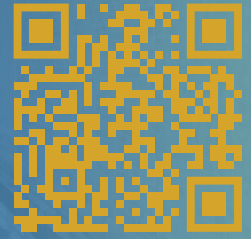


# Tunnel Kiln

## CASE STUDY



### Overview

- ▼ **Operating Temperature:**  
1520°C
- ▼ **Substrate:**  
Super Duty Fireclay Brick and High Duty Silica Brick
- ▼ **Application:**  
Tunnel Kiln firing high purity, high alumina refractory brick

### Application of Emisshield™

Emisshield® was applied to the refractory by spraying with a HVLP sprayer. The application of the coating was confined to the preheat and burning zones of the kiln.

Fuel	Natural Gas
Load	360,000 kg/day
Through Put	2 Kiln Cars every hour
Burner Location	Kiln Roof and Walls
Age	45 Years Old
Fuel Usage	275,000 MMBTU/ Year
Fuel Usage at \$12/MMBTU	\$3,300,000



### Emisshield™ Benefits

The kiln was put back into service immediately following the application of Emisshield®. It was immediately noticed that the brick in the coated furnace were being fired 30°F to 60°F hotter at precoat burner settings. The burners were turned down to return the firing temperature of the ware to the desired level. In the first month of operation, the average gas usage per day dropped from 476MCF to 371MCF, a 22.1% savings. Monitoring gas usage in subsequent months showed that at slower push rates, the fuel savings was not as great as the months with higher push rates. The monthly savings in the first year of service, as measured in MCF/MT of production ranged from 8% to 26% and averaged 16%. Since this kiln is of an older design and does not benefit from more modern kiln technologies, it was not unusual that brick in the center of the hacks on each car were frequently under-burned. After the coating was applied, under-burning was virtually eliminated. In addition, the kiln atmosphere was noticeably cleaner. The Emisshield® coating provided even radiative heating that more completely combusted fuel.

- ⬆ **Energy Savings of up to 9%**
- ⬆ **\$786,000**  
*Estimated Total Savings*
- ⬆ **5 - 6 months**  
*Total Annual Payback*
- ⬆ **Product Quality- Rejects Improved by 1% of total production**
- ⬇ **Reduced Turnaround, Shut Down, Start Up**