

عنوان مقاله:

The Multi-Objective Optimization of Shazand Refinery's Hydrocracking Unit

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

تعداد صفحات اصل مقاله: 9

نویسندگان:

Morteza Kia

Leila Vafajoo - Corresponding Author Address: Chemical Engineering Group, Fanni College, Islamic Azad University, South Tehran Branch, Tehran, Iran

Majid Bahmani

خلاصه مقاله:

In the process of oil refining, hydro cracking is a process through which a heavy hydrocarbon cut is converted into lighter and more valuable products in presence of hydrogen. The current study is concerned with a multi objective optimization of several hydro cracking unit's reactors of ImamKhomeini's Shazand refinery of Iran. In this regard, a tube reactor in a fixed bed has been modeled and the results validated with industrial data collected from the aforementioned refinery. Then the reactor optimized with the aim of increasing production with respect to the least reduction in the catalytic activity and efficiency in terms of hydrogen and fuel gas consumption. The results indicated that, optimization plus changes in operating conditions led to increased or maintained conversions at accepted industrial levels. Furthermore, the procedure to reduce the hydrogen consumption complied with led to an estimated annual reduction of 83373.84(KNM 3) hydrogen consumptions plus annual saving of about 87120NM3 in heater's fuel gas consumption. These were economically valuable and in particular, important in terms of environmental issues. Operating parameters varied within ± 0.1 , ± 0.3 , ± 0.6 , ± 1 and $\pm 1.2^\circ\text{C}$ for the reactor inlet temperature for 5%, 10% and 20% by volume of hydrogen injection in the feed and inlet. Optimal variations ranged for the reactor inlet temperature from - 0.7 to $+0.3^\circ\text{C}$ as well as; for inlet hydrogen injection determined to be + 9 to - 9% by volume and for the feed inputs were found +4 to 8% by volume

کلمات کلیدی:

IChEC cracking , optimization , kinetic model , sensitivity analysis

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/340978>

