

Oxy Combustion Global Offering

Steel





BoostAL™ for Ladle Heating

Looking to:

- Bring down atmospheric emissions?
- Reduce your carbon footprint?
- Increase your production rate?

Liquid metal transport ladles is preheated to:

- Minimize thermal shock when pouring molten metal;
- Prevent damaging the refractory lining;
- Reduce temperature drops of the metal in the ladle.

Ladle preheating is generally done using air combustion while limited to a maximum metal temperature of 1000°C and very fuel intensive.

BoostAL™ Ladle Heating is the Air Liquide complete offer for ladle preheating in steel mills and foundries.

We offer an advanced oxy-fuel technology which, thanks to a high radiative oxygen/fuel combustion, accelerates the heating and at the same time cleans the ladles from oxides accumulated on the refractory surface. This technology accelerates the heating of the refractory to a temperature (defined by the customer) that avoids overheating the metal at the furnace exit.

Moreover, by eliminating nitrogen in the oxidant, the NO_x formation is drastically reduced.

Applicable Industries

Steelmaking, cast iron and non-ferrous foundries.

Environmental benefits

- Up to 60% CO₂ saving.
- Up to 70% fuel saving.

Operational benefits

- Production rate increase:
Heat-up times divided by 4;
More uptime.
- Better quality of metal by eliminating thermal stratification in ladles.
- Lifetime increase of the refractory lining.

Case Study #1: 130t Ladle

Stainless Steel

Customer requirement

Reducing atmospheric emissions and carbon footprint

Solution

Oxygen combustion with oxy-fuel burner (1.5MW)

Benefits



52% fuel savings/cycle*
2850 m³ -> 1366 m³

1 cycle -> Heat-up time : 8 hours



52% less CO₂ emissions/cycle
5700 kg -> 2732 kg

Study #2: 40t Ladle

Carbon Steel

Customer requirement

Increasing production rate and improving metal quality

Solution

Oxygen combustion with oxy-fuel burner (1.5MW)

Benefits



Heat-up times reduce
3 hours -> 2 hours



40% fuel saving
875 m³ -> 350 m³

- Improvement of metal quality by eliminating thermal stratification in ladles.
- 100°C metal temperature increase (1100°C -> 1200 °C).

What We Offer:

- **Low-Carbon Oxygen Supply** in liquid storage.
- **Combustion Equipment**

The **FLAMOXAL-B** is an automated valve train for controlling oxy-fuel burners and their gas supply.



OXYGEN INJECTION TECHNOLOGY

Patented burner

The **ALJET LH** burner is an oxy-fuel burner especially designed for drying and heating of ladles. It is suitable to severe working conditions as confined or overheated areas. An ignition pilot burner and a flame supervision cell can be integrated into the burner body. The burner configuration is of pipe-in-pipe type with the fuel pipe located inside the oxygen pipe. Fuel and oxygen together mix at the burner outlet and the flame develops in the ladle.

The **ALJET LH** burner is available in two standard models: the **ALJET 1500 LH** and **ALJET 750 LH** burners.

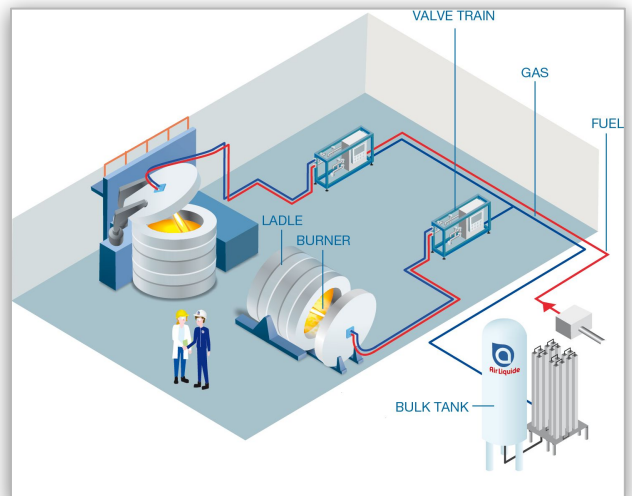
• Expertise

Based on your specifications, our experts design the best **BoostAL™ Ladle Heating** technology.

They provide you with full support all along your project:

- from the preliminary and detailed design of the suitable oxy-fuel solution to your project;
- the installation, start-up and commissioning of combustion equipment;
- and for the optimization of operating process parameters in case of need.

Our experts are also available to help you with your risk analysis if necessary.



Process Diagram for BoostAL™ Ladle Heating

**Nous contacter :**

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L'activité Industriel Marchand d'Air Liquide propose à ses clients des gaz et des solutions innovantes, intégrant des technologies d'application, des équipements et des services. De l'artisan indépendant aux grandes sociétés industrielles, nos 35 000 collaborateurs accompagnent au quotidien plus de 2 millions de clients dans 75 pays. Ils utilisent leurs incomparables capacités commerciales et techniques pour développer des solutions de gaz qui stimulent la performance de nos clients industriels et les aident à améliorer la qualité de leurs produits, contribuant ainsi à une plus grande compétitivité tout en minimisant l'empreinte environnementale de leurs activités.

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