Deflection on Heat Generation in Linear Friction Welding of Nickel-base Superalloys,*
Dr. Michael Eff and Dr. Olga Eliseeva, EWI

10:00 AM **Refreshment break & networking**

10:30 AM Presentation 3: *Fusion Welding of Hadfield Manganese Steels for Turbine Generator Applications*, Dr. Shankar Srinivasan, Siemens Energy

11:00 AM Presentation 4: *Laser Welding for Replacement of Electron Beam Welding in Engine Repair,* Jacob Hay, EWI, Tim Stotler, EWI; Dr. Suhas Vaze and Jamie Speck, GE Aviation

11:30 AM Presentation 5: *Laser Metal Deposition for Repair of Turbine Blades and So Much More…,* Dr. Eliana Fu, Trumpf

12:00 PM **Lunch & networking**

Session Chair: Dr. Michael Eff, EWI

2:00 PM Presentation 6: *Cold Spray as a Repair Technique for Turbine Blades,*
Dr. Victor Champagne and Howie Marotto, EWI

2:30 PM Presentation 7: *Aluminum Fan Case Repairs using Cold Spray,*
Tim Stotler, EWI; Dr. Suhas Vaze and Jamie Speck, GE Aviation

3:00 PM **Refreshment break & networking**

3:30 PM Presentation 8: *Automated Seal Slot Inspection,*
Connie Reichert LaMorte, EWI, Tim Stotler, EWI, and Dr. Suhas Vaze, GE Aviation

4:30 PM **Open house** at The Ohio State CDME

6:00 PM **Open house & reception** at EWI

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AGENDA PG 2

Wednesday, October 5th

7:00 AM	**Continental breakfast**
	Session Chair: Tim Stotler, EWI
8:00AM	Presentation 9: *Large Format High Fidelity Hybrid Directed Energy Deposition for Aerospace Component*s, Dr. J. Logan McNeil, Michael Carney, Jacob Hay, and Dean Langenkamp, EWI
8:30 AM	Presentation 10: *Thermodynamics and Phase Transformations in Refractory Complex Concentrated Superalloys,* Dr. Eric Lass, University of Tennessee
9:00 AM	Presentation 11: *Latest Developments in High Pressure Heat Treatment of Aerospace Components,* Chad Beamer, Quintus Technologies
9:30 AM	Presentation 12: *Accelerated Testing of Creep Resistance. Selection of Models for Brazed or Welded Joints,* Dr. Alexander Shapiro, Titanium Brazing
10:00 AM	**Refreshment break & networking**
10:30 AM	Presentation 13: *Diffusion Brazing of Additively Manufactured Haynes 282,* Dr. Warren Miglietti, Prince & Izant Company
11:00 AM	Presentation 14: *Braze Repair of Inconel 738LC using a Novel Multi-Principal Element Alloy,* Dr. Zhenzhen Yu, Colorado School of Mines
11:30 AM	Presentation 15: *Reduction of Boride Phases in Brazing of Gas-Turbine Components,* Dr. Warren Miglietti, Prince & Izant Company
12:00 PM	**Lunch & networking**
	Session Chair: Dr. Dennis Harwig, EWI
2:00 PM	Presentation 16: *Weldability of Precipitation Hardening Ni-based Superalloys,* Dr. Joel Andersson, University West
2:30 PM	Presentation 17: *Achieving Higher Performance Welds with ESD Interlayers and Coatings,* Nigel Scotchmer, Huys Industries
3:00 PM	**Refreshment Break & Networking**
3:30 PM	Presentation 18: *Advanced High Temperature Alloys for Turbine Service,* Brett Tossey, Market Manager, Haynes International, Inc.
4:00 PM	Presentation 19: *Weld Cracking in Ni-base Aerospace Alloys,* Dr. Carolin Fink, The Ohio State University
4:30 PM	Presentation 20: *Solidification Cracking Susceptibility Index – New Material Agnostic Index to Support ICME-based Alloy Design,* Dr. Antonio J Ramirez, The Ohio State University
6:00 PM -10:00 PM	**Event party** at Ethyl and Tank, hosted and sponsored by Prince and Izant Company

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AGENDA PG 3

Thursday, October 6th

7:00 AM **Continental breakfast**

Session Chair: Howie Marotto, EWI

8:00AM Presentation 21: *Critical Factors Affecting the Quality of Electro-spark Deposits on Nickel-Base Superalloys,* Dr. Jerry Gould, and Liya Amanuel, EWI

8:30 AM Presentation 22: *Procedure Qualification Schemes for DED Additive Manufacturing – Nickel Aluminum Bronze and High Strength Steel Demonstrations,* Michael Carney, EWI

9:00 AM Presentation 23: *Industrialization of Additive Manufacturing,* Dr Edward D. Herderick, The Ohio State University

9:30 AM Presentation 24: *Additive Manufacturing of Refractories Metals for the Turbine Industry,* Dr. Jacob Rindler, Director of Manufacturing and Materials Technology, Castheon Inc.

10:00 AM **Refreshment break & networking**

10:30 AM Presentation 25: *Controlling Thermal History in Laser Powder Bed Fusion to Improve Microstructure and Geometric Process Outcomes,* Ajay Krishnan, EWI, Alex Riensche, University of Nebraska-Lincoln, and Ben Bevans, University of Nebraska-Lincoln

11:00 AM Presentation 26: *Nanofilm technology coatings in turbine industry perspective,* Balaji Rao Garimella, Nanofilm Technologies International Limited

11:30 AM Presentation 27: *Composite Phase Thermal Barrier Coating: Design, Process and Evaluation,* Dr. Xinqing Ma, Curtiss-Wright

12:00 PM **Lunch & networking**

Session Chair: Nick Kapustka, EWI

2:00 PM Presentation 28: *Advanced Silicone Masking Solutions for Thermal Spraying of Turbine Components,* Kyle France, Aimtek

2:30 PM Presentation 29: *Development of Cold Spray CoNiCrAlY Coating Process of Turbine Blade Airfoil for Oxidation Protection,* Ian Liljestrand, Manufacturing Engineer, Flame Spray North America

3:00 PM **Refreshment break & networking**

3:30 PM Presentation 30: *Process Benefits of High Enthalply Torch,* Dr. Kent VanEvery, Progressive Surface, Inc.

4:00 PM Presentation 31: *Laser Cleaning/Ablation as a New Technology for Green Aerospace Manufacturing*, Dr. Dmitir Novikov, IPG Photonics

4:30 PM **Closing remarks**
Cal Lacasse, Turbine Forum

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