Molten metal blanketing technologies

Increase yield and reduce overall operating costs

With Air Products' molten metal blanketing technologies, ferrous and non-ferrous foundries can improve casting quality, increase yields and reduce overall operating costs. These technologies, when implemented on induction and crucible furnaces, can use 50% less gas than other technologies for molten metal blanketing.

Technologies

Air Products offers two technologies for molten metal blanketing which use slightly different approaches to deliver similar benefits. Both prevent oxidation and gas pickup into the molten metal by displacing the atmospheric oxygen and water vapor with a dry and inert atmosphere composed of argon or nitrogen. These methods have been proven safe in a production environment and provide optimum oxygen levels with lower gas consumption. Experienced Air Products engineers who understand your operation can work with you to determine the most effective approach to suit your particular need, based on the size of the furnace and the charging practice. We can also provide assistance in evaluating process economics and performing in-plant demonstrations.

Liquid spray

This approach uses a swirl-spraying device to produce a layer of liquefied inert gas over the metal surface. The sprayer delivers an even amount of fine, liquid droplets across the furnace. This results in a uniform two-phase gas blanket over the entire bath surface, which eliminates excessive liquid phase accumulation on the molten metal. Liquid blanketing enables the furnace to remain open at all times, allowing unobstructed access to the molten metal.

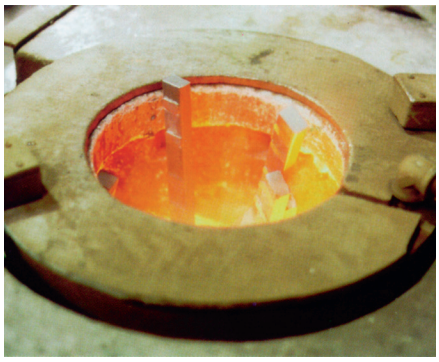
Gas blanketing

This approach introduces inert gas through a ceramic swirl cone at a predetermined flow rate, causing the gas to expand and swirl just above the bath surface. Gas blanketing also enables the furnace to remain open at all times, allowing unobstructed access to the molten metal. The "swirl" approach requires a refractory extension to the furnace, which Air Products can specify and fabricate.

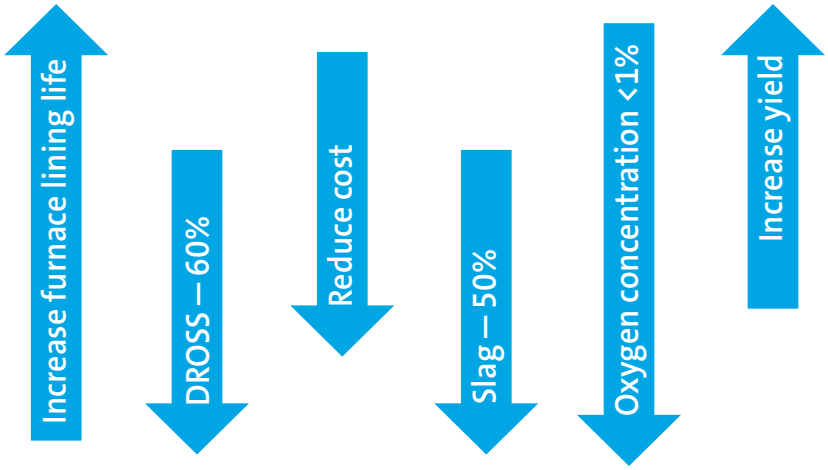
Key features and benefits

Our technologies can help you lower overall costs through:

- Reduced oxygen concentrations to extremely low levels (<1.0% volume), depending on furnace conditions
- Improved metal fluidity due to lower oxide inclusions in the metals, increasing casting yields
- Reduced inclusions and porosity
- Better surface finish and improved machinability of castings
- Improved furnace lining life
- Reduced alloying costs
- More consistent heat chemistries
- Reduced slag and dross levels



Typical performance



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