## عنوان مقاله:

Effect of ceramic coating on the thermal performance of an industrial steam methane reformer

## محل انتشار:

سومین کنفرانس بین المللی فناوری های جدید در صنایع نفت، گاز و پتروشیمی (سال: 1400)

تعداد صفحات اصل مقاله: 4

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## خلاصه مقاله:

Steam methane reformers compose many tubes full of catalysts inside a combustion chamber,producing synthesis gas in tubes. The combustion chamber has burners in order to provide heat ofendothermic steam methane reforming reactions in tubes. The dominant heat transfer mode betweencombustion chamber and tubes is radiation, and a major problem that arises in heat radiation isemissivity factor reduction in surfaces of steam reformer along times. Therefore, the portion of radiationheat transfer decreases and then tubes wall temperature reduces, which has a high effect on thereactions in tubes. In this work, an industrial reformer has been investigated for ten years.Computational Fluid Dynamic (CFD) is applied to compare the performance of this reformer at the firstand tenth years of operation. Results show that the application of ceramic coating with a high emissivityfactor has significant effect on thermal performance of old reformers. This change leads to an increaseof about ۴۰ K in tubes temperature in the ۱۰th year, which is ۳K more than that in the first year

## کلمات کلیدی:

Steam methane reformer, Computational Fluid Dynamic, Emissivity factor, Radiation heat transfer