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Evaluation of the causes of increasing the pressure drop of fixed bed reactor in RCD unit

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The unit of RCD (Reduced Crude Desulfurization) was applied for decreasing of Sulfur, CCR (Coradson Carbon Residue), metals of heavy feeds AR (Atmospheric Residue) and VR (Vacuum Residue), and prepared the feed of RFCC (Reduced Fluid Catalytic Cracking) unit. The unit includes the following parts:

- Feed Pretreating (Filter) Section,
- Reactor Section,
- Fractionator Section, and
- Make-up Hydrogen Compression Section

Capacity is 69180 BPSD. These compounds are easily converted to H₂S. However, feed-stocks containing heteroatomic aromatic molecules are more difficult to process. Desulfurization of these compounds proceeds by initial ring opening and sulfur removal followed by saturation of the resulting olefin. Thiophene is considered 15 times more difficult to process compared to diethylsulfide. There are 5 fix-bed reactors used and allowable pressure drop for each reactor is max 0.7 bar, approximately. All data is actual and extracted from DCS, we had faced down with more than 7 bar pressure drop in the 2nd reactor. This paper discussed about what was actual happening.

Biography

Ali Shaeri is a PhD student and working in NIOEC as a Senior Process Engineer. He is a Member of a Scientific Mission and also teaches at Elmi-Karbordi University. He is also a Member of IPS. He was responsible for commissioning and pre-commissioning of process units in Arak Refinery Expansion Project.

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