



# Aluminum Welding Technology Seminar

*Presented by Tony Anderson*

**Thursday, March 14, 2019**

**Time: 8:00 AM - 4:30 PM** *Lunch provided.*

**Location: GTCC Center For Advanced Manufacturing**

**6012 W Gate City Blvd, Greensboro, NC 27282**

*Showroom #1200 and Welding Technology Shop Room #1300*

## Topics Covered:

- Basic Aluminum Metallurgy
- Weld Performance of Aluminum Alloys
- Filler Metal Selection for Aluminum Welding
- Metal Preparation for Aluminum Welding
- GMAW (MIG) Welding of Aluminum
- GTAW (TIG) Welding of Aluminum
- Welding Discontinuities – Cause and Prevention
- AWS D1.2 – The Structural Welding Code—Aluminum

## Purchase tickets and RSVPs through Eventbrite:

AWS members Free

Non-members \$25



Tony Anderson CEng, FWeldI - is the Director of Aluminum Technology for ITW North America. He is based at the ITW Global Welding Center in Appleton WI and works very closely with Miller Electric – Welding Equipment and Hobart

Aluminum – Welding Wire. Mr. Anderson has spent over 40 years in the welding industry and is a Fellow of the TWI (British welding Institute) and a Registered Chartered Engineer with the British Engineering Council UK. He is an American Welding Society (AWS) Certified Welding Inspector, Certified Welding Educator and Certified Welding Engineer and Chairman of the Aluminum Association Technical Advisory Committee for Welding & Joining.

Professional activities include:

- Author – Welding Aluminum – Questions and Answers – A Practical Guide for Troubleshooting Aluminum Welding-Related Problems
- Chairman of the Aluminum Association Technical Advisory Committee for Welding
- Chairman of AWS D10.7 – Specification for Arc Welding of Aluminum Alloy Pipe
- Chairman of AWS A5.10 – Specification for Bare Aluminum Welding Electrodes and Rods
- Chairman of AWS D3.7 – Guide for Aluminum Hull Welding
- Advisor and past Vice Chairman – AWS D1.2 Structural Welding Code – Aluminum
- Chairman – AWS Handbook Committee (Vol. 5 – Ninth Edition) – Aluminum Alloys
- Member of ASME Section IX – Materials Subgroup Committee



# **Aluminum Welding Technology Agenda**

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## **8:00 Welcome and Overview**

- Technical tools / publications
- Why Aluminum is Being Designed Into More Products
- Trends for Aluminum Demand and the Many Applications of Aluminum Alloys

## **8:45 Aluminum Metallurgy – Basic**

- Understanding the Aluminum Alloy Designation System
- The Heat Treatable and Non-Heat Treatable Alloys
- How Aluminum is strengthened
- Wrought and Cast Alloys
- The History of Aluminum
- Aluminum Alloy Descriptions and Characteristics

## **10:00 Break**

## **10:15 Weld Performance**

- Corrosion, Temperature, Strength, Ductility, Toughness, Fatigue, and Color Match

## **11: 15 Filler Metal Selection for Aluminum Welding**

- Considerations for Selecting the Most Appropriate Filler Alloy
- Crack Sensitivity, Strength, Ductility, Corrosion, Elevated Temp, Color Match and PWHT
- How to Use the Filler Metal Selection Chart
- New Aluminum Filler Metal 4943

## **12:00 Lunch**

## **1:00 Metal Preparation for Aluminum Welding**

- Metal Working Methods, Material Storage and Handling, Aluminum Oxide and Hydrated Aluminum Oxide, Pre-weld Cleaning, Mechanical and Solvent Cleaning

## **GMAW (MIG) Welding of Aluminum**

- Modes of Metal Transfer, Feedability, Equipment Features, and Shielding Gas for Aluminum

## **GTAW (TIG) Welding of Aluminum**

- AC, DCEN, and DCEP

## **Welding Discontinuities – Cause and Prevention**

- How to Avoid Cracking, Porosity, Incomplete Fusion and Incomplete Penetration
- Distortion Control

## **3:00 Break**

## **3:15 AWS D1.2 – The Structural Welding Code for Aluminum**

- Procedure Qualification Record (PQR), Procedure Specification (WPS), and Welding Inspection

## **4:30 Adjourn**

