

**MODELING AND SIMULATION OF A SMALL REFINERY
PROCESS IN THAILAND**

Ms. Savanit Boonyasuwat

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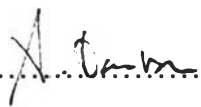
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By : Ms. Savanit Boonyasuwat


Program : Petrochemical Technology


Thesis Advisors : Prof. Brice Carnahan
Dr. Pornpote Piumsomboon
Dr. Thirasak Rirksomboon

Accepted by the Petroleum and Petrochemical College, Chulalongkorn University, in partial fulfillment of the requirements for the Degree of Master of Science.


.....Director of the College
(Prof. Somchai Osuwan)

Thesis Committee


.....
(Prof. Brice Carnahan)


.....
(Dr. Pornpote Piumsomboon)


.....
(Dr. Thirasak Rirksomboon)

ABSTRACT

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This project proposes to study a small scale refinery process by means of experimental data collection and dynamic modeling simulation. The refinery in question is a small refinery that is a duplicate of a major Thai refinery. Using this plant as a study model, the project will determine its efficiencies and thermodynamic properties in order to determine the optimum operating conditions. This will involve actual data collection from the refinery itself. Data pertaining to each of the product yields will be measured against various parameters such as feedstock temperature and feed flow rate. Using these data, mathematical models/ equations will be developed and simulated using a Mathcad program in order to determine the components and the enthalpy for each time step.

บทคัดย่อ

สวณิตย์ บุญญาสุวัฒน์ : แบบจำลองทางคณิตศาสตร์ของหอกถันเพื่อทำนายสารประกอบไฮโดรคาร์บอน (Modeling and Simulation of a Small Refinery Process in Thailand) อ.ที่ปรึกษา : Prof. Brice Camahan, ดร. พรพจน์ เปี่ยมสมบูรณ์ และ ดร. ชีรศักดิ์ ฤกษ์สมบูรณ์ 154 หน้า ISBN 974-638-495-3

วิทยานิพนธ์ฉบับนี้เป็นการศึกษาผลกระทบของการเปลี่ยนแปลงที่ให้กับหอกถัน เช่น การเปลี่ยนแปลงของอุณหภูมิที่ส่งเข้าหอกถัน และการเปลี่ยนแปลงของอัตราการไหลของวัตถุดิบที่ป้อนเข้าหอกถัน เป็นต้น การศึกษาผลกระทบนี้สามารถนำมาซึ่งการคำนวณเพื่อหาการเปลี่ยนแปลงของคุณสมบัติทางเทอร์โมไดนามิก (เอนทาลปี) ที่เกิดขึ้นจริงเปรียบเทียบกับทฤษฎีเพื่อหาค่าความแตกต่าง และนำค่าเหล่านั้นไปทำนายประสิทธิภาพของหอกถัน นอกเหนือจากนั้นสามารถทำนายสถานะของระบบที่สามารถให้ประสิทธิภาพสูงสุด

หลังจากนั้นจะนำค่าที่ได้จากการทดลองดังกล่าวไปเป็นค่าทำนายเริ่มต้นของสมการทางคณิตศาสตร์ที่จำลองเพื่อหอกถันนี้โดยเฉพาะ เพื่อให้ได้ค่าปริมาณสารประกอบไฮโดรคาร์บอนของแต่ละชั้นหอกถัน ณ เวลาต่างๆ

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