

Complete Combustion System Rebuild for Increased Production and Decreased Emissions



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Application: Steel Reheat Furnace

Bloom was able to increase production, decrease NOx emissions, and decrease specific fuel consumption by supplying a complete combustion system upgrade for a reheat furnace. Additionally, Bloom retrofitted existing competitor burners with Bloom internal components to improve performance.

Purpose/Drivers

- Emissions
- Fuel Rate
- Production

Scope

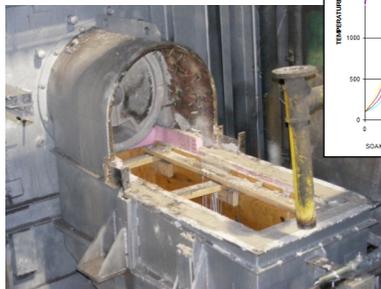
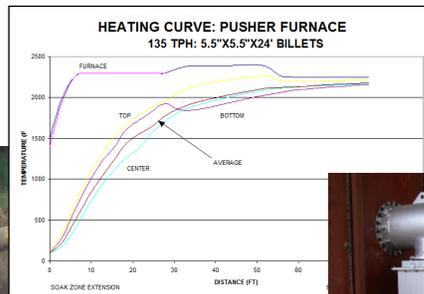
- **Complete Combustion System**
 - Regenerative burners (1150 series)
 - Ignition Equipment
 - Main Gas Train
 - Cycle and Flow Control Valves
 - Exhaust and Combustion air fans
- **Combustion Controls system**
- **Bloom burner internals for a competitor's existing regenerative burners**

Achievements

- **Improved Operation**
- Production Increase**
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- Fuel Rate**
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- NOx Emissions**
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Key Points:

- 1) **Expert thermal modeling** by Bloom determined the **optimal burner configuration** to meet the customer goals.
- 2) For a **significant NOx reduction** Bloom **retrofitted competitor burners with Bloom burner conversion kits**.
- 3) Bloom's solution helped the customer achieve **production and emissions targets and reduced specific fuel use**.



Bloom worked with a furnace OEM to design and supply a complete combustion system for a reheat furnace. The end user wanted to increase production, decrease emissions, and decrease specific fuel rate. First, Bloom developed several alternative thermal models of the furnace in order to determine the best solution for the end user. In order to accomplish the desired production, it was necessary to lengthen the furnace, thus requiring new control zones, and several new regenerative burners. To minimize installation efforts and downtime, Bloom designed new internal components (baffles, nozzles, etc.) for the competitor's existing regenerative burners, and made the modifications to the burners while they were still attached to the furnace. After completion, the furnace performed well on all measured metrics.

Keywords: Low NOx, emissions, productivity, retrofit, steel reheat

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