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KEY WORD: HYSYS / PROCESS MODEL / SIMULATION / NATURAL CONDENSATE / OPTIMIZATION

HATAIKAN SRISAMARN : THESIS TITLE. (AN OPTIMAL OPERATING CONDITION OF THE NATURAL CONDENSATE STABILIZATION PROCESS)

THESIS ADVISOR : ASSOCIATE PROFESSOR PAISAN KITTISUPAKORN, Ph.D., THESIS COADVISOR : TANES KHAMBANONDA, Ph.D., 91 pp. ISBN 974-03-1348-5.

In this research, a condensate stabilization process is modeled, simulated and optimized to study the variations of input variables to the amount of condensate and find an optimal operating condition by the Hysys process simulation package. The used optimization algorithm in Hysys is Successive Quadratic Programming (SQP). The case studies are based on the stabilization process of Erawan Central Processing Platform, Unocal Thailand Ltd.,. First case study considered is to study about the effect of input variables in the actual plant e.g. raw condensate feed, cold feed ratio, reboiler duty to product and energy usage. Simulation results have shown that the Reid Vapor Pressure (RVP) of product increases when the raw condensate feed increases but RVP significantly reduces when both the reboiler duty and energy usage increase. However, the RVP does not change much with regarding the cold feed ratio.

The second case study considered is to study about an optimal operating condition of the process. It was found that the process can be operated optimally between the production rate of 15,000 and 25,000 bbl/d within the constraint of given RVP and equipment capacities. In addition, the profit of the process would be gained when the production rate of between 15,000 and 22,000 bbl/d are operated.