Thirteenth International **Aluminum Extrusion Technology Seminar & Exposition**

Partnership by Design: Aluminum Extrusion & Sustainability

April 30–May 2, 2024 • Rosen Shingle Creek
Orlando, Florida USA

ET24.us

Updated April 23
See Revised Schedule Inside ▶

Partnership by Design: Aluminum Extrusion & Sustainability – *celebrating Aluminum Extrusion Innovation and Technical Exchange at the Thirteenth International Aluminum Extrusion Technology Seminar & Exposition – ET '24!*

The ET technical program examines every aspect of the aluminum extrusion industry — from theoretical, practical, managerial and operational perspectives.

Technical Schedule Inside!

- Look inside to see the ***preliminary*** technical program schedule
- **Visit ET24.us for details and updates to the program.**

Team Registration

- You and your team receive an intensive education in just three days and have a *wealth of information* to take home and implement to improve your operations. Send five or more people* from your company to ET '24 and **save $75 per person.**

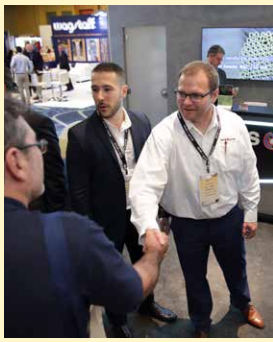
See the registration form for details!

Save $75 **per person with the Team Discount.***

ET '24 Program Includes:

- **Technical Sessions**
  140+ technical presentations from the best minds in aluminum extrusion that are propelling the industry forward.
  (See the preliminary schedule inside)

- **General Sessions**
  Today's leaders examine the challenges and opportunities facing the industry; engaging speakers promise a memorable ET experience.
- **ET Expo**
  Explore leading industry suppliers offering expert, problem-solving advice and products and services specifically for aluminum extruders



- **In-Conjunction Workshops**
  Expand your understanding of the extrusion process by attending one of the optional add-on workshops offered by partner organizations before and after ET '24.
- **Extrusion Showcase**
  Applications featuring extruded aluminum in a variety of markets—from architecture and automotive to energy and electrical—are highlighted here.

- **nETworking**
  Connect and interact with colleagues and peers over three action-packed days!

*All personnel must register and pay at the same time to be eligible for the Team Discount. If fewer than five people attend, the higher rate will be charged.

The ET Foundation is grateful to the following companies for their support of ET '24.

CONFERENCE SPONSORS

ALMEX · Butech Bliss (We Build Things. Better.) · CASTOOL TOOLING SYSTEMS · EGA AMERICA INC. · FOY INC (Developers of the World's Most Popular Extrusion Software) · GRANCO CLARK · Hydro · INOEX (INSPIRE BEYOND MEASUREMENT) · PENNEX METAL EXCHANGE · PRESEZZI EXTRUSION · RioTinto · SCM Can Do. · SMS group · wagstaff

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The Best Papers at ET '24 Announced

The following papers have been selected as the Best Papers by the ET Seminar Committee. These papers will be presented during the Opening and Closing General Sessions on **April 30** and **May 2,** respectively. The presentation day and time are listed below; the presenter's name is in **bold.**

Be sure to catch all the Best Papers at ET '24!

OPENING GENERAL SESSION

TUESDAY, APRIL 30
8:45 a.m. – 12:30 p.m.

BEST OF TRACK PRESENTATIONS:

10:35 a.m.

EXTRUSION DESIGN & INNOVATION (EI)

EI454 **Solution Development and Profile Design**
Ben Kuhn, *Almag Aluminum*

11:05 a.m.

EXTRUSION EQUIPMENT (EE)

EE439 **Measuring and Correcting Distortion in Extrusions**
Norbert Meinikmann and **Philipp Hettich,** *Laubinger + Rickmann GmbH & Co. KG;* Martin Hartlieb, *Viami International Inc.*

11:35 a.m.

EXTRUSION & DIE R&D (RD)

RD330 **Effect of Local Microstructure on Mechanical Behavior of Extrusion Weld Seams**
Andrew Zang *The University of British Columbia;* Jean-François Béland, *National Research Council Canada;* Yu Wang, *Mechanical and Mechatronics Engineering, University of Waterloo;* Nick C. Parson, *Rio Tinto Aluminium;* Mary A. Wells, *Mechanical and Mechatronics Engineering, University of Waterloo; and* Warren J. Poole, *The University of British Columbia*

12:05 p.m.

ET '24 OVERALL BEST PAPER

EP311 **The Journey to Supply Automotive Grade Extrusions: Challenges and Solutions**
Jerome Fourmann *Rio Tinto Aluminium;* Jean-François Béland, *National Research Council Canada;* Paul Rometsch and **Nick C. Parson,** *Rio Tinto Aluminium*

12:05 p.m.

ET '24 OVERALL BEST PAPER

EP311 **The Journey to Supply Automotive Grade Extrusions: Challenges and Solutions**
Jerome Fourmann *Rio Tinto Aluminium;* Jean-François Béland, *National Research Council Canada;* Paul Rometsch and **Nick C. Parson,** *Rio Tinto Aluminium*

CLOSING GENERAL SESSION

THURSDAY, MAY 2
1:00 p.m. – 4:15 p.m.

BEST OF TRACK PRESENTATIONS:

1:05 p.m.

EXTRUSION FINISHES AND FABRICATION (FF)

FF538 **Forming of Aluminum Extrusions for Automotive Applications – Part II: Recent Advances and Prospectives of Methods**
Jun Ma and **Torgeir Welo**, *Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology (NTNU)*

1:35 p.m.

ALLOYS AND BILLET PROCESS (BP)

BP326 **Potential for Using Scandium in Extrusion Alloys**
Paul Rometsch and Jerome Fourmann, *Rio Tinto Aluminium*

2:15 p.m.

EXTRUSION AND DIE PROCESS APPLICATION (EP)

EP318 **Quench Sensitivity of Automotive Extrusion Alloys**
Nick C. Parson, *Rio Tinto Aluminium;* Jean-François Béland, *National Research Council Canada and* Jerome Fourmann, *Rio Tinto Aluminium*

2:45 p.m.

SUSTAINABILITY AND MANAGEMENT (SM)

SM366 **The Business Case for Lightweighting in Battery Electric Vehicles**
Stig Tjoetta and Frode Paulsen, *Hydro Aluminium Metal*

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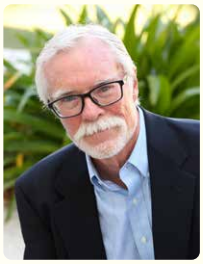
Thursday, May 2 – A Conversation with the Experts – Get Inspired!

3:15 PM

Jerome Fourmann
Rio Tinto

Mark Butterfield
Metal Exchange Corp./ Pennex Aluminum LLC



Lynn Brown
Long Point Associates

Andrew Halonen
Mayflower Consulting

Nick Parson
Rio Tinto Aluminium

John Bergman
SMS Group

Stig Tjoetta
Hydro Aluminum Metals

Join us for an enlightening panel discussion with industry experts where we delve into the latest innovations from ET '24!

Our esteemed panelists will explore the most compelling and crucial takeaways from the technical sessions, shedding light on what lies ahead for the aluminum extrusion industry.

During this engaging session, our leaders will discuss key aspects across various domains:

AUTOMOTIVE

Uncover how aluminum extrusions can address the automotive industry's demand for solutions that minimize the environmental footprint. Our panelists will discuss strategies to increase aluminum usage while meeting low carbon intensity requirements.

BUILDING & CONSTRUCTION

Discover emerging trends in aluminum extruded products for building and construction. From reducing energy footprints to implementing cutting-edge finishing solutions, our experts will share valuable insights.

SUSTAINABILITY

Learn how the extrusion industry is shaping a sustainable future by minimizing the environmental footprint. We will also explore aluminum's industry evolution and eco-friendly practices.

ENGAGE WITH THESE SEASONED PROFESSIONALS

by asking live questions during the discussion. Whether you're curious about specific challenges, innovative solutions, or future prospects, your inquiries will contribute to a more insightful and interactive dialogue. Feel free to raise any queries related to sustainability efforts, energy efficiency trends, challenges in the automotive sector, or any other relevant topics.

Let's ignite meaningful conversations!

Add In-Conjuction Workshops

Register for one of these in-conjunction workshops to enhance your understanding and knowledge of extrusion processes!

Add one or more of these practical seminars to your registration during ET Week – on **Monday, April 29** and/or **Friday, May 3, 2024.** Choose just the workshops or add it to your ET '24 registration.

Register early as space is limited; registration is in addition to your ET '24 registration and includes lunch and all course materials. For program and registration details, visit **ET24.us.**

MONDAY, April 29

8:00 AM – 5:00 PM

- **AEC Extrusion Excellence: Applied Fundamentals for Aluminum Extruders**
- **AEC Finishing Workshop**

8:30 AM – 5:00 PM

- **AEC Process Analysis & Optimization Workshop**
- **AAC Anodizing Essentials Class** presented by the Aluminum Anodizers Council (AAC)

FRIDAY, May 3

8:00 AM – 5:00 PM

- **AEC Extrusion Excellence: Applied Fundamentals for Aluminum Extruders**

8:00 AM – 5:00 PM

- **AEC Advanced Die Clinic**

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ET '24 TECHNICAL SESSION PRELIMINARY SCHEDULE

TUESDAY, APRIL 30 – OPENING GENERAL SESSION

8:45 AM – 12:30 PM

3 BEST OF TRACK PAPER PRESENTATIONS:

10:35 AM **EI454** Solution Development and Profile Design – *Ben Kuhn*

11:05 AM **EE439** Measuring and Correcting Distortion in Extrusions –*Phillip Hettich*

11:35 AM **RD330** Effect of Local Microstructure on Mechanical Behavior of Extrusion Weld Seams – *Andrew Zang*

BEST OVERALL PAPER OF ET'24 PRESENTATION:

11:55 AM **EP311** The Journey to Supply Automotive Grade Extrusions: Challenges and Solutions – *Nick Parson*

OPENING KEYNOTE

Excellence Beyond Extrusion
9:10 AM
Brook Hamilton,
President of Bonnell Aluminum

Brook will discuss how the company has been able to survive the ups and downs of the past 70 years of their existence with events like ET and organizations like the Aluminum Extruders Council. Brook will share Bonnell's methods that make the company a top extruder.

WEDNESDAY, MAY 1

	CONWAY	BUTLER	GATLIN A – 3/4
7:30 AM	**BP483** ALLOYS Evolution of AA6060 – High-Performance 6060X Market Experience *Marcos A. Varayud*	*Download the Cvent app to get the most up-to-date program updates!*	**EE533** MISC The XR Plant Inspector – A New Approach in 3-D Data Use *Sebastian Kemper*
8:00 AM	**BP376** ALLOYS Extrudability of AlMgSi Alloys *Martha Indriyati*	**FF538** FORMING Forming of Aluminum Extrusions for Automotive Applications–Part I: History, Foundations & Practical Implications *Torgeir Welo*	**EE500** LOG FURNACE Recovering the Maximum Amount of Energy from the Exhaust Gases of a Gas-Fired Direct Flame Impingement Log Furnace *Ulrich Bucher*
8:30 AM	**BP447** ALLOYS Review on Homogenization Process on High Zn Content 7xxx-Series Aluminum Alloys *Isik Kaya*	**RD342** ALLOY MISC Processing of Aluminum-Polymer Composites by Hot Extrusion *Patrick Kotzyba*	**EE485** QUENCH Development of Technology to Maintain Solution Temperature Between Press Exit and Quench System *Tanju Çeliker*
9:00 AM	**BP398** CASTING Safe, Autonomous, and Energy Efficient Furnace Tending, Minimizing Waste *David J. Roth*	**RD412** QUENCH Influence of Quench Rate and Artificial Aging Parameters on the Cracking of C20 Crash Alloy TRIMAL-54 during Uniaxial Compression Testing *Axel Marquardt*	**EE493** LOG FURNACE Induction Technology for High-Quality Extrusion Profiles with Reduced Carbon Footprint *Torsten Schaefer*
9:30 AM	**BP327** ALLOYS HyperAl – A Novel Method for Producing Automotive Parts *Ulf H. Tundal*	**BP374** SEAM WELDS Influence of Alloying Elements on the Formation of Longitudinal Weld Streak Defects *Jan Flesch*	**EE523** PRESS Sealing Pump and Other Factors Affecting Mushrooming Problem in Extrusion Process *Sutanay Parida*
10:00 AM	BREAK		
10:30 AM	**BP407** CASTING Furnace Camera System for the Identification of Aluminum Level and Aluminothermic Reaction *Marco Tarabini*	**BP427** ALLOYS Effect of Sc on Recrystallization Resistance of AA7050 *Paul Sanders*	*Watch for Schedule changes in the Cvent app!*
11:00 AM	**BP395** CASTING Comparison of Metallurgical Properties of Aluminum Billets Cast with Two Different Mold Types *Aybars Guven*	**EP315** OPTIMIZATION Connecting the Dots to Approach Optimization, not just Efficiency An Excellent Resource to Gain Impressive Productivity... *Richard Dickson*	**EE414** HYDRAULICS Power on Demand – POD *Scott Myers*

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ET '24 TECHNICAL SESSION PRELIMINARY SCHEDULE

ALSO FEATURED: **Best Paper Awards** • **Chairman's Award** and **Maurice H. Robert Award of Excellence**

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WEDNESDAY, MAY 1

	GATLIN B	GATLIN A – 2	GATLIN A – 1
7:30 AM	**EP428** ALLOYS **Recrystallization Effects on the Formability of Extruded AA6082-T6 Profiles** *Geir Ringen*	**EP399** OPTIMIZATION **Thermally Controlled Container: An Integral Part of the Extrusion Production System that Must be Managed...** *Paul Robbins*	***Visit ET24.us***
8:00 AM	**EP325** ALLOYS **Effects of Extrusion Process Parameter Variations on Mechanical Properties of AA6063 and AA6061** *Paul A. Rometsch*	**EE541** MISCELLANEOUS **Advancing Safe and Reliable Press Operations with Nondestructive `Examinations** *Richard Manganello*	**RD505** 6XXX **Effect of Mg and Si Concentration on Hot Deformation of AA6082** *Eli A. Harma*
8:30 AM	**EP466** ALLOYS **The Impact of Discoloration on Heat Transfer in 6xxx-Series Aluminum Log** *Lucas Itchue*	**EP361** OPTIMIZATION **Importance of Temperature in Extrusion Technology** *Padavu Devaraj*	**RD469** 6XXX **Flow Behavior Investigation during Miniaturized Extrusion of Aluminum (AA6082) and Magnesium (AZ31)** *Maria Nienaber*
9:00 AM	**EP378** ALLOYS **Modeling the Effect of Composition and Billet Temperature on Extrudability and Properties of AlMgSi Alloys** *Ole R. Myhr*	**SM476** OPTIMIZATION **Enhanced Decision Support Tools Applied at Automotive Extruder** *Jeremiah (Jay) Farlow*	**RD473** 6XXX **An Alloy Design Approach to Maximize Processability of High Recycled Content 6xxx-Series Alloys** *Alex Poznak*
9:30 AM	**EP528** ALLOYS **The Effect of Zinc and Magnesium Contents on the Surface Roughness of Extruded Al-Zn-Mg Alloy** *Satoshi Miyazaki*	**EP409** QUALITY CONTROL **promex CT – Complicated Profile Measurement with No Sample Preparation** *Brad Allen*	**RD331** 6XXX **Predicting Texture & Mechanical Properties of Al-Mg-Si Extrusions through Crystal Plasticity & Continuum Mechanics** *Jean-François Béland*
10:00	**BREAK**		
10:30 AM	**EP463** CAUSTIC **Improvements in Caustic Soda Recovery from Extrusion Die Cleaning Plants** *Lorenzo Vecchi*	**EP502** QUENCH **Using an Aluminum Extrusion as an Integral Design Feature in a High-Pressure Profile Spray Quench** *Jan Guenter*	**RD487** 6XXX **A Methodology for the Development of AA6063 Recrystallization Model using FEM Simulations** *Marco Negozio*
11:00 AM	**EP446** TOOLING **Analyzing Die-Related Influencing Factors for Surface Defects in Aluminum Extrusion** *Satheesan Unni*	**EP313** OPTIMIZATION **Fundamentals of Productivity Improvement in an Aluminum Extrusion Plant** *Pradip K. Saha*	**RD391** 6XXX **A Virtual Extrusion Test for Rapid Evaluation of Extrudability of 6xxx-Series Aluminum Profiles** *Mads B. Iddberg*

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KEY

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	CONWAY	BUTLER	GATLIN A – 3/4
11:30 AM	**BP390 CASTING** Application of a Digital Twin for Optimization of DC Casting of Extrusion Ingots *Knut Omdal Tveito*	**EE465 QUENCH** Intensive Quenching: Advanced Variable Geometry Cooling Technology for High-Quality Aluminum Profiles *Pau Vial*	**EE453 HYDRAULICS** Hydraulic Modernization of a World War II-Era Extrusion Press Complex *Steve DeMar*
NOON	LUNCH		
1:15 PM	**BP506 CASTING** S.T.O.P. Molten Explosions from Occurring *Alex W. Lowery*	**EP363 SEAM WELDS** Improving the Soundness of Seam Weld Joints in Hollow Profiles *B. Nataraja*	**EE504 HYDRAULICS** Modernizing an Extrusion Press with the Latest Drive and Control Technology *Michael Kramer*
1:45 PM	**BP347 MISCELLANEOUS** Automated Cast Aluminum Round Ingot Inspection with EMAT UT *David Mann*	*Watch for Schedule changes in the Cvent app!*	**EE406 HYDRAULICS** Data Fusion and AI for Predictive Maintenance of Hydraulic Valves for Aluminum Extrusion Plants *Marco Tarabini*
2:15 PM	**BP349 MISCELLANEOUS** Aluminum Casthouse Dedicated Vehicles are the Green Choice of the Future *Giovanni Magarotto*	**EP458 DIE DESIGN** Die Technology-Dynamic Die Design *Feroze Syed*	**EE415 LUBE** Framework for the Comparison and Selection of Release Agent Technologies *Héctor Kelly*
BREAK			
3:15 PM	**BP539 CASTING** Guide to the Selection and Care of Casting Consumables *John D. Schloz*	**EI492 ALLOYS** Customer Collaboration and New Alloy Development – Approach, Engagement and Establishing New Billet Alloys *Ram Sandipam Adhikary*	**EE392 LUBE** Extrusion Lubrication – Next Generation *James E. Dyla*
3:45 PM	**BP479 3XXX** Better Corrosion Life Aluminum Alloy Development for Automotive Heat Exchanger *Sunil Soni*	**EI379 MISCELLANEOUS** Development of a Porthole Die for Hollow Extrusion Profiles with Axial Asymmetric Variable Wall Thickness *Janne Max Heydrich-Bodensieck*	**EE499 LOG FURNACE** A Comparison of Various Billet Heating Concepts for Today's Extrusion Process *Michael Werner*
4:15 PM	**SM304 SUSTAINABILITY & RECYCLING** Climate-Neutral Extrusion Die Making *Joachim Maier*	**EI369 MISCELLANEOUS** Extending the Boundaries for Reinforced EN AW-6082 Profiles by New Lateral Angular Co-Extrusion Processes *Christian Klose*	**EE521 QUENCH** Improvement in Water Quenching System by Innovative Tall Pump and Smart Filter *Suntanay Parida*
5:00 – 7:00 P.M.	RECEPTION IN ET EXPO		

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WEDNESDAY, MAY 1

	GATLIN B	GATLIN A – 2	GATLIN A – 1
11:30 AM	**SM536 AI DIE TRAINING** The Role of AI in Digitalizing Die Correction – Processing Die Design Features and Aluminum Flow Behaviors... Part I *Praveen C. Hewage*	**FF328 ANODIZING PROCESS** Five Critical Mistakes to Avoid with Sustainable Anodized Aluminum *Anne Deacon Juhl*	***Visit ET24.us***
NOON	**LUNCH**		
1:15 PM	**EP375 AI DIE TRAINING** he Role of AI in Digitalizing Die Correction – Processing Die Design Features and Aluminum Flow Behaviors... Part II *Praveen C. Hewage*	**FF368 ANODIZING FINISHES** The Effect of Floating Crystals on the Surface Appearance of Anodized Aluminum Profiles *Jon A Møretrø*	**RD491 FEM** Simulating the Aluminum Extrusion Process with a Coupled Meshfree and Finite Element Method *Jean-François Béland*
1:45 PM	**SM383 MANAGEMENT** Lean Transformation in the Aluminum Extrusion Industry *Thilanka S Hettiarachchi*	**FF470 ANODIZING FINISHES** Measurement of Process Capability for Anodizing Color *Tony Da Silva*	**RD457 FEM** Comprehensive Numerical Simulation of the Quenching Process in Aluminum Profile Extrusion *Nikolay Biba*
2:15 PM	**SM389 KEY OUTPUT VARIABLE** Operational Excellence Deployed *Carl Czarnik*	**FF507 ANODIZING FINISHES** Anodizing Strategies for Recycled Aluminum Alloys with Aerospace Applications *Peter S. Totaro*	**RD367 FEM** Critical Evaluation of Different Simulation Scenarios of Semi-Hollow Dies *Lasindu Gayashan*
BREAK			
3:15 PM	**SM418 KEY OUTPUT VARIABLE** The Importance of On-Time In-Full (OTIF) Delivery in Aluminum Extrusion *Keerthan Jayaramu*	**FF317 ANODIZING FINISHES** Comparing Anodizing Performance to Alternative Architectural Finishes *Tej Patel*	**RD484 FEM** The Influence of Alloy Characterization Approaches on Extrusion Process FEM Simulation Reliability *Sara Di Donato*
3:45 PM	**EP358 MISCELLANEOUS** Use of Calibration to Achieve Tight Tolerances in High-Strength and Ductile Automotive Profiles *Jon A Møretrø*	**FF324 ANODIZING FINISHES** May it Be a Little Greyer? *Gerard Neervoort*	**RD394 MISC** Machine Learning: The Emerging and Powerful Tool for Material and Process Development & Optimization *Andrew Halonen*
4:15 PM	**EP307 OPTIMIZATION** Evaluating Factors Affecting Profile Extrudability *Tony Da Silva*	**FF351 ANODIZING FINISHES** Effects of Temper on Anodized AA6063 Aluminum Appearance and Architectural Quality Testing Performance *George Oh*	**RD356 MISC** Influence of Test Parameters on Intergranular Corrosion (ICG) Test Results (ISO 11846 Method B) *Malgorzata Halseid*

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THURSDAY, MAY 2

	CONWAY	BUTLER	GATLIN A - 3/4
8:00 AM	**SM365** SUSTAINABILITY & RECYCLING Calculating Carbon Footprint of Aluminum – Dilemmas with Recycling *Stig Tjoetta*	**RD397** QUENCH Using DSC Thermal Analysis for Understanding the Quench Effect on the Microstructure of EN AW 6082 Aluminum Alloys *Emrah F. Ozdogru*	**EE338** QUALITY CONTROL New Developments for Automatic Surface Inspection during Aluminum Extrusion *Gregory M. Gutmann*
8:30 AM	**EI601** CARBON FOOTPRINT Aluminum Extrusion and the Challenge of Decarbonization *Lynn Brown*	**RD474** DUCTILITY Overview of Methods to Evaluate Extruded Profile Ductility as It Relates to Automotive Profiles *Jeff Victor*	**EE360** QUALITY CONTROL promex CYRUS – In-Line AI Inspector for Surface *Björn Biehler*
9:00 AM	**SM408** SUSTAINABILITY & RECYCLING Energy & Environmentally Efficient – Sustainable Aluminum Extrusion Plant Contribution to Dubai Clean Energy Strategy 2050 *Arif Hussain*	**RD475** SEAM WELDS Industrial Implementation of Simulation-Based Tool Design to Ensure High-Quality Seam Welds in 6082 Automotive Profiles *Nikolay Biba*	**EE381** MISCELLANEOUS Profiles Automatic Logistics in Modern Aging Centers Equipped with AGVs *Stefano Mancini*
9:30 AM	**SM478** SUSTAINABILITY & RECYCLING The Climate Emission Footprint of Extrusion Billets from a Typical Recycling Plant *Arild Håkonsen*	**RD329** DUCTILITY Factors Affecting 3-D Deformation Behavior of Automotive Extrusions *Warren Poole*	**EE472** MISCELLANEOUS The Manifestation of Industry 4.0 in Aluminum Extrusion Operations *Christian S. Ferman*
10:00 – 10:30 A.M.	BREAK		
10:30 AM	**SM388** SUSTAINABILITY & RECYCLING Sustainable Dies; Why Bigger Isn't Always Better *Rob Sijben*	**RD350** 6XXX Extrusion Behavior of the Bimetal Billet for AA6000 Series *Onder Ayer*	**FF527** FABRICATION Innovations in Robotic Handling of Aluminum Profiles *Raffaele D'Andrea*
11:00 AM	**SM508** SAFETY Maintenance Department: The Deadliest...Why? *Alex W. Lowery*	**RD380** 6XXX Local Foaming of Extruded 6082 Hybrid Profiles by Means of an Adapted Heat Treatment *Florian P Schäfke*	**EE498** MISCELLANEOUS Vision System Assistant for Automation of Extrusion Process *Michael Horan*
11:30 AM	**SM529** SAFETY Exoskeletons for Industrial Applications *Raffaele D'Andrea*	**EI450** 3XXX Alloy Selection for the Heat Exchanger Market *Saurabh Sedha*	**SM359** MANAGEMENT & TRAINING Attracting and Developing Talent and Skills for the Aluminum Extrusion Industry Post Pandemic *Duncan Crowdis*
NOON	**SM341** SAFETY Excellent Safety Performance with a Risk Elimination System *Janette Courtney*	**EI452** MISCELLANEOUS Small but Mighty: 70 Years of Indirect Extrusion Press Technology *Arturo Oliden*	**SM310** MANAGEMENT & TRAINING Charting Team Development Trajectory: A Study of Engineering Teams Representing the Aluminum Extrusion Industry *Pawel Kazanowski*
NOON	LUNCH		

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This is the preliminary schedule as of April 23, 2024. The schedule is subject to change!

THURSDAY, MAY 2

	GATLIN B	GATLIN A – 2	GATLIN A – 1
8:00 AM	**EP302** OPTIMIZATION INPUT A Novel Analytical Equation for Front Scrap Allocation in Direct Aluminum Extrusion *Tommaso Pinter*	**FF384** ANODIZING FINISHES New Coloring Processes for Anodized Aluminum *Alberto Abad*	**RD385** MISCELLANEOUS AI How Artificial Intelligence (AI) Supports The Production of High Precision Aluminum Extrusion Dies *Ralf Huber*
8:30 AM	**RD488** OPTIMIZATION INPUT A Novel Analytical Formula for Charge Weld Extend Prediction *Riccardo Pelaccia*	**FF482** ANODIZING PROCESS The Benefits Related to a Fully Automated Anodizing Line for Aluminum Extrusions *Alessandro Guerrini*	**RD352** MISCELLANEOUS Additive Manufacturing T echnology Used for Extrusion Dies *Rolf H. Beckert*
9:00 AM	**RD535** CHARGE WELD Charge Weld Prediction in Hollow Aluminum Extrusion *Eren Can Sariyarlioglu*	**FF339** ANODIZING FINISHES The Automation in an Integrated Vertical Powder Coating Line *Andrea Trevisan*	**RD400** MISCELLANEOUS Dummy Block Evolution; Design Optimization for High-Pressure Extrusion *Paul Robbins*
9:30 AM	**EP445** TOOLING Increasing Productivity of Porthole Aluminum Extrusion Dies through Finite Element Analysis and Liquid Nitrogen Use *Evangelos Giarmas*	**FF357** ANODIZING FINISHES Influence of Trace Elements and Surface Processing on Quality of Anodized and Powder-Coated 6xxx-Series Profiles *Malgorzata Chojak Halseid*	**RD467** MISCELLANEOUS AI Development of a Parameterized Model for Additively Manufactured Dies *Fabian Esterl*
10:00 – 10:30 A.M.	BREAK		
10:30 AM	**EP456** TOOLING Understanding Aluminum Extrusion Die Heat-Treating and Nitriding to Reduce Die Failures and Lower Tooling Costs *Jack A. Kalucki*	**FF420** QUALITY Surface Defects with Unexpected Root Causes *Anne Tofte*	**RD449** MISCELLANEOUS Physical and Numerical Modeling of Microstructure Evolution and Micro-Extrusion during Solid-State Recycling... *Mahsa Navidirad*
11:00 AM	**EP514** TOOLING Quality Defects After Die Making *Hanif Hamzah*	**FF346** QUALITY Extruded Tube Shape Measurement with EMAT UT and a Laser Micrometer *David Mann*	**SM441** STANDARDS The Impact of Recent Changes in U.S. Energy and Green Building Codes on Aluminum Extrusions *Thomas D. Culp*
11:30 AM	**EP402** TOOLING High-Performance Dies Consume Less Energy, Last Longer and Create Less Scrap *Yahya Mahmoodkhani*	**FF387** FSW FSW Panels and Extrusions in Module Applications for Maritime Segments – Application to Future Automotive Fabrication *Ole T. Midling*	**SM438** STANDARDS Defining Our Modern Metal *Sam Muhamed*
NOON	**EP401** TOOLING Tooling Material and Heat Treatment Challenges with Bigger Extrusions *Yahya Mahmoodkhani*	**EI600** EXTRUDED PRODUCT Roll-A-Cover Mobile Enclosure System *Michael Morris*	**RD416** MISCELLANEOUS Aluminum Tubing with Locally Modified Properties by Shear Assisted Processing and Extrusion (ShAPE) *Mageshwari Komarasamy*
LUNCH			

THURSDAY, MAY 2 – CLOSING GENERAL SESSION

1:00 PM – 4:15 PM

BEST PAPER PRESENTATIONS:

1:05 PM **FF538** Forming of Aluminum Extrusions for Automotive Applications – Part II: Recent Advances and Prospective of Methods – *Torgeir Welo*

1:35 PM **BP326** Potential for Using Scandium in Extrusion Alloys – *Paul Rometsch*

2:15 PM **EP318** Quench Sensitivity of Automotive Extrusion Alloys – *Nick Parson*

2:45 PM **SM366** The Business Case for Lightweighting in Battery Electric Vehicles – *Stig Tjoetta*

NOTE: Names listed are presenters and are subject to change. *The ET Foundation reserves the right to alter the program or substitute speakers as needed.*

REGISTRATION FORM April 30 – May 2, 2024 • Orlando, Florida USA

Use this form for individual or team registrations. Only those registered may attend scheduled functions. Registration fee includes all as-registered program sessions, entrance to ET Expo, one copy of the ET '24 Proceedings (digital) per registered delegate (non-exhibitor), and scheduled networking and meal functions.
(The Printed ET '24 Proceedings will be available for purchase after ET.)

Fees *U.S. Funds only*	**STANDARD After APRIL 1, 2024**
☐ Individual	$1495
☐ Team *	$1420
☐ Spouse	$ 350

* ***TEAM DISCOUNT:*** Companies sending 5 or more delegates will qualify for the Team Discount. All registrations and payment must be sent together. If cancellation occurs, and fewer than 5 delegates attend, the appropriate fee will be charged. Discount applies to ET '24 registrations only. Delegate substitutions may be made at any time.

In-Conjunction Educational Workshops will be offered as optional add-on events during ET '24.

EVENT #	FEE
1. AEC Extrusion Excellence Course	$495 /**AEC Members/Monday** $895 / Non-Members
2. AEC Finishing Workshop	$495 /**AEC Members /Monday** $895 / Non-Members
3. Process Analysis & Optimization	$595 /**Monday**
4. AAC Anodizing Essentials Class	$495 /**AAC Members /Monday** $895 / Non-Members
5. AEC Extrusion Excellence Course	$495 /**AEC Members /Friday** $895 / Non-Members
6. AEC Die Clinic	$495 /**AEC Members /Friday** $895 / Non-Members

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Complete this section for individual delegates and team registrations.

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☐ **I have a diet request:** _____ Halal _____ Kosher
☐ Opt Out: **Do not** send my information to any third party.
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Please include ONE Job Code (Step 2) to indicate your PRIMARY job responsibility next to your name.

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11 Executive Management
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19 Die Maker/Corrector
20 Production
21 Finishing
22 Fabrication
23 Casting/Remelt
24 Packaging/Shipping
25 Plant Engineer
26 Financial
27 Safety
28 Environmental
29 Other

SUPPLIERS ONLY
31 Executive Management
32 Research & Development
33 Equipment Designer
34 Engineer
35 Sales & Marketing
36 Installer
37 Other

END-USERS ONLY
41 Executive Management
42 Research & Development
43 Product Designer
44 Engineer
45 Sales & Marketing
46 Manufacturing/Promotion
47 Other

OTHERS
51 Educator
52 Student
53 Non-Profit Organization
54 Researcher
55 Media/Press
56 Other

Step 2: Delegate Information

Complete this section for each delegate who will be attending. Individual email addresses MUST be provided for registration confirmation purposes.

Please use a separate sheet for additional names, if necessary.

	JOB CODE	First Name	Last Name	Job Title	Email	ET '24 Fee	Event # & Fee		Event # & Fee		Subtotal
1.								$		$	$
2.								$		$	$
3.								$		$	$
4.								$		$	$

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Send completed registration form and payment to:

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1000 N. Rand Road, Suite 214
Wauconda, IL 60084 USA
Secure Fax: 847.526.3993

If paying by check, ACH or wire transfer, the fee **must be paid by the discount expiration date** to qualify for that discount (i.e., Premium **by December 23, 2023; Early by February 16, 2024**) or the registration fees will automatically adjust to the next rate. After **March 18, 2024,** only credit card payments will be accepted for online registrations.

METHOD OF PAYMENT

☐ Check enclosed (make check payable to Aluminum Extruders Council; U.S. Funds drawn on a U.S. bank only)
☐ Wire transfer (include complete registration total and applicable bank fees in U.S. Dollars)

Contact us at mail@ETFoundation.org for wire transfer instructions.

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Questions?

Contact the ET Foundation:
847.416.7258
or **mail@ETFoundation.org**

CANCELLATION POLICY: Registration fees will be refunded only if written notice is received **on or before March 29, 2024.** A 20% administrative fee will be deducted from the refund amount. **No refunds** will be given for registration received **after March 29, 2024.** Delegate substitution may be made at any time.

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