

## The Foundry Way Learning Center *“Passing on the Knowledge”*



**About Us** – The Foundry Way Learning Center grew from one simple question *“How can we pass on the knowledge of our best, but retired, foundry engineers and metallurgists to an industry desperately in need of this knowledge?”* In search of the answer to this question, we found that many of these retired engineers and metallurgists not only still shared our passion for the industry but were eager to start a “Second Career” sharing the knowledge gained from a life in the foundry industry. Our direction was clear, and The Foundry Way Learning Center was born.

**Our Facility** – Our classroom is located adjacent to our metallurgy laboratory and inspection facility. This provides us the unique ability to integrate classroom instruction with hands-on learning.

### INTRODUCTION TO ALUMINUM CASTING AND METALLURGY

#### Course Overview

This course covers the aluminum casting process from material selection through processing, inspection, and controls. Even though this is an introductory course, key areas are covered in detail. Hands-on casting, metallurgy, and inspection techniques are employed in many segments of the course to ensure participants leave with a lasting understanding of critical processes and terminology.

#### Who Does the Course Benefit?

- **Aluminum Foundries** – While critical for supervisors, quality personnel, and management, this course is beneficial for anyone who wishes to understand the process, process control, and terminology of the Aluminum Foundry.
- **End Users of Castings** – This course is beneficial for purchasing agents, quality engineers and all personnel interacting with aluminum casting suppliers.

#### Course Outline

- **Aluminum Ingot and Alloys** – Differences, Reasons for selection
- **Foundry Terminology** - From Ingot through production and finished product
- **Foundry Processes** – Green Sand, Dry Sand, P-mold, Die Casting, Plaster Mold & Squeeze cast
- **In-Process Operations** – Molds, Cores, Chills, Gating & Pouring
- **Finish Operations** – Shake-out, core removal, trim, Heat Treat, Targeting
- **Casting Defects** – Types, Causes & Cures **\*\*Hands-on\*\***
- **In-Process Inspection and Quality Controls** – Hydrogen gas checks, Visual inspection, Chemical Analysis, Hardness Testing, Penetrant Inspection, X-ray, **\*\*Hands-on\*\***
- **Alloy Strength vs Physical Structure** – Grain size, Dendritic Cell Size, Si Modification, Alloying Elements **\*\*Hands-on\*\***
- **Mechanical Properties** – Tensile, Yield, Elongation, Hardness - **\*\*Hands-on\*\***
- **Understanding Heat Treatment** – Critical Variables, Effect on microstructure and mechanical properties, Heat Treat Controls
- **Hot Isostatic Press (HIP)** – Understanding the process, uses, and benefits
- **Weld Repair** – When to use, Requirements and Controls

#### Details

- **Length of Class** – 2 days. 8:30am to 4:30pm each day. Working Lunch provided.
- **Number of Participants** – In order to ensure the maximum learning experience and meet the needs of each participant, class size is limited to 8. Note - Classes fill quick so register now.
- **Location** – Foundry Way, 5100 River Valley Rd, Milford, OH
- **Registration and Schedule** - For course dates and registration, contact Diana at Foundry way 513-831-8777.