High Emissivity Coating for Energy Saving in Steam Cracking Furnace

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The furnace walls in a steam cracker are lined with refractory, bricks and fiber materials having a relative low emissivity. By applying a "High Emissivity Coating" on the surface of the furnace walls, it is possible to increase the emissivity and thereby improve the thermal efficiency of the furnace box significantly. It was found that applying high-emissivity coating on the furnace walls of steam cracker improves the thermal efficiency of the furnace (~3-6), which resulted in fuel savings, increased production and improved quality in firing and heat treating furnaces. These differences are small, but considering the industrial importance and scale of the steam cracker, significant. In addition, several other secondary benefits, such as increased life of refractory, less NOx emission, etc., are obtained by applying emissivity coating material onto the furnace walls. Recently, high emissivity coating has been applied in several steam crackers with satisfactory results. Moreover, high emissivity coating was also applied to other industrial furnaces and the results are presented.