UNREACTED PROPYLENE RECOVERY IN POLYPROPYLENE PRODUCTION INDUSTRY

By
MAHMOUD RAMADAN MASRY HELAL

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

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Title of Thesis : **UNREACTED PROPYLENE RECOVERY IN POLYPROPYLENE PRODUCTION INDUSTRY**

Key Words: Propylene recovery; Polypropylene Industry; Process Simulation; Polymerization Process; Monomer Recycle

Summary :

This study is to achieve a proper way for recovery of unreacted propylene in propylene polymerization reaction. By using Aspen Plus V9, three modules were developed to perform a good recovery for unreacted propylene. Each module shows it ability to recover maximum amount of propylene. Each module has its different equipment and characteristic configuration. By using Aspen Capital Cost Estimator V9, differences for each module in total capital cost, total operating cost, total utilities cost, equipment cost and total installed cost were shown.

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Dedication

For my father and my mother.

Table of Contents

List of Tables

List of Figures

Nomenclature

Abbreviations

BOPP	Biaxially oriented Polypropylene
FRR	Flow rate ratio
GPC	Gel permeation chromatography
HECO	Heterophasic copolymer
HP	Homopolymer
IBC	Intermediate bulk container
MFR	Melt flow rate
MWD	Molecular weight distribution
MZCR	Multi-zone circulating reactor
PDI	Polydispersity index
PP	Polypropylene
RACO	Random copolymer
SHAC	Shell high activity catalysts