



Cairo University

# **TREATMENT OF USED MINERAL OIL BASED HYDRAULIC FLUIDS**

**By**

**Nagatt Ibrahim Mohammed Ibrahim**

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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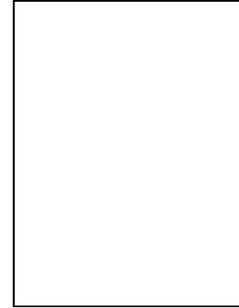
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**Title of Thesis:** **TREATMENT OF USED MINERAL OIL BASED  
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**Key Words:**

Oil, Used, Hydraulic, Investigated, Additives

**Summary:**

In this work, properties of fresh and used hydraulic mineral oil samples were investigated according to ASTM D 6158. Then a simple methodology for dewatering and filtration was adopted. Cleaned oil samples were characterized. Additives that improve oil properties were added to cleaned oil with many different (A/O) ratios, to obtain the optimum concentration. All inhibitors at their optimum concentrations were added to oil samples. Inhibited oil samples are characterized. The results show that physical properties and some of chemical properties for oil samples are improved and return to required limit.

## **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: Nagatt Ibrahim Mohammed Ibrahim

Date: 26 / 9 / 2018

Signature:

# Dedication

I would like to dedicate this thesis to:

- My parents spirit
- My brother Mr. Mohammed Ibrahim
- My husband Mr. Osama Mohammed Hassan
- My daughters Shahd, Nada, and Yasmeen

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