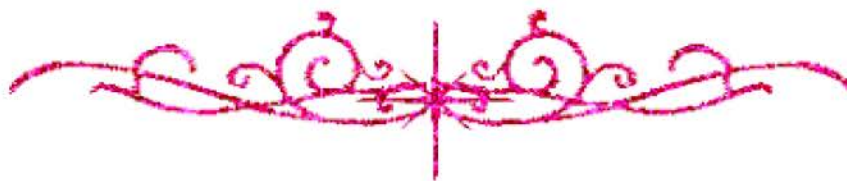


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

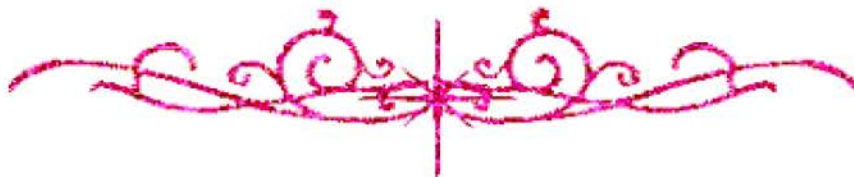
قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



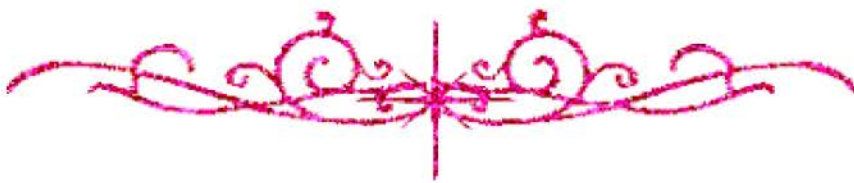
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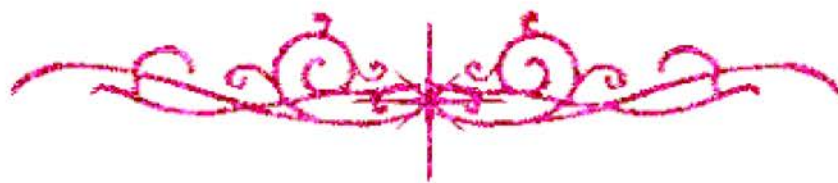


بعض الوثائق الأصلية تالفة





بالرسالة صفحات
لم ترد بالأصل





Cairo University

DEVELOPING AN EXPERT SYSTEM FOR IDENTIFYING OPTIMAL PUMPING LIFT BASED ON TECHNICAL, FINANCIAL AND COMPONENTS LEVELS

By

Mahmoud Ahmed Mahmoud Morsy

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
Petroleum Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Developing an expert system for identifying optimal pumping lift based on technical, financial and components levels

Key Words:

Expert System; Multiple Criteria Decision Making; Problem Optimization; TOPSIS; Financial Assessment

Summary:

Multiple technical and financial criteria are influencing selection of the optimal pumping lift systems (PLS). An expert system (ES) is developed to select the optimal PLS through four phases. Phase 1 screens out the unaccepted PLSs based on expert's preferences. Phase 2 selects the components of the accepted PLSs according to suppliers' catalogs and application conditions. Phase 3 is a financial assessment expecting the net present value for the accepted PLSs. Finally, phase 4 uses Technique for order preference by similarity to ideal solution, TOPSIS, to rank the accepted PLSs. The closest alternative to the positive-ideal solution is the most optimal solution. Therefore, the developed ES generates a comprehensive report about the recommendations with technical and financial justifications.

DISCLAIMER

I hereby declare that this thesis is my own and autonomous work. All sources and aids used have been indicated as such. All texts either quoted directly or paraphrased have been indicated by in-text citations. Full bibliographic details are given in the reference list which also contains internet sources containing URL and access date. This work has not been submitted to any other examination authority.

Name: Date: / /2020

Signature:

DEDICATION

This study is wholeheartedly dedicated to my beloved mother, who has been my source of inspiration and gave me strength when I thought of giving up, whose loving spirit sustains me still. With all my appreciation to my father, uncle, brothers, sisters, relatives, mentor, friends, and classmates who shared their words of advice and encouragement to finish this study, all of these, I offer to you.

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