

Kilns

Project Name: Tunnel Kiln
Location: Fairfield, AL

Furnace Information

Furnace Type: Older generation, Refractory Tunnel Kiln
Fuel Type: Gas
Substrate: The preheat zone was lined with super duty fireclay brick and the burning zone was lined with high duty silica brick.

Operating Temp: 2770 °F (1521°C)
Background: This tunnel Kiln fires high purity, high alumina refractory brick. Emisshield® was to be evaluated for energy savings

Application Information

The application of the coating was confined to the preheat and burning zones of the kiln. This application was completed in December 2003.

Emisshield® Benefits

The kiln was put back into service directly following the application of the Emisshield®. It was immediately noticed that the brick in the coated furnace were being fired 30°F to 60°F hotter at the pre-coating 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 476 MCF to 371 MCF, 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 fuel 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 radiant heating that more completely combusted fuel.