



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكروفيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY



Cairo University

A NEW PROCESS INTEGRATION AND INTENSIFICATION OF CUMENE PRODUCTION

By

ESRAA KHALED ALI DARWISH

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
CHEMICAL ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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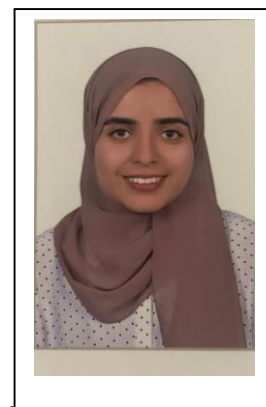
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Title of Thesis: A New Process Integration and Intensification of Cumene Production

Key Words: Pinch Technology, energy target, Cumene, Reactive Distillation, and Process Intensification.)

Summary:

In this Study, two plant designs for Cumene Production, Turton's Conventional process and Reactive distillation process were investigated. The conventional process was modelled using ASPEN HYSYS and the current HEN was revamped. Furthermore, a new design for the HEN was modeled using ASPEN Energy Analyzer. On the other hand the flow sheet for the Reactive Distillation process was modeled using ASPEN Plus using new chemical kinetics. Then an economic analysis was performed on both processes to identify the most optimum plant design to implement in Egypt.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Esraa Khaled

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Dedication

I dedicate this work to my parents; they were my biggest supporters.

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In the Name of Allah, the Most Merciful, the Most Compassionate all praise be to Allah, the Lord of the worlds; and prayers and peace be upon Mohamed His servant and messenger. First and foremost, I must acknowledge my limitless thanks to Allah, the Ever-Magnificent; the Ever-Thankful, for His help and bless. I am grateful to some people, who worked hard with me from the beginning till the completion of the present research particularly my parents for their continuous support, guidance and inspiration. Second my supervisors Prof. Fatma, Prof. Mohamed Amin and Dr. Dina who have been always generous during all phases of the research, and I highly appreciate their efforts. I would like to take this opportunity to say warm thanks to all my beloved friends, who have been so supportive along the way of doing my thesis. I also would like to express my wholehearted thanks to my family for their generous support they provided me throughout my entire life and particularly through the process of pursuing the master's degree. Because of their unconditional love and prayers, I had the chance to complete this thesis.

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