ADOPTING DIGITAL MANUFACTURING TECHNIQUE FOR LARGE SPAN STRUCTURE USING MEMBRANE MATERIALS

BY

Yasmin Tawfik Hussein Tawfik

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
Architectural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Adopting digital manufacturing technique for large span structure using membrane materials

Key Words:
Membrane structures – Digital technology in architecture – Digital manufacturing – New Materials – computer-integrated manufacturing.

Summary:

Membrane structures are hugely popular in architectural design and are increasing in their abundance within buildings. There is an increasing trend concerning the use of membrane structures within architectural design. The features of the membrane structure have been provided; an analysis of the strengths and weaknesses provides strength to the reasoning behind its use. This dissertation examines a variety of different factors concerning the membrane structures. It provides a detailed study of the use of membrane structures within building design , such as the structural components and mechanical usages. these efforts aimed at increasing buildings efficiency, saving and producing alternative power sources, reducing costs and ensuring the ease of implementation and maintenance.and using of Digital manufacturing has been considered, over the last decade, as a highly promising set of technologies for reducing product development times and cost as well as for addressing the need for customization, increased product quality, and faster response to the market. This paper describes the evolution of information technology systems in manufacturing, outlining their characteristics and the challenges to be addressed in the future.

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 source used and have cited them in the references section.

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