Alexandria University
Faculty of Fine Arts
Dept. of Architecture
Post-graduate Studies

Energy-Efficient Building Envelope Design Using Computer-Based Measurements.

تصميم غلاف المبنى المرشد للطاقة باستخدام قياسات الحاسب الآلى

PhD Degree Thesis
Presented By:

Architect / Khaled Mohamed Farid Mohamed Mohamed El-Deeb
Assistant Lecturer in the Department of Architecture
Faculty of Fine Arts – Alexandria University

Under Supervision of :
Prof. Dr. Hoda Abd El-Kader Azzam
Professor of Architecture
Faculty of Fine Arts – Alexandria University

Assistant Prof. Dr. Abbas Mohamed El-Zafarany
Assistant Professor of Architecture
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EXAMINATION COMMITTEE

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2009

بسم الله الرحمن الرحيم

(و ما أوتيتم من العلم إلا قليلاً)

سورة الإسراء - الآية (85)

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ABSTRACT

The research deals with role of using ‘building analysis computer software tools’ in the building envelope design to reach energy efficiency.

Energy-efficient building envelope systems are discussed. This includes passive heating, passive cooling, and intelligent building envelope systems, in addition to energy generation through the integration of renewable energy systems in the building envelope design.

Building analysis tools are discussed and categorized. These include airflow, natural/artificial lighting and whole building analysis simulation tools. Each tool is discussed showing the inputs, outputs, benefits and the stage where it can be used in design. The relation between analysis tool and CAD tools is also discussed.

In the last part of the research, an application is performed using computer-based measurements and simulations to detect take energy-efficient design decisions for the building envelope in a specified case study,

Finally, a number of conclusions and recommendations are derived.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my supervisors:
Prof. Dr. **Hoda Azzam**
for her valuable advices, guidance and continuous support,
and for her interest throughout the development of this research.

And
Assistant Prof.**Dr. Abbas El -Zafarany**
for his valuable advices since the earliest stages of the study, through which discussions with him were always helpful and fruitful.

I would like to express my thanks to
Prof.Dr. **Magdi Moussa** and to Prof. Dr. **Ahmed Fekry**
for examining this thesis.

I also, express my thanks to professors in the Department of ITACA
Faculty of Architecture "Ludovico Quaroni", Uniroma1 University, Rome, Italy
Prof. Dr. **Fabrizio Orlandi** Prof. of Architecture Head of Dept. ITACA.
Prof. Dr. **Eliana Cangelli** Prof. of Architecture, Dept. ITACA.
Dr. **Carlo Brizioli** Lecturer of Architecture, Dept. ITACA.
For the great assistance, guidance and training during my scholarship in Rome.

And to
Asst. Prof. Dr. **Mohamed Faruk El-Abi**. Faculty of Architecture, Kingdom University, Bahrain
Arch. **Mohamed Zaghloul**. Faculty of Fine Arts – Alexandria University
For their assistance in various stages of the research.

At last I would like to express my great thanks to my mother, father, sister and brother, who always encouraged me and gave me a lot of moral support

Only To You

Dedicated to my

Mother.

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