



## Case History

**Application: Radiant Sidewalls of an Ethylene Furnace**

**Operating Temperature:** ~2100°F

**Emisshield® Product Used:** Emisshield® ST-1 (US Patent 6,921,431)

**Situation:** Emisshield® ST-1 was applied to a 2' x 2' panel of aged Insulating Fire Brick (IFB) on the radiant sidewalls in November of 2002. Also applied was a competitive coating that is cerium based and contains chrome oxide. Using a Quantum Logic Laser Targeted Thermometer (LTT), the emissivity was measured in order to determine absolute temperature. (For more information on this equipment, please visit: [www.quantumlogic.com](http://www.quantumlogic.com)).

**Results after applying Emisshield®:** After ten (10) months of monitoring the two coatings with the Laser Targeted Thermometer, it was determined that the emissivity of the cerium coating had dropped to about 0.4. Emisshield® ST-1 maintained an emissivity of 0.9 and appeared visually intact. A test panel of ~70 ft<sup>2</sup> was applied to various refractories in September 2003 in a second furnace including, Z-Blok Modules, Thorpe Fiberlite burner blocks, and standard Fiberlite peephole blocks. In this second test, Thorpe's HotSpotter thermographic service will be used to obtain emissivity readings, temperature readings and efficiency readings; before and after the application of the two coatings. The end customer requested this second test to verify the findings of the first test.

While further testing has been requested by the end customer, this preliminary field data under rigorous field conditions shows that Emisshield® Products, as NASA determined, are high emissivity coatings that will maintain their high emissivity values at elevated temperatures provided they are properly applied to ensure adhesion. Because Emisshield® Products will maintain their emissivity values at higher temperatures; they will allow ethylene furnaces to become more efficient; either by reducing fuel costs or by allowing an increase in production; a significant impact to the petrochemical industry.

C3, 3/04