SECONDARY ALUMINUM PROCESSING --
Air Products' Oxy-fuel Solutions Deliver Results
Josh Gordon & Matt Hawkins, Applications Engineers, Air Products and Chemicals, Inc.

With more than 100 aluminum furnaces using Air Products’ oxygen enrichment technology, Air Products clearly has proven experience in the industry. Our team of applications engineers, equipment specialists, and combustion specialists continue to push the envelope, working to develop new and unique solutions that deliver valuable results.

The key to Air Products’ ability to develop state-of-the-art solutions is our dedication to working directly with our customers in their operating facilities. We take pride in bringing our technical and practical skills to every challenge, and in helping our customers improve their businesses.

For the secondary aluminum industry, our customers focus on increasing their production rates and improving metal yield / recovery. Other major cost factors and constraints include fuel efficiency (the BTU/lb of aluminum processed), flux usage, and baghouse temperature.

Increasing Production Rates

Using oxygen enrichment techniques in the combustion process is the key to increasing production rates. In normal air-fuel combustion processes, nitrogen comprises 78% of the combustion gases. Therefore, as the percentage of oxygen is increased in the combustion air, the percentage of nitrogen in decreased. This allows more available heat to melt the metal, resulting in higher production rates.

Increasing Recovery Rates

Increasing the amount of oxygen in the combustion process can increase the rate of production. However, it is critical to match the correct oxy-fuel system with an individual furnace to allow for optimal heat distribution and more precise control of the combustion gases. This helps keep free oxygen away from the molten aluminum. Air Products’ know-how and innovative burner design and control have enabled our customers to significantly improve their recovery rates.

An example of how Air Products’ technical solutions can deliver results was recently seen through our work with Imperial Aluminum. Imperial Aluminum operates three rotary furnaces and two reverberatory furnaces, and was evaluating new oxygen suppliers and their technologies. Air Products applications engineers spent several days evaluating Imperial Aluminum’s operations, and suggested a significant list of ways to bring real value to the aluminum processor. To demonstrate the value of our suggestions, a week-long trial was conducted at Imperial’s facility to give a true “side by side” comparison of their
existing burner system and the Air Products oxy-fuel burner. When our team of aluminum industry specialists converts a furnace they not only use Air Products’ proprietary burner technology, they also work with the customer’s operations staff to maximize the capabilities of the furnace and the benefits of the burner technology. This work often includes adjusting the firing rate and stoichiometry set points, operator training and melting practices, burner orientation, equipment controls and monitoring, data logging, and in some cases minor furnace modifications among other items.

The trial showed distinct advantages for using the Air Products oxy-fuel burner, including increases in metal recovery, production rates, and melting efficiency, as well as significantly lower noise levels around the furnace. Based on these factors, Imperial Aluminum decided that Air Products was the clear choice.

“With Air Products’ burner technology, our furnaces are running better than ever. We are getting even better recovery since the trial, our melting efficiency has gone way up, and our baghouse temperatures have been reduced by 2/3. Our burner is so quiet people ask me if the furnace is operating,” states Randy Stalnaker, Imperial Aluminum’s operations manager.

Our next generation of burners are currently being developed and tested based upon the ever changing needs of this dynamic industry. To find out how Air Products’ oxy-fuel technologies can deliver proven results to your operation, contact us at a location near you.

For More Information

North America, Corporate Headquarters
Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195
Tel 800-654-4567 or 610-706-4730
Fax 800-272-4449 or 610-706-6890
Email gigmrkrgt@airproducts.com

Asia
Air Products Asia, Inc.
2F, 21 Chung Shan N. Road, Sec. 2
Taipei 10419
Taiwan
Tel +886-2-25215891x317
Fax +886-2-2567-4704
Email asiacmb@airproducts.com

Europe
Air Products PLC
Hersham Place
Molesey Road
Walton-on-Thames
Surrey KT12 4RZ - UK
Tel +44 (0)1270 614314
Email apbulkuk@airproducts.com

tell me more
www.airproducts.com/nonferrous