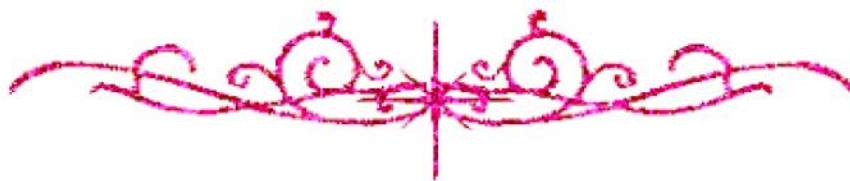


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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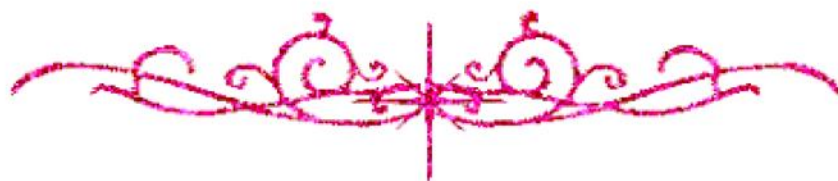


بعض الوثائق الأصلية تالفة





بالرسالة صفحات
لم ترد بالأصل





Cairo University

DESIGN OF A SELF-TUNABLE, VARIABLE-LENGTH PENDULUM FOR HARVESTING ENERGY FROM ROTATIONAL MOTION

By

Eng. Suzzan Abbas Hassan Abbas

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

MECHANICAL DESIGN AND PRODUCTION ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

**Prof. Dr. Aly Ahmed Mostafa
Khattab**

Professor of Machine Design
Department of Mechanical Design and
Production, Faculty of Engineering,
Cairo University

**Prof. Dr. Tarek Abdel Sadek
Osman**

Professor of Machine Design
Department of Mechanical Design and
Production, Faculty of Engineering,
Cairo University

**Prof. Dr. Mustafa Hani Ali
Arafa**

Professor of Mechanical Engineering,
Department of Mechanical Engineering,
American University in Cairo

**Dr. Mohammed Ali Mohammed
Abdelnaby**

Assistant Professor of
Production Engineering and Printing
Technology Department, Akhbar El-Yom
Academy

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Approved by the
Examining Committee

Prof. Dr. Tarek Abdel Sadek Osman (Thesis Main Advisor)
Faculty of Engineering, Cairo University.

Prof. Dr. Mustafa Hani Ali Arafa (Advisor)
Department of Mechanical Engineering, American University in Cairo.

Prof .Dr. Hesham Ahmed Mahmoud Hegazi (Internal Examiner)
Faculty of Engineering, Cairo University.

Prof .Dr. El Adl Mohamed Aly Rabieh (External Examiner)
Faculty of Engineering El Matareya-Helwan University.

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2020

Engineer: Suzzan Abbas Hassan Abbas Hassan
Date of Birth: 11/10/1987
Nationality: Egyptian
E-mail: suzan.hassan@akhbaracademy.edu.eg
Phone: 01278988205
Address: 6 October, area18, bulding 61, app4
Registration Date: 1/10/2014
Awarding Date: 24/ 11 / 2020
Degree: Doctor of Philosophy
Department: Mechanical Design and Production Engineering



Supervisors:

Prof. Dr. Tarek Abdel Sadek Osman.
Prof. Dr. Aly Ahmed Mostafa Khattab.
Prof. Dr. Mustafa Hani Ali Arafa.
Department of Mechanical Engineering, American
University in Cairo.
Dr. Mohammed Ali Mohammed Abdelnaby.
Department of Mechanical Engineering, Akhbar El-Yom
Academy.

Examiners:

Prof. Dr. Tarek Abdel Sadek Osman
Faculty of Engineering, Cairo University.
(Thesis Main Advisor)
Prof. Dr. Mustafa Hani Ali Arafa
Department of Mechanical Engineering, American
University in Cairo.
(Advisor)
Prof. Dr. Hesham Ahmed Mahmoud Hegazi
Faculty of Engineering, Cairo University
(Internal examiner)
Prof. Dr. El Adl Mohamed Aly Rabieh
Faculty of Engineering El Matareya-Helwan University.
(External examiner)

Title of Thesis:

Design of a Self-Tunable, Variable-Length Pendulum for Harvesting Energy from Rotational Motion

Key Words:

Energy Harvesting; Pendulum; Reciprocating Motion; MMR system, Frequency detection, Self-tunable harvester, Tuning algorithm.

Summary:

In this thesis, the design of a self-tunable energy harvester based on pendulum oscillation low-frequency vibration energy from horizontal excitations. The device is equipped with mechanical motion rectifier MMR to improve the output power. The frequency adjustment of the system has been demonstrated experimentally by changing the length of the pendulum rod automatically through a complete control circuit to achieve a state of resonance.

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 reference section.

Name: Suzzan Abbas Hassan Abbas Hassan Date:

Signature:

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