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BTX Plant Performance Tests (Best Practice)

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Abstract

For years Saudi Aramco faced rapid and chronic Claus catalyst deactivation induced by aromatics (BTX) in feed acid gas (lean acid gas). This catalyst deactivation resulted in low sulfur recovery and frequent shutdowns to replace the catalyst. After completing an exhaustive process selection study to identify the most cost effective solution to the problem, the company proceeded with installation of regenerable activated carbon beds upstream of sulfur recovery units (SRUs) to remove aromatics contaminants before they reach the converter beds. In early 2006, Saudi Aramco successfully commissioned these carbon beds and the catalyst deactivation problem has been virtually eliminated. This paper discusses the performance of these carbon beds after two years in operations. The performance tests focused on a unit that has started with fresh catalyst, in order to have a clear performance observation over the last two years (2006 and 2007). Furthermore, this paper will discuss Saudi Aramco best practices in operating these carbon beds, such as performance test procedure, optimizing acid gas temperature to have the maximum adsorption efficiency, and lab assessment of Claus activated alumina and the activated carbon conditions after two years in operation.