



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



HANAA ALY



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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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**CO-HYDROPROCESSING AND HYDROCRACKING OF
ALTERNATIVE FEED MIXTURE (VACUUM
GASOIL/USED LUBRICATING OIL/WASTE COOKING
OIL) FOR PRODUCTION OF HIGH-QUALITY FUELS**

By

Mohamed Sayed Abdo Mohamed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY
in
Chemical Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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Title of Thesis:

Co-hydroprocessing and hydrocracking of alternative feed mixture (vacuum gas oil/used lubricating oil/waste cooking oil) for Production of high-quality fuels

Keywords:

Used lubricating oil, vacuum gasoil, waste cooking oil, co-hydroprocessing, simulation.

Summary:

The aim of this thesis was to make a semi complete study about co-hydroprocessing of vacuum gasoil (VGO), waste cooking oil (WCO) and waste lube oil (WLO). This alternative feed mixture is studied under different reaction temperature and different mixture feed compositions, then industrial calibrated simulation case of hydrocracking unit is built to illustrate the effects new unconventional feed on unit integration and economics. Experimental work was conducted at the “Egyptian Petroleum Research Institute”. Waste cooking oil (WCO) feedstock was acquired and collected from daily home use. Waste lube oil was sampled from “Suez Oil Processing Company”. Vacuum gasoil (VGO) feedstock was acquired from Middle East Oil Refinery (MIDOR) in Alexandria, Egypt. The target of the experimental work is to determine the effect of feed mixture composition and reaction temperature on high-quality product fuels. The obtained results revealed that: adding WCO increases the reaction conversion and jet fuel yield, while adding WLO increases diesel product quality (cetane index).



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.

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Table of Contents

Disclaimer	i
Acknowledgment.....	ii
List of Figures.....	vi
List of Tables	ix
List of symbols and abbreviations.....	xi
Abstract.....	xii
CHAPTER 1: Introduction.....	1
CHAPTER 2: Literature Review	4
2.1 Hydro-processing introduction.....	4
2.1.1. Petroleum refinery process	5
2.1.2. Heavy feedstocks	5
2.1.3. Hydrocracking feed	5
2.1.4 Refinery Products	8
2.2 Upgrading of heavy hydrocarbons.....	9
2.2.1 Chemistry	9
2.2.2 Heavy oil upgrading processes.....	9
2.3 Hydrocracking of conventional hydrocarbon	20
2.3.1 Hydrocracking history	20
2.3.2 Hydrocracking reactor types	21
2.3.3 Hydrocracking operating conditions.....	22
2.3.4 Hydro-processing catalysts	23
2.3.5 Chemistry and Mechanism of Hydrocracking	26
2.3.6 Hydrocracking catalyst deactivation mechanism	28
2.4. Waste lube oil (WLO) re-refining and processing	30
2.4.1 The meaning of waste oil / used oil:.....	30
2.4.2. Impurities in waste lubricating oil.....	32
2.4.3. Environmental effect of spilling waste oil	36
2.4.4. Waste oil re-refining history:	36
2.5. Waste lubricating oils recycling technologies.....	41
2.5.1. Waste oil reclamation	42

2.5.2. Minimization of waste mineral oils at source	43
2.5.3. Re-refining processes of waste lube oil.....	44
2.6. Waste cooking oil recycling and processing for biodiesel production.....	55
2.6.1. What is waste cooking oil	56
2.6.2. Lipid derived biofuels.....	57
2.6.3. Advantages and disadvantages of using green diesel.....	62
2.6.4. Green diesel production from waste cooking oil hydro-processing	62
2.6.5. Biomass in oil refining industry.....	65
2.7. History of waste oils co-hydroprocessing.....	66
CHAPTER 3: Aim of The Work	70
CHAPTER 4: Experimental Methodology.....	71
4.1. Materials	71
4.2. Characterization	71
4.2.1. WCO, WLO and VGO characterization	71
4.2.2. Catalyst characterization	71
4.2.3. Process description	73
4.2.4. Hydrocracking activity test.....	73
4.2.5. Product analysis	74
4.3. Process simulation case	74
4.3.1. Process design.....	76
4.3.2. Process simulation and analysis.....	77
CHAPTER 4: Results and Discussion.....	84
4.1. Result and analysis of experimental work	84
4.1.1. Gaseous product analysis	84
4.1.2. Conversion	86
4.1.3. C15-C18 paraffin carbon yield	87
4.1.4. Hydro-desulfurization efficiency	92
4.1.5. Hydro-denitrification efficiency	94
4.1.6. Liquid product specific gravity.....	95
4.1.7. Liquid product kinematic viscosity	96
4.1.8. Liquid product Pour point	97
4.1.9. Liquid product Flash point	98
4.1.10. Gasoline-range carbon yield	99

4.1.11. Gasoline-range carbon yield quality	99
4.1.12. Kerosene -range carbon yield	101
4.1.13. Diesel -range carbon yield	101
4.1.14. Diesel-range carbon quality	103
4.2. Result and analysis of simulation case	104
4.2.1. Performance evaluation of simulation model	104
4.2.2. Market and economic analysis.....	112
CHAPTER 5: Conclusions	118
References	120

List of Figures

Figure 2.1: Refinery process flow diagram.	6
Figure 2.2: Viscosity vs API gravity and density of conventional crude oil.....	7
Figure 2.3: Molecular structure of asphaltene	8
Figure 2.4:Refinery processes operating conditions (pressure and temperature).....	10
Figure 2.5: Process flow diagram of Visbreaking unit.....	10
Figure 2.6: Process flow diagram of Delayed Coker Unit (DCU).	11
Figure 2.7: Process flow diagram of Fluid Catalytic Cracking (FCC) unit.....	13
Figure 2.8: FCC reactor and regenerator configuration.	14
Figure 2.9: Process flow diagram of Residue De-Sulfurization (RDS) unit.	15
Figure 2.10: Process flow diagram of single-stage hydrocracking unit.	17
Figure 2.11: Process flow diagram of once-through hydrocracking unit.	17
Figure 2.12: Process flow diagram of two-stage hydrocracking unit.....	18
Figure 2.13: Process flow diagram of separate hydrotreater with single-stage hydrocracking unit.	18
Figure 2.14: Refining processes used for feedstock conversion to liquid products.	20
Figure 2.15: Types of hydro-processing reactors.	22
Figure 2.16: Silica / alumina transactions during acid site dehydration.....	24
Figure 2.17: Catalyst common industrial shapes.....	26
Figure 2.18: Hydrocracking reactions.	27
Figure 2.19: Deposits of carbon and metal on catalyst with time.	28
Figure 2.20: Coke formation pathways on hydrocracking catalysts.	29
Figure 2.21: Different systems for treating used oils.	34
Figure 2.22: Management systems for used oil.....	37
Figure 2.23: The environmental effect of oil spilt in water.....	37
Figure 2.24: Hierarchy of waste oils management.	41
Figure 2.25: Basic outline of acid/clay bleaching technologies.	46
Figure 2.26: Basic outline of vacuum distillation and hydrogenation processes.	48
Figure 2.27: Thin film evaporator configuration.....	49
Figure 2.28: Block diagram of Mohawak process technology for used oil re-refining.....	51
Figure 2.29: Block diagram represents BERC process technology.....	52
Figure 2.30: Block diagram represent safety Kleen technology.	53
Figure 2.31: Process block flow diagram of Interline process technology.	55
Figure 2.32: Transesterification reaction of biodiesel production.....	58
Figure 2.33: Process flow diagram for base catalyzed biodiesel production.	58
Figure 2.34: Block flow diagram of green diesel production process.....	61
Figure 2.35: production map of biodiesel and green diesel.....	62

Figure 4.1: Catalyst beds configuration in the experimental reactor.....	75
Figure 4.2: Experimental process block flow diagram.....	75
Figure 4.3: Process flow diagram of Unicracking unit.....	78
Figure 4.4: Hydrocracker model configuration in ASPEN HYSYS V.11.....	81
Figure 5.1: Possible pathways of fresh and used vegetable oils oxygen removal.....	85
Figure 5.2: Effect of temperature on conversion of VGO, WCO, WLO mixtures feedstock(pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³)......	87
Figure 5.3: Hydro-processing reaction routes based on oleic acid, and stearic acid.	89
Figure 5.4: Effect of temperature on C15-C18 paraffin yield from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	90
Figure 5.5: Effect of temperature on hydrdeoxygenation (HDO%) of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	92
Figure 5.6: Effect of temperature on hydrdecarbonylation(HDC%) of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	92
Figure 5.7: Effect of temperature on hydro-desulfurization (HDS%) of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	94
Figure 5.8: Effect of temperature on hydro-denitrification (HDN%) of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	95
Figure 5.9: Effect of temperature on liquid product specific gravity of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	96
Figure 5.10: Effect of temperature on liquid product kinematic viscosity of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	97
Figure 5.11: Effect of temperature on liquid product pour point of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	98
Figure 5.12: Effect of temperature on liquid product flash point of VGO, WCO, WLO mixtures processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	99
Figure 5.13: Effect of temperature on Gasoline yield from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³).	100

Figure 5.14: Effect of temperature on RON of Gasoline produced from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400Nm ³ /m ³ .)	102
Figure 5.15: Effect of temperature on Kerosene yield from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³ .)	102
Figure 5.16: Effect of temperature on Diesel yield from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³ .)	103
Figure 5.17: Effect of temperature on Diesel yield from VGO, WCO, WLO mixtures hydro-processing (pressure: 7 MPa, LHSV:1.5 hr. ⁻¹ , H ₂ /Oil: 400/ 400 Nm ³ /m ³ .)	104
Figure 5.18: Predicted and actual reaction conversion.....	106
Figure 5.19: Predicted and actual gasoline yield in weight percent.....	107
Figure 5.20: Predicted and actual kerosene yield in weight percent.....	108
Figure 5.21: Predicted and actual diesel yield in weight percent.....	108
Figure 5.22: Predicted and actual middle distillate yield (kerosene yield + diesel yield) in weight percent.....	109
Figure 5.23: Predicted and actual values of gasoline RON.....	110
Figure 5.24: Predicted and actual values of diesel CI.....	111
Figure 5.25: Predicted make up hydrogen from hydrocracking simulation model at different reaction temperature and feed mixture.....	112
Figure 5.26: crude oil barrel price (US dollar \$ / bbl.) in last years.....	113