

## Registration Form:

Name:	
Title:	
Company:	
Address:	
City:	
State:	Zip:
Phone:	
Email:	
Fax:	
Date of Seminar:	
Visa/MasterCard:	
Card #:	
Expiration Date:	Code:
Signature:	
Purchase Order #:	
Check #:	
Shirt Size:	<input type="text"/>

### 2017 Dates:

March 21-23 (Carol Stream, IL)  
August 15-17 (Traverse City, MI)  
October 17-19 (Appleton, WI)  
November 28-30 (Appleton, WI)

**Fee:** \$495 first attendee (\$100 for additional attendees from the same company)

Appleton Hotel Accommodations Needed?  Yes  No

Appleton Check In Date \_\_\_\_\_ Appleton Check Out Date \_\_\_\_\_

**Cancellations:** Cancellations will be accepted and refunds made up to 14 days prior to the seminar date. Make non-refundable airline reservations at your own risk.

### Direct Payment to:

Miller Training Systems  
Miller Electric Mfg. Co.  
P.O. Box 1079  
Appleton, WI 54912  
Fax 920-735-4101

### Email inquiries or Registration:

peggy.moehn@MillerWelds.com

**Fee Covers:** Coffee and doughnuts available in the lecture room at 7:30 a.m. lunch provided each day.

**Provided Materials:** Guide for Aluminum Welding, safety glasses, use of a welding helmet and personal safety equipment.

**Seminar Hours:** 8:00 a.m. - 5:00 a.m. each day

**Accommodations:** Reserved by participant in a common location.

**Transportation:** Participants should make arrangements for transportation to and from the hotel. Shuttle service may or may not be provided by the hotel.

High-quality filler metals and specially designed equipment are two key factors in gaining the results you need when welding aluminum. Knowing the techniques to make successful aluminum welds, as well as proper welding procedures, weld preparation, troubleshooting and more are also critical. Together, Miller Electric Mfg. Co. and Hobart Brothers Company provide the training you need through seminars that include hands-on welding and informative instruction on aluminum welding technology.

- Industry Trends and Applications
- Codes and Standards
- Metallurgy
- Weld Preparation
- Welding Processes and Procedures
- Design and Performance
- Filler Metal Selection
- Weld Discontinuities - Cause and Correction
- Weld lab, welding procedures, fillet welds and groove welds, welding inspection and testing

**23 Professional Development Hours can be used for AWS Re-certification.**

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**3 Day Advanced  
Aluminum Welding  
& Design Seminar**

# Course Overview:

To provide professionals, active in the design and fabrication of aluminum structures, educational support in the areas of welding technology associated with designing and welding of aluminum structures. This will include a detailed evaluation of the many aluminum alloys, their characteristics and applications, metallurgical considerations, welding procedure development, welding processes, weld design, weld discontinuities, trouble shooting welding problems and quality control.

## Course Outline - Theory

### Introduction:

Industry trends  
Characteristics of aluminum  
Applications  
Hobart's guide for aluminum  
Welding brochure

### Codes and Standards:

Review of AA and AWS publications  
Alloy and temper designation system

### Metallurgy:

History of aluminum production  
Alloy system characteristics of element additions  
Effect of alloying elements on structure  
Weld bead, fusion zone and heat affected zone

### Weld Preparation:

Metal storage considerations  
Dew point calculations  
Cutting, thermal and mechanical  
Cleaning techniques

### Welding Processes and Procedures:

#### GMAW (MIG)

#### Welding

Feedability  
Polarity/arc cleaning  
Metal transfer modes  
Power sources

#### GTAW (TIG)

#### Welding

Polarity  
Wave formation square wave  
Tungsten electrode selection

Take away every usable **FACT** about welding aluminum

### Design & Performance:

Corrosion types and performance  
Elevated temperature performance  
Strength performance/tensile and shear  
Weld joint design  
Toughness/elasticity/ductility  
Fatigue performance  
Post anodize color matching

### Filler Metal Selection:

Weld Metal properties  
How to use the Hobart filler metal selection chart  
Case studies

### Weld Discontinuities - Cause & Correction:

Weld cracking  
Porosity  
Inadequate fusion and penetration

### AWS/D1.2

### Structural Welding Code Aluminum

Structural design  
Procedural qualification  
Performance qualification  
Fabrication and inspection

## Course Outline - Practical

### Welding Procedures:

Safety procedures  
WPS preparation  
Sample preparation  
Pre-weld inspection  
Welding machine set up

### Fillet Welds & Groove Welds:

Select base and filler metal  
Prepare and clean base metal  
Review and select equipment settings

Experience the practical **FEEL** of a successful aluminum weld

### Welding, Testing & Inspection:

- Create weldments
- Record settings, practice and produce samples
- Visually inspect weldments
- Perform a fillet weld fracture test inspection
- Perform a fillet weld macroetch specimen inspection
- Perform a groove weld guided bend test (Root and face bends)
- Evaluation of radiographics (X-ray) inspection

