

Intro to Aluminum Course

Meeting the Challenge of an Aging Workforce

By Rose Eaton, Staff Writer

Secat, located on the University of Kentucky cold-stream research campus in Lexington, KY, has provided research, technology, and testing to support the aluminum industry for the past 17 years. They work with aluminum companies in many ways, such as to improve processes, optimize production, and to identify new products and technologies available to the industry. Now, as a result of their extensive experience working in the aluminum industry, they are also providing technical training courses to aluminum manufacturing workers.

Recently, *Light Metal Age* had the privilege of attending Secat's course, "Aluminum Wrapped Up: An Introduction to the Metal, Its Characteristics, Alloys, Processes, Forms, and Applications." The course was designed to provide a basic understanding of aluminum in a format that was general, yet exhaustive, covering all areas of the aluminum process. Thirteen students were in attendance from different companies (Figure 1), covering a broad spectrum of types of aluminum and equipment manufacturing.



Figure 1. Students at Secat's recent aluminum course.

One of the greatest challenges companies are facing today is an aging workforce. As the industry continues to grow, especially with the rise of automotive aluminum, the demand for aluminum professionals is increasing, along with other manufacturing technologies. Secat is responding to this challenge. Todd Boggess, general manager at Secat, explained the company's hands-on approach of visiting plants to better understand their customer's needs. "We are constantly at plants and asking questions like, 'What are your biggest challenges? What are your concerns?'" A common response to these questions is, "The average age in the plant is 50 plus, and we have very little young talent coming into the industry." Aluminum companies are all facing a similar challenge of replacing workers with many years of experience with young workers that have a limited understanding of aluminum manufacturing. They are recruiting talent, but there is a huge gap in terms of a knowledge base." With its history of responding to the rise and fall of industry concerns, Secat has created these courses in response to their customers' need to train new employees.

The Course

The course was led by Carl Seidler, who has extensive experience in the aluminum industry. His tenure included 30 years working at affiliated companies, ARCO and Logan Aluminum. After retiring from Logan Aluminum in 2013,

he started up a consulting business, Solid Solution Partners LLC, in the aluminum industry. Currently he is serving as technical director – Can Products for Nanshan America.

Each student was presented with a generous amount of study materials, including: a binder with the course's complete presentation materials and a quick reference guide that contained up-to-date information on wrought and cast alloys (principal alloying elements and whether they are heat treatable or not) and an outline of aluminum temper codes. The students also received the *Aluminum Standards and Data 2017* and the *Technical Report: Aluminum and its Alloys (Third Edition)*, both published by the Aluminum Association.

The course covered 14 different topics and objectives, including categories such as: Market, Applications and Products; History and Commercial Development; Extraction and Primary Aluminum Production; Aluminum Forms and Fabrication; Aluminum Alloys, Tempers, and Designations; Aluminum Nomenclature; and so on. During the Markets, Applications and Products section the class learned about the extensive scope and breadth of the aluminum market. Many in the class seemed surprised to learn that there is almost no industry that aluminum does not touch, from aerospace, building and construction materials, weapons and defense systems, all the way to electrical, cookware, and packaging, such as food and beverage cans and pharmaceutical products.

Throughout each section, a slideshow presented helpful diagrams, photos, and tables, as well as videos to illustrate and complement course content. Videos and materials were provided courtesy of Hertwich Engineering (secondary production), Sapa Extrusions America (extrusion), Wagstaff, Inc. (DC casting), Hazelett Strip Casting and FATA Aluminum (continuous casting), and Logan Aluminum, Inc. (remelt and casting, hot rolling, and cold rolling). At the end of each section, students eagerly took part in an optional quiz to test what they learned and help cement the material in their memories.

Though it was presented as a formal class, discussions between the students were encouraged. They were also able to anonymously ask Seidler questions using note cards handed out at the beginning of the course. Breaks were offered throughout the day that allowed the students to mingle and network, furthering their connections in the industry.

The 13 students came from far and wide to attend the course. Many of the students were present to take advantage of a refresher, while others came for more specific reasons. "The company I work for makes a variety of furnaces. We do the whole process and as a company we touch metal many times," said Mike Jacobs, CAB product team leader/Aluminum Process at SECO/Warwick, who noted that he had taken the course to receive a general training in aluminum.

Greg Mierzejewski, technical manager of the Americas for Morgan Advanced Materials, was "hoping to learn more about the new alloys used in the automotive industry."

Troy Moore, production team leader at Kentucky Smelting Technology, that supplies aluminum for Toyota tire rims wanted to learn about the history of aluminum. He said, "I was curious about how aluminum started, and how it was made."

Dillon Sheetz, a programmer/engineering technician for Aluminum Line Products, explained, “I’m here to learn what happens before aluminum gets to us and what happens in the various parts of the industry.”

After the course ended, an optional tour of Secat’s research facilities was offered providing a look at the equipment and machines that Secat uses to support research and development. Secat occupies a 10,000 sq ft building. Their lab is spread out across 75% of the building. There are two large rooms that house saws, heat treat ovens, mechanical testing equipment, and a rolling mill (Figure 2). Another room contains a variety of specialized equipment—all of which can provide metallurgical support. For example, an optical emission spectrometer is often used to help a company determine the chemistry of the aluminum



Figure 2. One of Secat’s labs showing a CNC machine, shear, and rolling mill.

they are buying. Secat has an advanced scanning electron microscope (SEM) for detailed metallurgical evaluation, failure analysis with an energy dispersive spectrometer (EDS) to determine localized chemistry of particles/inclusions, an earring machine to test ductility (Figure 3), an x-ray diffractometer to measure cross formation, and microscopes, among other highly useful, state-of-the-art machinery. The company’s scientific engineering team was on hand during the tour to answer questions.



Figure 3. Huxley Bertram earring tester.

Conclusion

Secat’s aluminum course exposed each student in attendance to almost every area of aluminum manufacturing, providing a compendium of valuable knowledge for the up-and-coming entry level aluminum worker or professionals wanting to hone their understanding of the industry. “Secat’s mission has always been to serve as the center of excellence for providing technological and intellectual services to support the industry, its customers and its suppliers,” affirms Boggess. Sharing knowledge is a key way that Secat contributes to the growth of the industry. The company is planning to continue providing these courses, and is currently working on a more focused course on billet and extrusion manufacturing in particular.