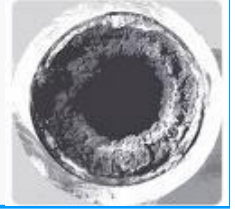


Latest news!

Removal of heavy metal deposits from refinery equipment



Situation

The Rectisol process is a physical gas washing process. Acid components in the feed gas like CO₂, H₂S or COS are absorbed in methanol and removed from the synthesis gas.

Other impurities in the feed gas are NH₃, HCN and metal carbonyls like Ni(CO)₄ and Fe(CO)₅. These carbonyls will decompose under specific process conditions to form heavy metal fouling. This can result in equipment plugging and reduction of the plant availability. For this reason most of the metal carbonyls are removed from the process before entering the main methanol loop.

Problem

Even small amounts of nickel and iron components may have a negative effect on the performance of the Rectisol plant. The heavy metals can accumulate in the bottom section of the distillation columns to form very stable deposits. A chemical cleaning with strong acids bears the risk to badly damage the distillation equipment. Furthermore nickel deposits are often not completely dissolved under acidic conditions and remain in the system.



Fig 1: Nickel deposit

New Technology

KURITA G-7930 is a new cleaning agent, developed to give fast, safe and efficient removal of nickel and iron deposits. It is a formulation of a buffer solution containing a weak organic acid. This cleaning agent is a "ready to use" product, which works at neutral pH conditions. **KURITA G-7930** does not contain any strong complex forming agents and does therefore not create the typical environmental problems of these products.

In combination with a corrosion inhibitor the cleaning agent **KURITA G-7930** dissolves heavy metals deposits without attacking the distillation equipment. **KURITA CI-6320** has been evaluated as the most suitable product that forms a very resistant protective layer on the metal surface of the refinery equipment during the cleaning procedure.

Field Experience

This new cleaning technology was implemented successfully in several applications. In one case a Rectisol unit was suffering from nickel deposits in the bottom section of three distillation columns. All fouled distillation columns were chemically cleaned with **KURITA G-7930** and **KURITA CI-6320**. Dissolved nickel concentrations up to 2800 ppm were analysed in the cleaning solution.

The nickel deposits were completely removed, while the iron concentration in the cleaning solution was kept below 10 ppm. No corrosion attack of the refinery equipment was observed. In



Fig 2: Cleaned column

comparison to the strong acid cleanings that had been applied before this new and mild cleaning procedure is a very significant improvement in terms of cleaning efficiency and safety for the unit.

Application Fields

The new cleaning technology, which works at neutral pH conditions is suitable for applications, where nickel or iron may cause fouling in the process equipment. The heavy metal deposits will be dissolved and removed with the cleaning solution.

Your benefits

- Excellent nickel and iron dissolver
- Works at neutral pH conditions
- Very low corrosivity to refinery equipment
- Does not contain strong complex formers
- Field approved cleaning technology
- Efficient, safe and environmental friendly

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