Extrusion Excellence:
Applied Fundamentals for Aluminum Extruders

Held in conjunction with ET’20

May 18th and 22nd, 2020

Hyatt Regency Orlando • Orlando, Florida USA

Attend Monday or Friday
8:00 a.m. – 5:00 p.m.

The Extrusion Excellence short course is an intensive one-day educational seminar that brings together aluminum extrusion theory and practice and provides a fundamental engineering approach to the aluminum extrusion process.

Why Attend?

Many people in the aluminum extrusion industry have production experience but have not had formal training in engineering and metallurgy as they pertain to the aluminum extrusion process.

You will gain a well-rounded education on the fundamentals of the aluminum extrusion process in this intensive one-day course. The topics taught will enable you to offer your customers improved assistance and help you better understand their needs.

Who Should Attend

This course is intended for those involved in the production of aluminum profiles that may not have had any formal training in the engineering and metallurgical aspects of the extrusion process. The curriculum taught is appropriate for those new to the industry, as well as experienced production personnel, including:

- Extrusion Managers
- Superintendents
- Production Supervisors
- Lead Extrusion Operators
- Die Shop Managers
- Maintenance Managers
- Process Engineers
- Engineering Staff

THE COURSE

This one-day course will include the basics of the extrusion process from a fundamental engineering approach. The topics covered will include the extrusion process from billet production through the press to the runout table.

- Extrusion Concepts
  Get an overview of extrusion processes and the types of products that utilize aluminum profiles.

- Aluminum Extrusion Alloys
  A number of basic concepts involving aluminum alloys will be covered, including:
  - Composition
  - Mechanical properties
  - Standards
  - Quench sensitivity
  - Aging practices (natural and artificial)
  - Tempers

This course will help you:

- More clearly understand engineering fundamentals
- Improve personnel safety
- Increase product quality and extrusion productivity
- Leverage competitiveness through better understanding of process and throughput.

AEC reserves the right to alter the program and substitute speakers as needed.

AEC.org/ExtrusionExcellence
Learn the Fundamentals of the Extrusion Process

Aluminum Billet Metallurgy
The microstructure development from casting through homogenization will be addressed in layman’s terms but also in enough detail to offer registrants the understanding needed to manufacture a product that meets mechanical property requirements. Other topics include:
- Deformation
- Quenching
- Extrudability
The factors that control the term "extrudability" and decisions affecting output, quality, and scrap will be covered, including:
- Definitions
- Extrusion limit diagrams
- Differences between soft and hard alloys
- Throughput and productivity
- Limiting factors of extrusion.

Metal Flow Analysis
The fundamentals of metal flow in container and die, and their impact on butt discard scrap and product quality will be described. Topics include:
- Billet upset
- Container issues
- Roles of friction, temperature, and strain distribution.

Extrusion Dies
The concept of overall die cost, the basics of die design, and proper handling techniques will be discussed. Topics include:
- Preheating practice
- Deflection under load and temperature
- Dies nitriding, and cost of tooling relative to productivity.

Quality Assurance
The basic tools of quality control will be reviewed and their relative importance and proper application will be described. Some of the quality tests that will be examined in this section include:
- Analysis of extrudates through microstructural evaluation and mechanical property testing
- Tensile tests covering elongation, yield strength, and tensile strength
- Hardness tests
- Microstructural gradients.

Current Technological Developments
Current developments in extrusion technology will be examined.

The Instructor
Dr. Wojciech Z. Misiolek, Director of the Loewy Institute at Lehigh University in Bethlehem, Pennsylvania, will be the instructor. Dr. Misiolek, Loewy Professor and Chair of the Materials Science and Engineering, is a respected expert in the field who works closely with the industry to help propel the aluminum extrusion process forward.

The Hotel
The Extrusion Excellence Course is taking place in conjunction with the Twelfth International Aluminum Extrusion Technology Seminar & Expo – ET ’20.

A block of rooms at the Hyatt Regency Orlando, located next to the Orange County Convention Center, is being reserved at the special rate of $239/night (single or double occupancy). Contact the hotel directly to make your room reservations. You may make your reservation with the Hyatt Regency Orlando online at www.ET20.org or by calling the hotel reservation phone number below.

This event is popular and will sell out quickly; make your room reservations as early as possible and no later than April 20, 2020 to take advantage of the special room rate.

Hyatt Regency Orlando
9801 International Drive
Orlando, FL 32819
Reservations: 888.421.1442
When calling be sure to mention Group code: G – MEXT to receive the special rate.

Transportation
The Hyatt Regency Orlando is located just 15 minutes from the Orlando International Airport (MCO). Though Hyatt Regency Orlando does not offer a shuttle service, contact MEARS Transportation who operates shuttles in the area at: www.mearstransportation.com or 1.855.463.2776

Full day and overnight guests may self-park at the Hyatt Regency Orlando at $27 + tax daily. Valet parking is available at $40 + tax daily. Prices are subject to change without notice. Guests in the ET ’20 group reservations block receive a 20% discount on self-parking.
May 18th and May 22th 2020 • Orlando, Florida

Extrusion Excellence:
Applied Fundamentals for Aluminum Extruders

COURSE REGISTRATION FORM*

Register Online at: ET20.org
*NOTE: If you wish to register for ET ’20 and this course, register at ET20.org

Hotel Information
Hyatt Regency Orlando
9801 International Drive
Orlando, FL 32819
Reservations: 1.888.421.1442
Mention the Group code: G – MEXT

Online Reservations
Visit AEC.org/ExtrusionExcellence and follow the link for hotel reservations.
Extrusion Excellence Course is being held in conjunction with ET ’20. A block of rooms is being held at the Hyatt Regency Orlando until April 20, 2020 at the special rate of $239 per night plus tax (single or double). Rooms may sell out of our block so act soon to secure your reservation. After April 20, 2020, group rates can no longer be guaranteed and rooms will be provided on a space-available basis.

Mail completed registration forms and payment to:
1000 N. Rand Road, Suite 214
Wauconda, IL 60084 USA
SECURE FAX: 847.526.3993
NOTE: For your protection, please do not email form with credit card information. Please fax or mail completed form to AEC.

QUESTIONS?
Tel: 847.416.7215
Email: mail@aec.org or j.cook@tso.net

To Fax Your Registration:
You may fax this form to AEC at 847.526.3993; however, registration cannot be processed until payment has been received.

Cancellation Policy
Registration fees will be refunded only if written notice is received at the AEC Office on or before May 11, 2020. A 20% administrative fee will be deducted from the refund. Substitutions may be made at any time.

Attend Monday or Friday. Registration fees include all program sessions, reference materials, scheduled meals and refreshment breaks. Use one form per person; photocopy this form for additional people. Only those registered may attend. Hurry! Space is limited to just 25 registrants per day and this course will likely sell out quickly.

Full Name __________________________________________
Preferred First Name for Badge ____________________________
Title ___________________________ Email _______________________________
Company ________________________________________________
Mailing Address ____________________________________________
City, State/Province ____________________ Zip/Postal Code ___________ Country _________
Telephone __________________________ Fax ____________________________

☐ Check here if you require accommodations to fully participate. AEC will contact you.

Registration Fee

<table>
<thead>
<tr>
<th>Monday • May 18, 2020</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ $450 for AEC Members</td>
<td>☐ $850 for Non-Members</td>
</tr>
</tbody>
</table>

| Friday • May 22, 2020 | ☐ $450 for AEC Members | ☐ $850 for Non-Members |

Grand total ________________

Indicate your method of payment

☐ My check or bank draft is enclosed. (U.S. funds only; make checks payable to the Aluminum Extruders Council.)

☐ Or charge my credit card: ☐ VISA ☐ MasterCard ☐ AmEx ☐ Discover

Name of Cardholder (required) __________________________________________

Signature ___________________________ Date __________________________

Billing Address (if different than above) __________________________________________

For your protection, this portion of the form will be destroyed after processing your credit card information.

Account Number __________________________________________

Exp. Date ___________________________ V-Code __________________________

(3- or 4-digit verification code on card)
Extrusion Excellence
Learn the fundamentals of the extrusion process

Held in conjunction with ET ’20

May 18th and 22nd, 2020

Hyatt Regency Orlando • Orlando, Florida USA

Learn the Fundamentals of the Extrusion process

Attend this course to:
• Increase your extrusion knowledge
• Enhance your productivity
• Gain the competitive edge