

BoostAL™ for Cast Iron Melting in Cupolas

Looking to:

- Reduce your carbon footprint?
- Increase your productivity?

Cupolas are vertical furnaces to produce all grades of grey iron and ductile iron. Bottom air injection make solid coke burn, which in turn transfers heat to the metal load.

However, being a thermal ballast, nitrogen in the air limits the combustion temperature to 900°C and the cupola performances. This put limits on the productivity rate, the pouring temperature and restricts the scrap supply.

To surpass these limits, using pure oxygen increases the flame temperature to 1500°C, allowing more energy transfer for metal melting.

We offer a comprehensive offering of oxy-fuel technologies for different levels of oxygen enrichment that combine lances and oxygen injection in the cupolas.

With **BoostAL™ for Cast Iron Melting in Cupolas**, three possible means are:

- **Oxygen enrichment** of combustion air that modifies the heat gradient in the combustion zone by increasing the maximum temperature. It is used for low oxygen enrichments (2 %) of the blast, on all sizes of cupolas.
- **Oxygen injection through lances** to the coke combustion zone with enrichment rates above 2%; The oxygen is injected directly into the cupola and allows for better oxygen penetration into the centre of the cupola and better oxygen distribution.

- **Oxygen injection through supersonic lances** for hot blast cupolas for deeper oxygen penetration in the centre of the cupola thanks to an injection speed twice as high (Momentum oxygen force=230N) as the previous one.

Applicable Industries

Foundries industries

Environmental Benefits

Coke reduction up to 5-10%kg coke/t_{iron}

Operational Benefits

Production rate increase

Up to 7% to 1% per % of oxygen enrichment

Pouring temperature increase

Up to 10 °C to +15°C per % of oxygen enrichment

Operating range increase

Up to -30% to +50% of the nominal production with 3% oxygen enrichment

Higher metal yield

Cast Iron Case Study: 28t Hot Blast Cupola





Customer requirement

- Reducing coke consumption (gas natural)
- Reducing production rate
- Increasing iron temperature

Solution

- Oxygen (27Nm³/hour)
- Supersonic lances and valve train

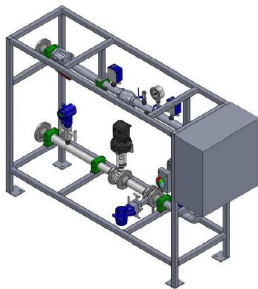
Benefits

5t/h production increase  19 t/h -> 24 t/h	Coke need reduction (10%)  13.5 % -> 12.1 %
40°C melting temperature increase (3%)  1500 °C -> 1540 °C	10°C air temperature increase (2%)  ~ 490°C -> 500°C

What We Offer:

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

The **SUROXAL** is an automated valve train to control the oxygen injection.



OXYGEN INJECTION TECHNOLOGIES

- The **Lances** to be placed in the blast conduit or in each of the tuyeres;
- The **Supersonic lances** to be placed in the center of the cupola.

Lances and **Supersonic lances** are made-to-order.

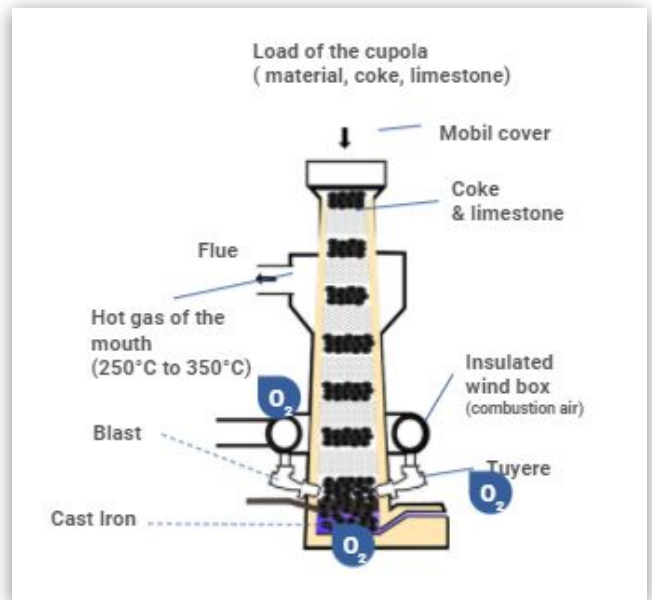
• Expertise

Based on your specifications, our experts design the best **BoostAL™ for Cast Iron Melting in Cupolas** 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.

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



Process Diagram of Cupola

Related Offers

- BoostAL™ for Ladle Heating
- BoostAL™ for Cast Iron Melting in Rotary Furnaces