

Wednesday, May 19

Seminar Sessions

ET Expo and Extrusion Showcase
Open 10:00 a.m. – 8:00 p.m.

8:00	OPENING GENERAL SESSION – SUN BALLROOM 8:00		
10:00	BREAK 10:00 – 10:30 NEAR ET EXPO HALL		
Room	Osceola A – BP & EP	Osceola B – DD	Osceola C – EE
	Alloys & Homogenization	Practical	Controls
10:30 to 10:55 am	Extrudability and Mechanical Properties of Alcan's High Performance Al-Mg-Si Alloy, Ram Ramanan, Alcan Primary Metal Group	The Fixed Dummy Block, Paul Robbins (Dennis Van Dine)*, Castool Tooling Solutions	Upgrading Extrusion Presses with Variable Frequency Drives, Richard J. Rutkowski, SMS Eurmco Inc.
11:00 to 10:25 am	A Model of the β -AlFeSi to α -Al(FeMn)Si Transformation During Homogenization in 6xxx Alloys, F.J. Vermolen, Delft University of Technology	Die Heating in Production, Alan Castle, Service Extrusion Consultants	Practical Non-Contact Temperature Measurement for Gas-Fired Billet Heating Furnaces, David Jenista, Granco Clark, Inc.
11:30 to 11:55 am	A Modern View of the Thermodynamics and Kinetics of the Magnesium-Silicide Presence in 6xxx Alloys, Roger N. Wright, Rensselaer Polytechnic Institute	The Single Cell Die Oven, Stephen Wasilenko (Michael Rushton)*, Castool Tooling Solutions	Automation System for Production Optimization in Aluminum Extruder Plants, Based on Temperature Measurement and Control, M. Pandit, University of Kaiserslautern
NOON	LUNCH IN ET EXPO HALL		
	Molten Metal Treatment	FEM	Container
1:15 to 1:40 pm	The Pechiney Jetcleaner – New Equipment Technology for "In-Line" Treatment of Molten Aluminum Alloys, John V. Griffin, Pechiney Aluminum Engineering, Inc.	Analysis and Design Optimization of Aluminum Extrusion Dies, Mahender P. Reddy, Altair Engineering, Inc.	▲ The Analysis of a Fatigue Failure of a Large Indirect Aluminum Extrusion Press Container Mantle, Gerry J. Dail, Alcoa, Inc.
1:45 to 2:10 pm	Techniques for Removing Sodium from Molten Aluminum, Martin B. Taylor, Société des Technologies de l'Aluminium STAS Itée	Experimental and Numerical Investigations of Aluminum Extrusion Through Pocket Dies, Dariusz Leśniak, AGH University of Science and Technology	Tool Steel and Design of Modern Containers for Extrusion of Light Metal, Manfred Herder, Kind & Co. Edelstahlwerk
2:15 to 2:40 pm	Benefits with Electromagnetic Pumping Technology in Extrusion Alloy Melting Furnaces, Paul S. Campbell, Metallux Systems Co. LP	Microstructural Evaluation of Convex Die Extrudates, Heather M. Browne, Institute for Metal Forming, Lehigh University	New Developments in Design and Production of Container Assemblies, Volker Wieser, Bohler Edelstahl GmbH & Co KG
2:45 to 3:10 pm	Advantages of Vertical Bonded Particle Filter Technology in Extrusion Billet Casting, David V. Neff, Metallux Systems Co. LP	▲ Effect of the Convex Die Geometry on the Process Parameters During Extrusion, Pawel Kazanowski, Institute for Metal Forming, Lehigh University	Thermal Control of the Extrusion Press Container, Dennis Van Dine (David Purdy)*, Castool Tooling Solutions
3:15	BREAK 3:15 – 3:45 NEAR ET EXPO HALL		
	Peripheral Course Grain I	Surface Treatment	Handling
3:45 to 4:10 pm	Prediction of Extruded Microstructures Using Experimental and Numerical Modeling Techniques, Christopher Harris, University of Birmingham	Deposition of Hard Films on Hot-Work-Steel Dies for Aluminum Extrusion, Klaus Müller, Technische Universität Berlin	Flying Cut Puller Without Hand Off, Francesco Gramaticopolo, OMAV SpA
4:15 to 4:40 pm		CVD Coating Technology for Increased Lifetime of Aluminum Extrusion Dies, Joachim Maier, WEFA GmbH	Technical Textiles for Extrusion Handling Systems: Introducing High Tech While Avoiding Basic Mistakes, Doris Gaube, BWF Textil GmbH & Co. KG
4:45 to 5:10 pm		Nitriding of Extrusion Dies: Problems and Solutions, Tahar Nabil Tarfa, Nitrex Metal Inc.	Innovative F.T.S. Three Puller – Automatic Stretcher System, Mauro Spizzo, O.M.S.
5:30	RECEPTION IN ET EXPO HALL 5:30 – 8:00		

(*Name in parentheses denotes presenter other than principal author.)

Tracks:	 Billet Process and Equipment (BP)	 Extrusion Process (EP)
	 Die Design & Technology (DD)	 Management Issues (MI)
	 Extrusion Equipment (EE)	 Value Added Processes (VA)

8:00

10:00

Room

Osceola D – EP**Osceola 1, 2, 3 – MI****Osceola 4, 5, 6 – VA****Process I**

HyperXtrude/Process – Extrusion Process
Optimization Software, Mahender P. Reddy, Altair
Engineering Inc.

Effect of Section Thickness on Magnitude of Shape
Variations During Cooling of Flat, Extruded Sections,
Martin Kristoffersen, SINTEF Materials Technology

Studies of the Effects of Flow Imbalance on Shape
Variations in Aluminum Extrusion by use of
Lagrangian FEM Software, Frode Halvorsen, SINTEF
Materials Technology

Paint

Chrome-Free Pretreatment: A Cost-Effective
Solution to the Elimination of Environmental and
Workplace Concerns Surrounding Chromium,
Charles R. Ike, Bulk Chemicals, Inc.

Decoral System: for the Decoration of Extruded
Aluminum Profiles,
Enrico Piva, Decoral System Srl

Process Control and Data Acquisition for
Pretreatment Washer Systems Utilizing
Computerized Graphics, Timothy E. Fudge, Bulk
Chemicals, Inc.

10:30
to
10:55
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10:25
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to
11:55
am**Peripheral Coarse Grain I**

Analysis of Peripheral Coarse Grain Recrystallization
in 6xxx Aluminum Alloy Extrusion, William Van
Geertruyden, Institute for Metal Forming, Lehigh
University

Prediction of Static Recrystallization During Shaped
Extrusion, Zhi Peng (Terry Sheppard*), Bournemouth
University

Thermomechanical Modeling of Coarse Grain
Formation of Al-Mg-Si Alloy during Extrusion, Paul T.
Wang, Alcoa Technical Center

Application of FEM to Modeling of Multi-Hole Die
Extrusion, Zhi Peng (Terry Sheppard*), Bournemouth
University

Safety

Practical Application of the Future European Extrusion
Safety Standard EN 14656 in an Existing Plant near
Barcelona, Jürgen Sturm, TECALEX Aluminum
Technology

Extrusion Hazards and Risk Reduction, Alan Bartelt,
Alcoa, Inc.

The Aluminum Industry's Efforts to Prevent Molten
Metal Explosions (Part 1), Seymour G. Epstein, The
Aluminum Association

The Aluminum Industry's Efforts to Prevent Molten
Metal Explosions (Part 2), Seymour G. Epstein, The
Aluminum Association

Extrusions

Industrial Experience of Caustic Soda Recovery
Integrated with Automatic Die Cleaning, Walter
Dalla Barba, Italtelco Srl

Manufacturing Process of Curved Extrusions for
Aluminum, Karl-Heinz Lindner, Erbslöh
Aktiengesellschaft

Production of High Curved Extruded Profiles
Directly During the Extrusion Process, Klaus
Müller (Sven Stuke*), Forschungszentrum
Strangpressen TU Berlin

NOON

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1:40
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to
3:10
pm

3:15

Temperature Measurement

Real Temperature Parameters for Isothermal Extrusion,
Boris Shtarker, 3T – True Temperature Technologies,
Ltd.

Thermal Management Practices for Aluminum
Extrusion, Bill Barron, Williamson Corp.

Integrated Extrusion Thermometry and the
Measurement of Quench Rate, Stuart F. Metcalfe, Land
Instruments International

Education

Bringing Technical Materials Engineering and
Aluminum Information to the K-12 Community, Kelly
P. Wardlow (Wojciech Misiolek*), Institute for Metal
Forming, Lehigh University

Welding

Promoting the Use of Aluminum Extrusions Within
the Welding Fabrication Industries, Tony Anderson,
AlcoTec Wire Corporation

Friction Stir Welding Tools and Techniques for
Welding Aluminum Extrusions, Wayne M. Thomas
(Michael Nunn*), TWI

▲ Wider Extrusions at Lower Cost by Friction Stir
Welding, Kari Erik Lahti, Esab AB Welding
Automation

3:45
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4:10
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5:10
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5:30

Room	Osceola A – BP & DD	Osceola B – DD	Osceola C – EE
	Alloys	Practical Design	Presses
8:00 to 8:25 am	Features of Extrusion of Al and Mg Alloys for Production of Billets with Improved Strength, Plastic and Technological Properties, Rafail Shcherbel, All-Russia Institute of Light Alloys Stock Co.	Die Design - The Next Generation, Rick Liscomb, Alu' Die	Catastrophic Failure: A 48-Hour Remedy, Adam Cramlet, Alexandria Extrusion Company
8:30 to 8:55 am	Step-Change Improvement in Properties and Extrudability of 6xxx-Series Alloys, Malcolm Couper, Comalco Research & Technical Support	The Effect of Die Type and Die Design on Heat Generation and Productivity when Extruding AlMgSi Alloys, Gregory Lea, Alcan Primary Metals Group	Building a "Green Field" Extrusion Plant in the 21st Century, Franco Libera, Presezzi Extrusion
9:00 to 9:25 am		Integrated Computer-Aided Extrusion Hollow Die Design System, Yeon-Jeng (Henry) Huang, Extru System Inc.	Front-Loading Technology with Tandem Cylinder Design for High Precision Extrusions, Jürgen Sturm, Tecalex Aluminum Technology
9:30 to 9:55 am	Predictive Metallographic Assessment of Extrudability and Comparative Testing of 6xxx Aluminum Alloy Billets, Richard M. Kelly, Werner Corporation	Introduction of Simulation Technology to Die Design, Hidekazu Sakihama, Showa Denko K. K.	Special Purpose Extrusion Press for the Production of Curved Profile, Markus König, SMS Eumuco GmbH
10:00	B R E A K 1 0 : 0 0 – 1 0 : 3 0 N E A R T H E E T E X P O H A L L		
	Die Technology	FEM	Age Ovens/Miscellaneous
10:30 to 10:45 am	Weight Per Meter Control Through Accurate Die Aperture Size, Hanif Hamzah, Press Metal Berhad	Prediction of Material Flow Pattern in the Hot Extrusion of Aluminum Alloys by the Finite Element Method, Xavier Velay, Bournemouth University	The Extrusion Press Line for 2024: A Forecast, J.A. Kennedy, Kennedy Eurotech, Inc.
11:00 to 11:25 am	Finite Element Method (FEM) Investigations for Practical Extrusion Issues – Extrusion Process for Complex 3-D Geometries; Pocket Die Designs; Transverse Weld Phenomenon, Qiang Li, University of Birmingham	Consideration of Surface Formation and Cracking and Control by Isothermal Extrusion – Simulation of These Factors by the Finite Element Method (FEM), Xavier Velay, Bournemouth University	Continuous Aging Oven for Extruded Profiles in Aluminum Extrusion Plants, Luis Las Heras, Tecalex
11:30 to 11:55 am		Integration of 3D Finite Element Flow Modeling in Extrusion Tool Conception and Fabrication, B. Bourqui, Alcan Aluminum Valais Ltd.	Innovative Continuous Aging Oven for Extruded Profiles, Mauro Spizzo, Ö.M.S.
NOON	L U N C H I N E T E X P O H A L L		
		Practical	Induction
1:15 to 1:40 pm		Use of Tribology to Improve Performance and Quality in Aluminum Extrusion, Pradip K. Saha, The Boeing Company	Process Control Improvements for Single Billet Induction Heaters, Stefan Beer, Induktionsanlagen+Service GmbH & Co. KG
1:45 to 2:10 pm		Automated Polishing and Cleaning of Aluminum Extrusion Dies, Bill Fehl, Extrude Hone Corporation	Induction Heating of Aluminum Billets Using Superconductors, Niklas Magnusson, SINTEF Energy Research
2:15 to 2:40 pm		Study of Cost Savings in Die Trial and Die Correction With New Inspection Technologies, Shmaya Wallfish, Romidol Ltd.	Progress in Single-Billet Induction Heater for Light-Metal Extrusions Works, Willi Johnen, Firma Otto Junker GmbH
2:45 to 3:10 pm		Software Application for the Management of Profiles, Backers, and Bolsters, Rafael I. Rodriguez, Alusoft, S.L.	Improvements in Modern Heating Techniques for the Extruder, Mike Whisken, Inductoheat Banyard

Tracks:	 Billet Process and Equipment (BP)	 Extrusion Process (EP)
	 Die Design & Technology (DD)	 Management Issues (MI)
	 Extrusion Equipment (EE)	 Value Added Processes (VA)

Osceola D – EP	Osceola 1, 2, 3 – MI	Osceola 4, 5, 6 – VA	
Metallurgy/Measurement	Globalization	Fabrication	Room
The Process of Gaining Extrusion Speed in 6xxx-Series Alloy, Srimay Basu, Gulf Extrusions Co. (L.L.C.)	▲ The Effects of Globalization on the Aluminum Extrusion Industry, Bruno G. Rüttimann, Alcan Singen GmbH		8:00 to 8:25 am
A Methodology for Quantitative Three-Dimensional Comparison of Experimental and Computer-Simulated Microstructural Textures of 6xxx Aluminum Alloys, Alexander R. Bandar, Institute for Metal Forming, Lehigh University	High Quality Extrusions for Railway and Urban Transit Applications in China, Walter Engelmann, Corus Aluminium Profitechnik GmbH	Improving Thermal Performance in Structural Fenestration Products, Patrick Muessig, Azon	8:30 to 8:55 am
Thermomechanical Effects of the Presence of Magnesium–Silicide in 6xxx Alloys at Extrusion Temperatures, Roger N. Wright, Rensselaer Polytechnic Institute	Aluminum Extrusion Industry in India – Challenges & Opportunities, S. S. Chokhani, Sudal Industries Limited	Manufacture of Continuously Reinforced Profiles Using Standard 6060 Billets, Alexander Klaus, Dortmund University	9:00 to 9:25 am
The Role of Metallography in the Characterization of Aluminum Extrusion Defects and Failures, William L. Phillipson, Alcan Technical Laboratory	Aluminum Industry Standards for Extrusions, Pete Pollak, The Aluminum Association, Inc.	Enhanced Tool Lubrication Systems, James E. Dyla, AMCOL Corporation	9:30 to 9:55 am
10:00			
Metal Flow I	Operations Management	Anodizing	
▲ Isothermal Extrusion of Aluminum Alloys, Masaya Takahashi, Sumitomo Light Metal Industries, Ltd.	Managing the Performance of Extrusion Plant, Roger A. P. Fielding, Benchmarks and The Virtual Company, Inc.	Outdoor Exposure Performance of Anodized Finishes, Barry Ellard, Alcan Corporation	10:30 to 10:45 am
Measurement of Pressure and Friction on the Container Surface During Aluminum Hot Extrusion, Takeshi Yoneyama, Kanazawa University	Process and Quality Improvements by Implementation of ISO/TS 16949 in Extrusion Plants, Walter Engelmann, Corus Aluminium Profitechnik GmbH	A New Economic Two-Step Coloring Process for Bronze and “Stainless Steel” Colors, Walter Dalla Barba, Italtelco Srl	11:00 to 11:25 am
Study on Metal Flow in Extruded Billet, Hideo Sano, Sumitomo Light Metal Industries, Ltd.	The Nine Principles for Best-in-Class Quality, Brad Allen, DII Ascona Inc.	A New Anodizing Specification, Richard Porosky, YKK AP America, Inc.	11:30 to 11:55 am
NOON			
Peripheral Coarse Grain II	Operations Management	Extrusion	
Prediction of Flow Stress and Recrystallization by the Finite Element Method During the Hot Extrusion of Aluminum Alloys, Xavier Velay, Bournemouth University	Die Correction?, Roger A. P. Fielding, Benchmarks and The Virtual Company, Inc.	Changes to Extrusion Application Design in the Aluminum Design Manual 2005, J. Randolph Kissell (Teoman Pekoz*), The TGB Partnership	1:15 to 1:40 pm
Effects of Extrusion Parameters on Coarse Grain Surface Layer in 6xxx-Series Extrusions, Elizabeth D. Sweet, Comalco Research & Technical Support	Using “Feed Forward” Concept to Integrate and Optimize the Extrusion Process, Die Design, and Management Process, Yean-Jenq (Henry) Huang, Extru System, Inc.	Effect of Stretching on Extrusions for Residual Stress and Distortion, M.E. Karabin, Alcoa	1:45 to 2:10 pm
▲ Control of Grain Structure in Al-Mg-Si Extrusions, Nick Parson, Alcan International Ltd.	Meeting Today’s Market Challenges Through Strategic Equipment Investments, Nicola Defendi (Al Kennedy*), OMAV SpA		2:15 to 2:40 pm
Microstructural Gradients Present Near the Surface of Large 6xxx Aluminum Extrudates, Steven R. Claves, Institute for Metal Forming, Lehigh University	Technical Solutions for the Aluminum Extrusion Industry, Subodh K. Das, Secat, Inc.		2:45 to 3:10 pm

..... **Thursday, May 20**
Seminar Sessions Continued

Room	Osceola A – BP	Osceola B – DD	Osceola C – EE
3:15	B R E A K 3 : 1 5 – 3 : 4 5 N E A R E T E X P O H A L L		
	Cast Shop	FEM	Quench
3:45 to 4:10 pm	Traveling Billet Homogenizing Furnace, Bill Weyand, Seco/Warwick Corporation	Evaluation of a New Finite Element Method (FEM) Criterion for Seam Welds Quality Prediction in Aluminum Extruded Profiles, L. Donati, University of Bologna sez. D.I.E.M.	Advantages of a "Special Nozzles" Cooling Tunnel, Enrico Freri, OMAV SpA
4:15 to 4:40 pm	Compact Type Remelt Plant for Contaminated Scrap Using Latest Melting Technology, Franz Niedermair, Hertwich Engineering	Numerical Simulation of Weld Pocket Dies during Extrusion of Thin-Walled Solid Sections, Igor Duplancic, University of Split	High Performance Quenching: Maximum Performance in the Minimum Space, David Jenista, Granco Clark, Inc.
4:45 to 5:10 pm	Use of Boron Nitride Coatings with Aluminum Casting Technology, Stephan Rudolph, Büro Für Angewandte Mineralogie	3-D Finite Element Method (FEM) Simulation System for Optimization of Profile Extrusion, Nikolai Biba, QuantorForm Ltd.	A New Horizontal Plant Concept for the T6 Treatment of Hard Alloy Extrusions, Carl Kramer, WSP Ingenieur GmbH

..... **Friday, May 21**
Seminar Sessions

Extrusion Showcase Open
7:00 a.m. – 10:00 a.m.

	Osceola A – BP	Osceola B – DD	Osceola C
	Cast Shop	Materials & Surface Treatments	
8:00 to 8:25 am	The Ultimate Extrusion Scrap Remelt and Casting System, Roger A.P. Fielding, Benchmarks	Extrud-AL™ -- An Alternative Approach to Nitrogen Die Cooling, Richard Twigg, Air Liquide America LLP	
8:30 to 8:55 am	▲ Wagstaff NuMax™ Technology – Improving Billet Casting and Extrusion Performance, David Schlotz, Wagstaff	Modern Extrusion Die Hardening and Nitriding, Tom Guler, Thermovac Pty. Ltd.	
9:00 to 9:25 am	The Casthouse Safety Program, Michael Craig, Indalloy Toronto Division Indalex Limited	Ni3Al-based Composites as Alternative Die Materials for the Extrusion of Hard Aluminum Alloys, Twan J. Walstock, Adex B.V.	
9:30 to 9:55 am	AllMech: A Computer Program for Alloy Selection and Extrusion Process Improvement, Jostein Rayset, Hydro Aluminium R&D Materials Technology	Fundamentals of Advanced Aluminum Extrusion Processes, Józef Zasadziński, University of Mining and Metallurgy	
10:00	B R E A K 1 0 : 0 0 – 1 0 : 1 5 I N O S C E O L A L O B B Y		
10:15	1 0 : 1 5 A M – N O O N C L O S I N G G E N E R A L S E S S I O N		

Tracks:	 Billet Process and Equipment (BP)	 Extrusion Process (EP)
	 Die Design & Technology (DD)	 Management Issues (MI)
	 Extrusion Equipment (EE)	 Value Added Processes (VA)

Osceola D – EP	Osceola 1, 2, 3	Osceola 4, 5, 6 – VA	Room
Metal Flow II		Fabrication	3:15
Metal Flow in Billets of Thin-Walled Extrudates, Steven R. Claves, Institute for Metal Forming, Lehigh University		New Advanced Automation in Extrusion Working and Assembly, Mario Conserva, Aifin SpA	3:45 to 4:10 pm
Upset, Christopher W. Jowett, Alcan International Ltd.		Design and Fabrication of Aluminum Automobiles, Frank G. Armao, The Lincoln Electric Company	4:15 to 4:40 pm
An Investigation of Size Effects in Miniature Hot Extrusion, Fahad Al-Mufadi (Jay S. Gunasekera), Ohio University		A CNC Machining Center for Processing Profiles for the Train Industry, Giovanni Barbareschi, Tekna Srl	4:45 to 5:10 pm

Osceola D – EP	Osceola 1, 2, 3 – MI	Osceola 4, 5, 6 – EE	
Process II	Globalization	Maintenance & Productivity	
Results of Investigation Direct and Backward Extrusion with FEM Program Qform, Sergei Stebunov, QuantorForm Ltd.	Business Opportunity of Aluminum Extrusion in China, Benson Wu, Kam Kiu Aluminum Group		8:00 to 8:25 am
Evaluation of the Applicability of a Thermomechanical Model to Industrial Extrusion Experiments of AA6063, J. van de Langkruis, Corus Research, Development and Technology	Extrusion Equipment Upgrades for Maintaining Leadership Status in India, Jitendra Pal Singh, Hindalco Industries Ltd.	The Maintenance of Extrusion Presses with Specific Reference to Press Tooling, Paul Robbins (Dan Dunn*), Castool Tooling Solutions	8:30 to 8:55 am
A Manufacturing Flow Path Simulation of the Microstructure Evolution of 6260 Aluminum Alloy During Extrusion Processing, Lawrence A. Lalli, Alcoa Technical Center	Aluminum Profile Industry in China, Wang Zitao, Guangdong Non-Ferrous Metals Society Processing Academic Committee	Influence of Log and Billet Temperature Gradients on the Productivity of Extrusion Plants – Theoretical Considerations and Practical Results, Bruno Mancini (Werner Strehmel*), Cometal Engineering	9:00 to 9:25 am
Temperature Changes and Their Effect on Deformation During Extrusion Using FEM, I. Filita (Terry Sheppard*), Bournemouth University			9:30 to 9:55 am

10:00

10:15

ET '04 reserves the right to substitute speakers and alter the schedule.

* Denotes presenter ▲ Denotes award-winning paper