

Contents

1	Tutorial on Experimental Dynamic Substructuring Using the Transmission Simulator Method	1
	Randy L. Mayes	
2	Experimental–Analytical Substructure Model Sensitivity Analysis for Cutting Machine Chatter Prediction	11
	Anders Liljerehn and Thomas Abrahamsson	
3	Eliminating Indefinite Mass Matrices with the Transmission Simulator Method of Substructuring	21
	Randy L. Mayes, Mathew S. Allen, and Daniel C. Kammer	
4	Using Substructuring to Predict the Human Hand Influence on a Mechanical Structure	33
	Sébastien Perrier, Yvan Champoux, and Jean-Marc Drouet	
5	Simple Experiments to Validate Modal Substructure Models.....	45
	Mathew S. Allen and Daniel C. Kammer	
6	Experimental Realization of System-Level Vibration by Use of Single Component Based on Virtual Boundary Condition Concept	51
	Kohei Furuya, Tetsuki Hiyama, Nobuyuki Okubo, and Takeshi Toi	
7	An Introduction to the SEM Substructures Focus Group Test Bed – The Ampair 600 Wind Turbine.....	61
	Randy L. Mayes	
8	Modal Assessment of Wind Turbine Blade in Preparation of Experimental Substructuring.....	71
	Mohsin Nurbhai and David Macknelly	
9	Comparison of Some Wind Turbine Blade Tests in Various Configurations.....	73
	Julie Harvie and Peter Avitabile	
10	Consideration of Interface Damping in Dynamic Substructuring.....	81
	Pascal Reuss, Bernhard Zeumer, Jan Herrmann, and Lothar Gaul	
11	Direct Hybrid Formulation for Substructure Decoupling	89
	Walter D’Ambrogio and Annalisa Fregolent	
12	Substructuring with Nonlinear Subcomponents: A Nonlinear Normal Mode Perspective.....	109
	Matthew S. Allen and Robert J. Kuether	
13	An Effective Method for Assembling Impulse Response Functions to Linear and Non-linear Finite Element Models	123
	P.L.C. van der Valk and D.J. Rixen	
14	Truncating the Impulse Responses of Substructures to Speed Up the Impulse-Based Substructuring	137
	Daniel Rixen and Nazgol Haghighat	

15	Application of Residual Vectors to Superelement Modeling of an Offshore Wind Turbine Foundation	149
	B.P. Nortier, S.N. Voormeeren, and D.J. Rixen	
16	Demonstrating Predictive Capability of Validated Wind Turbine Blade Models	165
	Kendra L. Van Buren, François M. Hemez, and Sezer Atamturktur	
17	Towards the Experimental Assessment of <i>NLBeam</i> for Modeling Large Deformation Structural Dynamics	177
	Sarah Dalton, Lisa Monahan, Ian Stevenson, D.J. Luscher, Gyuhae Park, and Kevin Farinholt	
18	Wind Turbine Experimental Dynamic Substructure Development	193
	Randy L. Mayes	
19	Validation of a Finite Element Model Used for Dynamic Stress–Strain Prediction	205
	Jack LoPiccolo, Jennifer Carr, Christopher Niezrecki, Peter Avitabile, and Micheal Slattery	
20	Dynamic Stress–Strain on Turbine Blade Using Digital Image Correlation Techniques Part 1: Static Load and Calibration	215
	Jennifer Carr, Javad Baqersad, Christopher Niezrecki, Peter Avitabile, and Micheal Slattery	
21	Dynamic Stress–Strain on Turbine Blades Using Digital Image Correlation Techniques Part 2: Dynamic Measurements	221
	Jennifer Carr, Javad Baqersad, Christopher Niezrecki, Peter Avitabile, and Micheal Slattery	
22	Structural Health Monitoring of Wind Turbine Blades Under Fatigue Loads	227
	Samuel J. Dias, Justin Scheidler, Stuart G. Taylor, Kevin Farinholt, and Gyuhae Park	
23	Dynamic Characterization of Whisper 500 Turbine Blade	247
	Christopher Nonis, Samuel Garrett, Stuart G. Taylor, Kevin M. Farinholt, and Gyuhae Park	
24	Developing a Finite Element Model in Conjunction with Modal Test for Wind Turbine Blade Models	267
	Eric Harvey, Peter Avitabile, and Christopher Niezrecki	
25	Dynamic Stress-Strain Prediction from Limited Measurements in the Presence of Structural Defects	279
	Eric Harvey, Peter Avitabile, and Christopher Niezrecki	
26	On the Mode Based Simulation of Dry Friction inside Lap Joints	289
	Markus Breiffuss, Wolfgang Witteveen, and Gerhard Prechtel	
27	Efficient Updating of Static Modes in the Craig-Bampton Reduction Basis	299
	S.N. Voormeeren and D.J. Rixen	
28	Comparison of CMS, Krylov and Balanced Truncation Based Model Reduction from a Mechanical Application Engineer’s Perspective	319
	Wolfgang Witteveen	
29	Vertical Axis Wind Turbine Operational Modal Analysis in Sheared Wind Flow	333
	J.F. Kusnick and D.E. Adams	
30	Output-Only Estimation of Wind Induced Stresses in Structures	345
	Eric M. Hernandez, Dionisio Bernal, and Luca Caracologia	
31	Modal Testing of 9 m CX-100 Turbine Blades	351
	Tim Marinone, Bruce LeBlanc, Julie Harvie, Christopher Niezrecki, and Peter Avitabile	

Topics in Experimental Dynamics Substructuring and
Wind Turbine Dynamics, Volume 2

Proceedings of the 30th IMAC, A Conference on
Structural Dynamics, 2012

Mayes, R.; Rixen, D.; Griffith, D.T.; De Klerk, D.; Chauhan,
S.; Voormeeren, S.N.; Allen, M. (Eds.)

2012, VIII, 358 p., Hardcover

ISBN: 978-1-4614-2421-5