ACTIVE CONTROL OF SMART BEARINGS

By

Antoine Salama Dimitri Abboud

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

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Under the Supervision of

Prof. Dr. Aly El-Shafei

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

Prof. Dr. Amr Adly

Professor
Electrical Power and Machines
Department
Faculty of Engineering, Cairo University

Dr. Jarir Mahfoud

Associate Professor
Université de Lyon, INSA-Lyon
France

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Approved by the Examining Committee

Prof. Dr. Aly El-Shafei Cairo University	Thesis Main Advisor	_____________________
Prof. Dr. Amr Adly Cairo University	Member	_____________________
Dr. Jarir Mahfoud INSA – Lyon – France	Member	_____________________
Prof. Dr. Ahmed Bahgat Cairo University	Internal Examiner	_____________________
Prof. Dr. Eric Maslen James Madison University, USA	External Examiner	_____________________

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Engineer's Name: Antoine Salama Dimitri Abboud
Date of Birth: 13/11/1981
Nationality: Egyptian
E-mail: mechengtony@hotmail.com
Phone: 0122 775 46 444
Address: 9, Mariette St., Kasr el Nil, Cairo, Egypt
Registration Date: 1 / 10 / 2009
Awarding Date: …./…./ 2016
Degree: Doctor of Philosophy
Department: Mechanical Design and Production Engineering

Supervisors:

Prof. Aly El-Shafei
Prof. Amr Adly
Dr. Jarir Mahfoud (INSA – Lyon – France)

Examiners:

Prof. Dr. Eric H. Maslen (External examiner)
(James Madison University, USA)
Prof. Dr. Ahmed Bahgat (Internal examiner)
Porf. Dr. Aly El-Shafei (Thesis main advisor)
Porf. Dr. Amr Adly (Member)
Dr. Jarir Mahfoud (Member)
(INSA – Lyon – France)

Title of Thesis:

Active Control of Smart Bearings

Key Words:
journal bearings; magnetic bearings; smart integrated bearings; oil whip instability

Summary:
The work in this thesis presents the design of a smart integrated bearing which provide the load carrying capacity and controllability. The new bearing is designed, manufactured, and tested. Different control algorithms are successfully implemented leading to the elimination of the oil whip instability.

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Dedication

To the woman who supported me during this long and hard journey

‘Mum, thank you dear’

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