شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

بعض الوثائق الأصلية تالفة

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

DEVELOPING A RETROFITS' APPLICATION VARAIBLES MODEL (RAVM) AS A DECISION- MAKING TOOL FOR ENVELOPE RETROFITS APPLIED TO EXISTING OFFICE BUILDINGS IN CAIRO/EGYPT

By

Shereen Omar Mohamed Galal Khashaba

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
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Professor of Architecture
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Approved by the
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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2020

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Title of Thesis:

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Key Words:

Office buildings, External envelope, Decision-making, Retrofit variables, Cairo/Egypt.

Summary:

The building envelope has tangible impacts on energy consumption; thus, it is the most effective building layer to apply green retrofits. The decision-making process of selecting retrofit measures to apply is complex, it involves many objectives that are quantifiable and others that can't be quantified. Retrofit analysis simulation tools can be used to identify some of these objectives like energy savings, but they are not enough to rely on; because there are other variables like the availability of the retrofits in the Egyptian market, and the installation process difficulty/duration which are not identified. Thus, the research aims to improve the energy efficiency in office buildings constructed in Egypt by applying retrofit measures to the existing building's envelope; By developing an optimized decision-making model for retrofits application in the Egyptian market based on a mathematical framework to support decision makers' selection according to their objectives. Then applying this model to two case studies representing the majority of office buildings in Cairo, to investigate its applicability and compare its results with the simulation tools'.

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: Shereen Omar Mohamed Galal Khashaba

Date:

Signature:

Dedication

I would like to dedicate this thesis to my family. A special feeling of gratitude to my loving mother and sister.

I also would like to dedicate this thesis to my father's Soul — who is always in my heart.

And special dedication to Saleem Mohamed Farahat, my nephew new family member, Mohamed Farahat and Asmaa Farahat.

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