



TKE-HTT™

Thermal Kinetic Energizer-
Heat Transfer Technology

CASE STUDY: LADLE PREHEATER

BACKGROUND

- Ladle Capacity – 130 ton
- Refractory Type – Dolomitic barrel and bottom with mag-carbon slag line
- Preheater Temperature Set-point – 1900°F
- Preheater Type – Horizontal with a natural gas/forced air burner
- Burner Rated Capacity – 12 MMBTU/hour

CUSTOMER GOALS

1. ***Increase reliability*** – eliminate downtime and reduce maintenance costs.
2. ***Eliminate hot and cold spots within the ladle*** – provide more uniform temperatures and drive more temperature into the bottom refractories.
3. ***Reduce natural gas consumption*** – the existing burner frequently went “off-ratio” resulting in incomplete combustion and overheating of the ladle refractories.

PROJECT DESCRIPTION

Baseline data was generated using a data-logging natural gas flowmeter. A 3.5 MMBTU TKE-HTT™ combustion system was specified to replace the existing 12 MMBtu burner and gas train. The gas train, combustion air fan, and control panel were provided on a steel skid, and the installation was completed in less than 24 hours.

RESULTS

<u>System</u>	<u>Average Natural Gas Consumption</u>
12 MMBTU Conventional	8195 SCFH
3.5 MMBtu TKE-HTT™	2409 MCF
<i>Reduction</i>	<i>70.6%</i>

CONCLUSIONS

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The customer reports that since the conversion to TKE-HTT™ technology, the temperature set-point is achieved faster, with a significant improvement in temperature uniformity within the ladle refractories. Subsequently, they have begun reducing the temperature set-point and have reported less temperature related issues at their LMF and caster. The customer converted 10 ladle preheaters to TKE-HTT™ technology.