

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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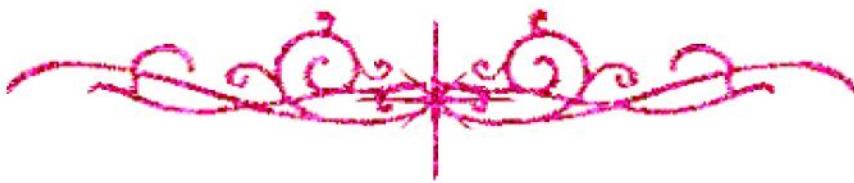
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بالرسالة صفحات
لم ترد بالأصل





Cairo University

Integrated Approach for Sustainable Power Plant Projects Using BIM

By

Ali Osama Ali Ibrahim Azzam

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
INTERDISCIPLINARY- MASTER OF SCIENCE
in
Integrated Engineering Design in Construction Projects

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Under the Supervision of

Prof. Mohamed Mahdy Marzouk

Professor of Construction Engineering,
and Management
Structural Engineering Department
Faculty of Engineering, Cairo University

Dr. Mohamed Abdel Karim El Zayat

Adjunct Assistant Professor
School of Sciences and Engineering
Faculty of Engineering, American University
in Cairo

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Approved by the Examining Committee

Prof. Mohamed Mahdy Marzouk Thesis Main Advisor
Professor of Construction Engineering and Management – Structural
Engineering Department – Cairo University

Prof. Ayman Hassan Ahmed Mahmoud Internal Examiner
Professor of Architecture –Architectural Engineering Department – British
University in Egypt.

Dr. Abdelhamid Adel Abdelhamid Beshara External Examiner
Chief Executive Officer of Masader Environmental Solutions and Energy
Services

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2020

Engineer's Name: Ali Osama Ali Azzam
Date of Birth: 24 /02/1992
Nationality: Egyptian
E- mail: Ali.azzam.F@eng-st.cu.edu.eg
Phone: 002-01111002905
Address: Mohandseen, Giza, Egypt
Registration Date: 01/10/2017
Awarding Date:/....../2020
Degree: Interdisciplinary - Master of Science
Department: Integrated Engineering Design in Construction Projects



Supervisors:

Prof. Mohamed Mahdy Marzouk – Cairo University
Dr. Mohamed Abdel Karim El Zayat – American University in Cairo

Examiners:

Dr. Abdelhamid Adel Beshara – Alexandria University (External examiner)
Prof. Ayman Hassan Ahmed Mahmoud – Cairo University (Internal examiner)
Prof. Mohamed Mahdy Marzouk – Cairo University (Thesis main advisor)

Title of Thesis:

Integrated Approach for Sustainable Power Plant Projects Using BIM

Key Words:

Building Information Modeling; Sustainability; Green Buildings; Power Plants, Emissions.

Summary:

Sustainability is considered one of the most discussed topics globally. The construction industry has a long-run impact that its projects have on the environment. Sustainability systems and criteria have been established to reduce the influence of buildings on the environment through sustainable designs. This research aims to develop an approach that integrates sustainability and Building Information Modelling in power generation sector. Various sustainability rating systems (e.g. GSAS, LEED, Estidama, Envision, Technical Sustainable Management), and design guidelines (e.g. World Bank EHS Guidelines) are studied to develop a new sustainability assessment system dedicated to power plants projects. A total of 54 criteria, clustered in eight categories, are considered in the proposed rating system. These categories are: 1) Nature and Urban, 2) Site, 3) Energy, 4) Water, 5) Materials and Resources, 6) Emissions and Environment, 7) Operation and Management, and 8) Culture and economy. The sustainability levels are ranked in six levels: Non-Sustainable, Improved, Enhanced, Superior, Conserving, Restorative. Building Information Modeling (BIM) is used to develop a plugin that facilitates the use of the proposed rating system to determine the level of sustainability of power plant projects. A case study of a 100 MW power plant is presented to test the effectiveness of the proposed sustainability system. The results of the case revealed that the total estimated point is 2.10 points which is equivalent to the conserving level according to the proposed sustainability rating system of power plant projects.

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: Ali Osama Ali Ibrahim Azzam

Date:

Signature:

Dedication

My Father: Osama Ali Azzam
Who has always supported me, and encouraged me to be better
person

My Mother: Gihan Said Khafagi
Who has always been there for me and loves me unconditionally

My Brother: Said Osama Azzam (may Allah be merciful to him)

My Whole Family and Friends
Who believe in me, and reinforce me

May Allah Bless Them All

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