Reducing NOX during Air-Oxygen-Fuel Combustion

Summary
A method and apparatus for air-oxygen-fuel combustion that increases furnace productivity while minimizing NOx formation.

Overview
Air Products is offering for license technology pertaining to air-oxygen-fuel combustion processes. A majority of combustion processes use air as an oxidizer to combust with fuels such as natural gas, fuel oil, propane, waste oils, and other hydrocarbons. The performance of many air-fuel combustion processes can be improved by enriching the combustion air with oxygen. Oxygen enrichment of combustion air increases both the flame temperature and the thermal efficiency of the furnace. This allows for the flue gas volume to decrease and the oxygen concentration in the oxidizer to increase. A possible setback is the cost of high purity oxygen; however, the cost of using high purity oxygen for enrichment can be offset by gains in productivity from enhanced combustion. Low level enrichment can be applied to existing air-fuel systems with only a few modifications to the system.

This technology provides the method and equipment for air-oxygen-fuel combustion that increases productivity while minimizing NOx formation. Oxy-fuel combustion takes place in a post-mix or muzzle-mix burner. Air is injected on either side of the oxy-fuel combustion by specially shaped passages allowing furnace gases into the flame zone. Additional oxygen can be injected directly into each air passage to enhance combustion, resulting in an overall combustion process with low NOx emissions.

Benefits:
- Furnace Production Increase of 15%
- Lower NOx emissions

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<th>Title</th>
<th>Status</th>
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<td>5,871,343</td>
<td>Method and Apparatus for Reducing NOX Production During Air-Oxygen-Fuel Combustion</td>
<td>Issued</td>
<td>2/16/1999</td>
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Drawing: A drawing of the air-oxy-fuel combustion equipment.

Also Offered:
Technology transfer assistance may be provided with a license.

Availability:
All serious inquiries for license will be considered.

For more information on licensing this technology contact:

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