

Advances
in
Aircraft Structures

Editor

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Preface

The content of this book is a balanced between materials derived from research activities conducted by academic staffs and materials derived from works done while supervising undergraduate final year project students within the Department of Mechanical Engineering, International Islamic University Malaysia (IIUM).

The chapters of this book are arranged into four major parts. The first part presents aircraft structure design and testing. The chapters discuss some parts of the design process of unmanned air vehicle (UAV) fuselage structure including structure analysis, design, fabrication, and testing. Chapters evaluating corrosion detection and fatigue damage characterization are also presented.

The second part emphasizes on simulation analysis and test of composite structure. This part covers several types of composite structures including corrugated hybrid composite, foam-filled honeycomb structure, composite perforated plate and active composite beam. This includes discussion on determination of mechanical properties, structural analysis, buckling stability analysis, numerical delamination simulation, and experimentation study.

The third part presents a more deep analysis on structural instability. The critical buckling loads of several structure components such as column, thin walled section and perforated plate are investigated.

The last part focuses on recent researches on structure analytical methods. These chapters discuss topics on identification of materials constitutive parameters, finite element model, model updating, of linear and nonlinear material structure model.

We would like to express our sincere appreciation to academic staffs of International Islamic University Malaysia who contributed to this book, to Dr. Ahmad Rivai of Universiti Teknikal Malaysia Melaka (UTEM) who thoroughly reviewed the draft of the text, and to IIUM students who aided in bringing this book to completion.

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CONTENTS

Preface	i
Contents	iii
Contributing Author	v
Aircraft Structural Design and Testing	
1 Design of IIUM Aircraft Fuselage Using Composite Material	1
2 Fabrication and Testing of IIUM Aircraft Fuselage Structure Made of Composite Laminate Material	8
3 Design and Fabrication of Fuselage Model for Laboratory Purpose	16
4 Simulation of Fuselage Model for Laboratory Purpose	24
5 Propeller Blade Stress Analysis using CATIA	30
6 Lateral Crushing of Composite Fuselages	37
7 Corrosion Detection in Aircraft Structures by Ultrasonic Method	45
8 Fatigue Damage Characterization of Aluminum Alloy Plates	55
Composite Structures	
9 Determination of Mechanical Properties of Corrugated Hybrid Composite	63
10 Composite Failure Mechanism of Corrugated Hybrid Composite Subjected to Bending Loading	70
11 Study of Energy Absorption of Foam-Filled Honeycomb Structure	79
12 Experimental Study of Indentation on Composite Structure	86
13 Simulation Study of Composite Structure Subjected to 3 Points Bending Load	93
14 Experimental Study of the Strength of Sandwich Structure with Honeycomb Core	101
15 Buckling of Composite Columns	107
16 Buckling of Composite Perforated Plates	117
17 Structural Analysis of an Active Beam	125
18 Characterization of Composite Materials using Full Field Data	131

19	Application of Virtual Fields Method to Composite Plate Bending Problem	137
20	Mode I Delamination Simulation using LS-DYNA	143

Structural Instability

21	Buckling of Long Column	150
22	Buckling of Thin Walled Sections	158
23	Effect of Boundary Conditions on the Buckling Behavior of Perforated Plates	167
24	Effect of Cutout Shape on the Critical Buckling Load of Perforated Plates.	174
25	Experimental Determination of Critical Buckling Load for a Perforated Plate	182
26	Accurate Geometric Stiffness Matrix Formulation of Beam Finite Element	190

Structure Analytical Methods

27	The Constitutive Equation Gap Method	198
28	The Equilibrium Gap Method	202
29	The Reciprocity Gap Method	206
30	The Virtual Fields Method	210
31	Numerical Construction of Piecewise Virtual Fields	215
32	Numerical Model of Noise Effect in Full Field Data	221
33	Optimized Virtual Fields with Noise Minimization	227
34	Axial Stiffness Matrix of Non-Uniform Bernoulli-Euler Bar Elements	233
35	Finite Element Model Updating	240

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