



## Case History

**Application:** Afterburner of a batch kiln that cures high tech ceramics

**Operating Temperature:** 1400°F

**Emisshield® Product Used:** Emisshield® ST-2 (US Patent 6,921,431)

**Problem:** The purpose of the afterburner is to heat the exhaust gasses during the kiln cycle to completely burn the organic binders that are discharged from the ceramics being fired. The kiln's cycle is 48 hours. In these 48 hours, 25% of total fuel usage is used by the afterburner to ramp-up and maintain the temperature of 1400°F. The customer wanted to see a decrease in fuel use and shorter ramp-up time to reach 1400°F

**Application of Emisshield®:** The firebricks were prepared by sweeping all debris away from the area to be coated. Any remaining dust was blown away using the in-house air compressor system. A spray gun was used to apply the coating to a coverage density of 150 ft<sup>2</sup>/gallon. The afterburner chamber is 80 feet long, six feet tall and 42 inches across. Fifteen gallons of Emisshield® ST-2 were used to coat the entire chamber.

**Results after applying Emisshield®:** The natural gas burners are controlled by thermocouples that hang in the afterburner. The burners are normally kept open at a rate setting of 35%. In the three months after the application, the burners were open to between 25% - 29%. This translates into energy savings of 23% in the afterburner chamber for the entire year based upon the fuel flow for each setting. The customer realized a payback in less than three months.

Emisshield® ST-2 saved the customer 23% in fuel savings in the afterburner chamber over a one year period. Fuel consumption is one of the more costly aspects of this industrial application. By reradiating energy back into the afterburner chamber, the amount of fuel needed to keep the afterburner at 1400°F was reduced. This 23% fuel savings was estimated as a savings of \$360,000 per year.

C2, 3/04