شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

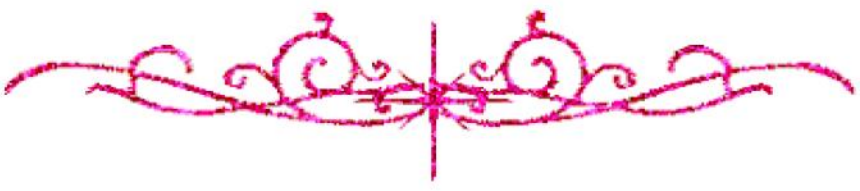
نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



بالرسالة صفحات
لم ترد بالأصل

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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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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