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Abstract

Flameless oxyfuel slab reheating experiences

Recent developments in flameless oxyfuel heating technology have been demonstrated to significantly enhance existing reheating furnace performance. By installing flameless oxyfuel boosting burners or the new REBOX[®] HLL technology, reheating furnaces can be upgraded with limited capital investment compared to other alternatives. The results from flameless oxyfuel installations in multiple slab reheating furnaces ranging from 40 to 340 tons/hour will be presented.

Typically these new performance enhancement systems can be installed during a normal operating schedule with little or no lost production. Start-up at SSAB Borlänge took only one day as the REBOX[®] HLL technology continues to use the existing air-fuel burners. Also, potential risk relating to implementing REBOX[®] HLL technology is minimized because it enables flexibility in operating techniques (in response to fluctuating fuel cost, availability and production requirements) and is essentially reversible. The same features may be designed into a technical solution incorporating flameless oxyfuel boosting.

Following is a summary of achieved results from walking beam installations using REBOX[®] HLL and/or flameless oxyfuel boosting:

- Emissions of NO_x have been reduced by up to 45%
- Fuel consumption has been decreased by 25%, with similar reductions in SO₂ and CO₂ emissions
- The use of flameless oxyfuel technology has demonstrated no negative impact on the surface quality
- Flameless combustion has demonstrated a positive impact on the temperature uniformity of the slabs.
- Production throughput has been increased by 15-30%
- The ideal heating curve suggested by the control system has been achieved more closely
- There has been a reduction in smoke emanating from the furnace, greatly improving the plant working environment

The Linde Metals Team reviews processing challenges and develops solutions for steel, aluminum and other metals processors. For more information or to get a copy of the full paper, register here: http://www.lindeus.com/Web/web2000/us/contactus.nsf/USContactUs?OpenForm&Seq=1#_RefreshKW_Market or call: 800-755-9277.

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