

Extrusion Excellence:

Applied Fundamentals for Aluminum Extruders

Held in conjunction with ET '24
April 29th or May 3rd, 2024
Rosen Shingle Creek • 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.



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.

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

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

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
- and Aging.
- 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.



Dr. Wojciech Z. Misiolek

The Hotel

The Extrusion Excellence Course is taking place in conjunction with the Twelfth International Aluminum Extrusion Technology Seminar & Expo – ET '24.

Visit **ET24.us** or **aec.org/extrusionexcellence** and follow the link to hotel reservations. The Extrusion Excellence Course is being held in conjunction with ET '24. A block of rooms is being held at the Rosen Shingle Creek Resort until **April 4, 2024**, at the special rate of **\$219 per night plus tax** (single or double). Rooms will likely sell out of our block so act soon to secure your reservation. **After April 4, 2024**, group rates can no longer be guaranteed, and rooms will be provided on a space-available basis at the prevailing rate.

This event is popular and will sell out quickly; make your room reservations as early as possible and **no later than April 4, 2024** to take advantage of the special room rate.

Rosen Shingle Creek Resort

9339 Universal Blvd.

Orlando, Florida 32819 USA

Reservations: **407.313.4300**

*When calling be sure to mention the **Aluminum Extrusion Technology Seminar** to receive the special rate.*



Transportation

The Rosen Shingle Creek Resort is located on Universal Boulevard, east of the Orange County Convention Center North/South expansion. Transportation options from the airport (for a fee) include taxi service, rental cars, and Mears shuttle service. Visit **ET24.us** or **aec.org/ExtrusionExcellence** for more information and a link to the hotel website for details.

REGISTRATION FORM

Extrusion Excellence: Applied Fundamentals for Aluminum Extruders

April 29th or May 3rd 2024 • Orlando, Florida

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 *Register for this course online at ET24.us if you are also attending ET '24.*

U.S. Dollars Only

TOTAL

Monday • April 29, 2024

\$495 for AEC Members

\$895 for Non-Members

Friday • May 3, 2024

\$495 for AEC Members

\$895 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 OFFICE USE ONLY DATE _____ ID# _____ TYPE _____ CK# _____ AMT \$ _____ BADGE _____

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

Account Number _____

Exp. Date _____ Security code _____

(3- or 4-digit verification code on card)

Register Online at: **ET24.us**

*NOTE: If you wish to register for ET '24 and this course, register at **ET24.us**

Hotel Information

Rosen Shingle Creek Resort

9339 Universal Blvd.

Orlando, Florida 32819 USA

Reservations: 407.996.6338

Toll-free: 866.966.6338

When calling be sure to mention Aluminum Extrusion Technology Seminar to receive the discounted rate.

Online Reservations

Visit **AEC.org/ExtrusionExcellence**

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Mail or Fax 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: 847.416.7219 or 847.416.7241

Email: mail@aec.org or lnelson@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 April 22, 2024.**

A 20% administrative fee will be deducted from the refund. Substitutions may be made at any time.



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Seating
is limited -
register today!

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Learn the Fundamentals of the Extrusion process

Attend this course to:

- Increase your extrusion knowledge
- Enhance your productivity
- Gain the competitive edge



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