Cost Estimation and Optimization of the Topping Unit Products in Khangiran Gas Refinery in the Steady State Condition

Nowadays, optimization of chemical processes is of great importance from both economical and practical point of view. The aim of this research is to optimize the topping unit of Khangiran Gas Refinery using Hysys software. A nonlinear SQP (Sequential Quadratic Program) model has been adopted for the optimization purposes. The objective function of this work is chosen somehow that to maximize the annual income by considering the utility and maintenance cost. Taking into consideration that in the optimization of chemical process, the operating variables should not exceed from the permissible limits and the unit must operate in the steady state condition, one can impose limits on the primary and secondary variables. The primary variable that is used for the optimization in this study is the two feeds to the unit. Furthermore, given that the composition of the two feed differs and the product can be kept constant, we can obtain the optimal values. In addition, we can impose constraint function on the secondary parameters such as minimizing the reboiler heating load and condenser, maximizing the product rate of naphtha with respect to solvent and diesel and keeping it to the minimum with respect to kerosene and at the same time maintaining the overall capacity fixed. The findings of this study reveal that we can make a net profit of about $\text{626,367}$ annually through the selling of the unit products, and raise the annual income by as much as $4.1$ percent through the optimization scheme.

Optimization, SQP, Kerosene, Naphtha, Topping unit, Hysys software
این صفحه به معنای تاییدیه نمایه سازی مقاله در پایگاه استنادی سیویلیکا می‌باشد. در هر لحظه به منظور تایید اصلاحات این گواهی می‌توانید وضعیت ثبت مقاله را از طریق لینک فوق به صورت آنلاین کنترل نمایید.