Advanced Die Clinic

Moving Beyond the Basics

May 7–8, 2019

Hyatt Regency St. Louis at the Arch

ST. LOUIS, MISSOURI

Learn from Industry Experts! Details inside.

Instructive Hands-On Workshops • Informative General Sessions

AECmeets.org
**Learn From Industry Experts!**

The AEC Advanced Die Clinic goes beyond the basics of the original Die Clinic to address more advanced concepts for professionals with some experience in the Die Shop. The Advanced Die Clinic provides opportunities for hands-on learning from industry experts who have dealt with the challenges and issues that you face every day. Only the Aluminum Extruders Council (AEC) can give you the best and most practical training in the aluminum extrusion business.

The Advanced Die Clinic combines expert knowledge and experience with classroom learning—and there’s plenty of time to talk one-on-one with industry experts. Pick up valuable tips and techniques from the very best source: your peers.

- **Presenter Expertise**
- **Classroom Setting**
- **Workshops**
- **Participant Knowledge-Sharing and Interaction**

This is a highly interactive educational experience that gives back an **invaluable return on investment** for member companies.

**FIVE In-depth Interactive Breakout Sessions!**

All breakout sessions are led by members of the AEC Die & Tooling Team, extruders and die makers alike. These are the experts in die correction, die manufacture, extrusion operation, and related skills. It is the experience of these individuals, given freely, which makes the Advanced Die Clinic one of the Council’s most highly anticipated events.

- **Presenter Expertise**
- **Classroom Setting**
- **Workshops**
- **Participant Knowledge-Sharing and Interaction**

If you are involved in extrusion die and related operations and a seasoned professional, you will want to attend this essential Advanced Clinic. At the AEC Advanced Die Clinic you can brush up on your skills, learn new techniques, and connect with fellow die personnel to “talk shop”. This Advanced Clinic is particularly appropriate for those with moderate experience, including:

- **Die Makers**
- **Die Shop Supervisors**
- **Die Correctors**
- **Managers**
- **Press Operators**
- **Engineers**
- **Process Engineers**
- **Extrusion Supervisors**
- **Die Designers**
- **Sales Personnel**

**Hotel Information**

**AEC Advanced Die Clinic**  
Hyatt Regency St. Louis at the Arch  
315 Chestnut Street  
St. Louis, MO 63102

Reservations: **1.888.421.1442**  
Online Reservations: follow link to hotel reservations at [www.AECmeets.org](http://www.AECmeets.org)

The Hyatt, located near the base of The Arch, is a short walk from the shopping district and many fine restaurants, and the iconic Mississippi Riverfront.

A block of rooms is being held at the Hyatt until Thursday, April 11, 2019. **After this date group rates can no longer be guaranteed and rooms will be provided on a space-available basis.**

Please make your hotel reservations directly with the Hotel by calling 314.655.1234 or 888.421.1442, or online by following the hotel link at [www.AECmeets.org](http://www.AECmeets.org).

Be sure to mention on the phone that you are attending the Aluminum Extruders Council’s Advanced Die Clinic or AEC to receive the special rate of **$175 per night**, plus tax (single or double).

**Transportation**

Hired chauffeured rides, taxis, Uber and Lyft are available for the 15-mile trip each way between the airport and hotel. For additional information, visit [www.AECmeets.org](http://www.AECmeets.org) for a link to the hotel’s website.
THE HEART OF THE DIE CLINIC

Moving Beyond the Basics with these FIVE In-Depth Workshops!

In addition to plenary sessions and many opportunities to talk with peers, the Die Clinic offers FIVE separate In-Depth Workshops focusing on a different set of issues—the kinds of issues facing Die Correctors every day. Solutions are sought and discussed among the group. These breakouts are the “heart” of the Clinic and are an extremely unique and valuable learning experience. Participants will rotate in small groups through each of the five sessions listed below over the course of the Clinic until each group has attended each workshop.

THE FIVE WORKSHOPS

Evolution of Die Making and the Impact on Die Correction
The fundamentals of how metal flows through the various cavities in dies (ports, feeder plates, baff rings, feeder pockets and bearings) will be presented together with the forces involved in driving/resisting that metal flow. The impact of each design element on the balance of forces and its impact on the total force needed to extrude metal through the die will be introduced, leading to a discussion on how to optimize each element for various types of profiles. Practical elements of design (section lay out, number of cavities and number of ports) on the handling of the extrusions on the run out table and subsequent processing will also be discussed.

Workshop Leaders: Richard Dickson, Hydro Aluminum Technology Center, and Rick Liscomb, Exco.

Die Shop Technology Moving Forward
Having an effective die program requires detailed planning for each profile produced in our factories. From the quoting process to the maturation of the product, each step along the production trail must be carefully planned, implemented, and continuously improved. Training methods, the use of automation in capturing feedback from the press, proper nitride parameters and long term care of dies will be discussed. Steel selection for specific applications – a review of recent developments and case studies in flow simulation will be covered. Key press components and the proper care and recommended preventive maintenance for each will be reviewed.

Workshop Leaders: Lester Janus, Hydro; Doug Fallin, Thumb Tool & Engineering, division of Gemini Group; Chris Kohn, Belco Industries; Tim Elmergreen, Crystal Finishing

Die Use
Tooling Design, Manufacturing, Maintenance and Optimization (covered in separate Advanced Die Clinic segments) have dramatic effects on the resulting profile, metallurgical performance and condition of the tooling. It is important to understand what affects the tooling and what the tooling affects throughout the overall extrusion process. This workshop will cover extrusion tooling from the point it leaves the die shop/storage area, through handling, heating and extruding through the tools. Extrusion topics will include from the press through the lead-out table and quench to the puller. Excellent tooling and extrusion processes produce profiles with the required shape control and metallurgical performance.

Workshop Leaders: Dan Dunn, Castool; Carl Holderbaum, Bonnell Aluminum; John Funai, Kaiser Aluminum; Bryant Bronner, Lake Park Tool

Process Conditions & Optimization
In this workshop, you will learn the best choice of alloy for application and design. What does your customer really need, benchmarking, thermal management, and press conditions will be covered. Learn how and when to optimize yield, cycle, TWA, die service life, hit top pressure on break-through extrusion limit diagram, and more. Extrudability, understanding data and current conditions and shape optimization will also be covered. Develop a greater understanding of pressure curve and die and tooling deflection, learn effective methods of working with your sales people and engineers on alloy choice and shape consideration, and develop a plan for feedback for next stage of optimization and meeting quoted rate.

Workshop Leaders: Paul Robbins, Castool Tooling Systems; Mark Butterfield, Magnode; Zack Pence, Magnode; Pawel Kazanowski, Hydro Aluminum Technology Center

Die Manufacturing
Manufacturing: what is the “TODAY” and “FUTURE” standard and how does your tooling flow through the shop? This session will explore how a difficult die can be modeled for ease of manufacturing. Die materials, a brief summary of steel types and their characteristics, and why and when it makes sense to utilize a special tool steel will be covered. The pros and cons, limitations and cost factors of various surface treatment of extrusion tooling will be discussed. There are multiple level steps taken to build your tooling — before, during and after. The many metrics we measure in each step of the organization, maintaining a constant flow of work will be discussed.

Workshop Leaders: Terry Clarke, Exco; Joe Maier, WEFA; Nick Gnatyuk, Exco;
Tuesday, May 7

The Advanced Die Clinic includes in-depth, hands-on workshops featuring topics of general interest and significance.

GENERAL SESSION HIGHLIGHTS
The Opening General Session provides a focus on safety and an overview of the environment that surrounds the die during extrusion. This is covered in detail during the breakout sessions that follow.

Extrusion Safety Begins with Risk Elimination!
*Carl Holderbaum, Bonnell Aluminum – Aacoa Division*

The journey to industrial safety encompasses "engineering out" hazards, managing what hazards cannot be engineered out and instituting appropriate PPE when engineering and management solutions are not enough. The aluminum industry specifically has inherent hazards such as hot metal, sharp edges, heavy tooling and chemical use. This presentation will discuss GOLDEN RULES and a bottom-up Risk Elimination approach to managing these hazards through supporting engineering and PPE improvement ideas from the employees with the actual exposure. Participants will learn how using simple management techniques to implement safety improvements will reduce risks in their own aluminum extrusion plants.

The State of the Art Knowledge of Metal Flow and the Impact It Has on Extrusion Dies
*Richard Dickson, Hydro Aluminum Metals USA*
*Jerome Fourmann, Rio Tinto Aluminium*

Jerome and Richard will cover the various facets of metal flow in dies and the container. They will review a series of papers from past Extrusion Technology conferences (ET Foundation) and take the group through the impact of metal flow patterns on the final product. This will include, shape, surface, welds and tempers.

BONUS!

All participants receive the following items:

**Bonus #1** – AEC’s *Extrusion Dies and Tooling Manual* is a handy reference guide and training tool for anyone in the field of die correction and maintenance.

**Bonus #2** – Miniature porthole extrusion die manufactured from 6063 alloy. Each piece of the mini porthole are made from four separate extrusions and each piece is turned and assembled to make a completed die.

**Bonus #3** – The Advanced Die Clinic Workbook includes handouts used during the sessions for reference, and pages for note-taking.

---

AEC reserves the right to alter the schedule or substitute speakers as needed.

---

**Advanced Die Clinic Schedule**

<table>
<thead>
<tr>
<th>TUESDAY, MAY 7</th>
<th>6:30 a.m. – 4:30 p.m.</th>
<th>Registration Open Gateway Foyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 a.m. – 7:45 a.m.</td>
<td>Breakfast Gateway West</td>
<td></td>
</tr>
<tr>
<td>7:15 a.m.</td>
<td>Welcome &amp; Intro Pawel Kazanowski – Hydro</td>
<td></td>
</tr>
<tr>
<td>7:45 a.m. – 9:00 a.m.</td>
<td>GENERAL SESSION Gateway East</td>
<td></td>
</tr>
<tr>
<td>7:45 a.m. – 8:15 a.m.</td>
<td>Safety in the Die Shop Carl Holderbaum – Bonnell Aluminium, Aacoa Division</td>
<td></td>
</tr>
<tr>
<td>8:15 a.m. – 9:00 a.m.</td>
<td>The State of the Art Knowledge of Metal Flow and the Impact it has on Extrusion Dies Richard Dickson – Hydro Aluminium Metals USA Jerome Fourmann – Rio Tinto Aluminium</td>
<td></td>
</tr>
<tr>
<td>9:00 a.m. – 9:15 a.m.</td>
<td>Break Sterling Foyer</td>
<td></td>
</tr>
<tr>
<td>9:15 a.m. – 10:45 a.m.</td>
<td>BREAKOUT SESSION *</td>
<td></td>
</tr>
<tr>
<td>10:45 a.m. – 11:00 a.m.</td>
<td>Break Sterling Foyer</td>
<td></td>
</tr>
<tr>
<td>11:00 a.m. – 12:30 p.m.</td>
<td>BREAKOUT SESSION *</td>
<td></td>
</tr>
<tr>
<td>12:30 p.m. – 1:20 p.m.</td>
<td>Lunch Gateway West</td>
<td></td>
</tr>
<tr>
<td>1:20 p.m. – 2:50 p.m.</td>
<td>BREAKOUT SESSION *</td>
<td></td>
</tr>
<tr>
<td>2:50 p.m. – 3:00 p.m.</td>
<td>Break Sterling Foyer</td>
<td></td>
</tr>
<tr>
<td>3:00 p.m. – 4:30 p.m.</td>
<td>BREAKOUT SESSION *</td>
<td></td>
</tr>
<tr>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>Reception Gateway West</td>
<td></td>
</tr>
</tbody>
</table>

**WEDNESDAY, MAY 8**

| 7:00 a.m. – Noon | Registration Open Gateway Foyer |
| 7:00 a.m. – 8:00 a.m. | Breakfast Gateway West |
| 8:10 a.m. – 9:40 a.m. | BREAKOUT SESSION * |
| 9:40 a.m. – 10:00 a.m. | Break Sterling Foyer |
| 10:00 a.m. – 11:45 a.m. | Closing General Session The Importance of Temperature & Pressure Richard Dickson – Hydro Aluminium Metals USA Jerome Fourmann – Rio Tinto Aluminium |
| 11:45 a.m. | Clinic Adjourns |

*Breakout Sessions consist of five concurrent workshops. Each participant attends each session over the course of the Die Clinic.

- Please choose to fill out a paper sheet or digital email survey. Your participation is appreciated.
**Space is limited! REGISTER NOW!**

This clinic is open to AEC members only. Because of the hands-on nature of this clinic, only the first 100 paid registrants will be accepted. As in previous experiences, this event is expected to sell out quickly.

Registration fees include all program sessions, reference materials, scheduled meals, and refreshment breaks. Use one form for each person. Photocopy this form for additional people. Only those registered may attend.

<table>
<thead>
<tr>
<th></th>
<th>Early by 4/11/19</th>
<th>Regular after 4/11/19</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>$ 775</td>
<td>$ 875</td>
<td>$</td>
</tr>
<tr>
<td>Team*</td>
<td>$ 725</td>
<td>$ 825</td>
<td>$</td>
</tr>
<tr>
<td>Credit for attending prior Die Clinics</td>
<td>($ 50.00)</td>
<td>($ )</td>
<td></td>
</tr>
</tbody>
</table>

**GRAND TOTAL =**

*Team discounts are available for companies registering three or more representatives. To qualify for the Team Discount of $50 off per person, all registrations must be submitted and paid together. If cancellation occurs and fewer than three representatives attend, the appropriate fee will be charged. Delegate substitutions may be made at any time.

**Method of Payment**

- My check or bank draft for $_____________ in net U.S. funds is enclosed as full payment of registration fees. Make check payable to the Aluminum Extruders Council.
- Or charge my credit card for $_____________.
  
  Please check one:  □ MasterCard  □ Visa  □ American Express  □ Discover

**Required for credit card payments:**

- Printed Name of Cardholder
- Signature
- Billing Address (if different than above)
- Card Account Number
- Exp. Date
- V-Code

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

Please indicate your job function:

- □ Die Maker
- □ Die Shop Supervisor
- □ Die Corrector
- □ Manager
- □ Press operator
- □ Engineer
- □ Process Engineer
- □ Extrusion Supervisor
- □ Die designer
- □ Sales
- □ Other________________________

**Mail completed forms and payment to:**

Aluminum Extruders Council  
1000 N. Rand Road, Suite 214  
Wauconda, IL  60084  USA

Secure Fax: 847.526.3993

**Questions?**

Email:  mail@aec.org or ljurcenko@tso.net

**Secure Fax**

You may fax this form to AEC at 847.526.3993; please note, registration cannot be processed until payment has been received.

**FOR AEC OFFICE USE ONLY**

**DATE __________________**

**ID# __________________**

**TYPE __________________**

**CK # __________________**

**AMT $ __________________**

**BADGE __________________**

**Check here if you have a disability or dietary restriction and may require accommodation to fully participate. (AEC will contact you.)**

**Cancellations**

Registration fees will be refunded only if written notice is received at the AEC Executive Office on or before April 29, 2019. A 20% administrative fee will be deducted from the refund. Substitutions may be made at any time.
AEC Advanced Die Clinic

May 7–8, 2019

Hyatt Regency St. Louis at the Arch
St. Louis, Missouri USA

The hands-on nature of this advanced die program offers a comprehensive learning experience that only the Aluminum Extruders Council (AEC) can deliver. The Advanced Die Clinic adds up to an in-depth, informative educational opportunity with a terrific return on investment!