



Dilute Oxygen Combustion Technology

Typical Dilute Oxygen Combustion (DOC) Benefits

- Productivity increase of 10-35 percent
- Fuel savings of up to 50 percent over conventional air-fuel combustion
- NO_x emission levels less than 0.015 lb/MM BTU, equivalent to 12 ppm from air-fuel combustion
- Improved heating uniformity for better quality and fewer rejects in rolled product
- Simple, low-maintenance combustion system

Commercial Results

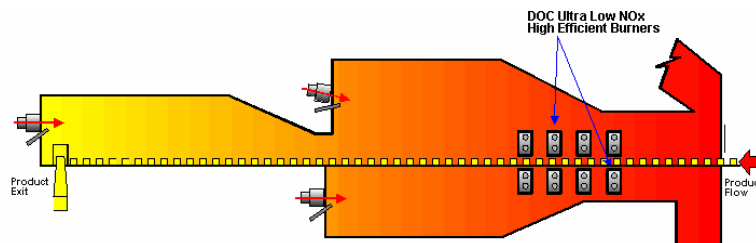
- Up to 30 percent increase in furnace capacity
- Optimum reheat furnace efficiency (1.2 MM BTU/ton fuel rates)
- Average billet discharge temperature increased 19°F (7.2°C)

Praxair's DOC Technology Helps Improve Overall Reheat Furnace Performance While Lowering NO_x Emissions With Oxygen Enrichment

Praxair's DOC technology helps provide rolling mill operators with higher productivity without high capital and operating costs. This application and process solution technology requires less fuel to heat steel and promotes lower overall heat content in the waste gases. These features allow a reheat furnace to economically operate at higher production rates.

DOC technology injects the fuel and oxygen into the furnace through separate ports rather than through a single burner. The reactants mix with the hot furnace gases before reacting with each other. This dilution effect prevents the high peak temperatures that are responsible for NO_x generation.

Because the flue gas is recirculated aerodynamically within the furnace, DOC technology is simple and inexpensive to install compared to conventional systems. In addition, the wide diffuse flame from the DOC technology provides exceptionally uniform heating of the steel, resulting in improved rolling mill performance and higher yields.



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