

ICSS8
8th INTERNATIONAL CONFERENCE ON SANDWICH STRUCTURES

FACULTY OF ENGINEERING, UNIVERSITY OF PORTO
PORTO, PORTUGAL
6-8 MAY 2008

FINAL PROGRAM

PROGRAM IN SHORT

MONDAY, MAY 5, 2008

14h00-18h00	REGISTRATION	Registration Desk, first floor of the Main Building
18h00	WINE AND CHEESE RECEPTION	Under the Auditorium

TUESDAY, MAY 6, 2008

	Auditorium	Room B032	Room B033
07h30	REGISTRATION	Registration Desk, first floor of the Main Building	
08h30	OPENING CEREMONY		
09h00	Plenary Lecture Yapa Rajapakse, Research in composite sandwich structures at ONR <i>Chair Person: A. T. Marques</i>		
10h00	Coffee Break	Coffee Break	Coffee Break
10h30	ONR Session I Chair Persons: Yapa Rajapakse, Ole Thomsen	MODELLING I Chair Persons: Y. Frostig, R. M. N. Jorge	TESTING I Chair Persons: L. Reis, B. Castanié
12h35	Lunch	Lunch	Lunch
13h55	ONR Session II Chair Persons: Yapa Rajapakse, Mark Battley	MODELLING II Chair Persons: Y. Frostig, E. E. Gdoutos	IMPACT Chair Persons: N. Takeda, R. Brooks
16h00	Coffee Break	Coffee Break	Coffee Break
16h30	ONR Session III Chair Persons: Yapa Rajapakse, George Kardomateas	MODELLING III Chair Persons: R. Moreira, J. Jacobsen	TESTING II Chair Persons: O. Rabinovitch, A. Shukla
19h00	RECEPTION (under the Auditorium)		

WEDNESDAY, MAY 7, 2008

	Auditorium	Room B032	Room B033
08h00	Registration	Registration Desk, first floor of the Main Building	
09h00	Plenary Lecture Norman Fleck, The dynamic performance of sandwich beams with lattice cores <i>ChairPerson: Isaac Daniel</i>		
10h00	Coffee Break	Coffee Break	Coffee Break
10h30	ONR Session IV Chair Persons: Yapa Rajapakse, Y. Jack Weitsman	JACK VINSON'S SESSION I Chair Person: Ole Thomsen	NEW MATERIALS Chair Persons: Jörg Hohe, Leif Carlsson
12h35	Lunch	Lunch	Lunch
13h55	TESTING III Chair Persons: M. Rinker, L. Reis	JACK VINSON'S SESSION II Chair Person: Dan Zenkert	APPLICATIONS I Chair Persons: Jorg Feldhusen, B. Hayman
16h00	Coffee Break	Coffee Break	Coffee Break
16h30	FRACTURE Chair Persons: M. Burman, M. Hoo Fatt	DAMAGE Chair Person: Dan Zenkert, M. F. Moura	MODELLING IV Chair Persons: José D. Rodrigues, Per Wennhage
19h30		CONFERENCE DINNER AT TAYLOR'S PORT WINE CELLAR (BUSES LEAVE FEUP AT 19H00)	

THURSDAY, MAY 8, 2008

	Auditorium	Room B032	Room B033
08h00	Registration	Registration Desk, first floor of the Main Building	
09h00	Plenary Lecture Torben K. Jacobsen, Sandwich structures in rotor blades for wind turbines <i>Chair Person: Ole Thomsen</i>		
10h00	Coffee Break	Coffee Break	
10h30	Plenary Lecture Dan Zenkert, Future needs for sandwich structures research and development <i>Chair Person: Yapa Rajapakse</i>		
11h30	DAMPING & ACOUSTICS Chair Persons: V. Koissin, Jens Andreasen	JOINING Chair Person: R. Natal	
13h00	Lunch	Lunch	
14h30	MODELLING V Chair Person: A. Araújo	New Materials II Chair Person: C. Berggreen	
16h00	Coffee Break	Coffee Break	
16h30	END of CONFERENCE	END of CONFERENCE	END of CONFERENCE

PROGRAM IN DETAIL

Monday 5 May, 2008

14h00-18h00	REGISTRATION	Registration Desk, first floor of the Main Building	
18h00	WINE AND CHEESE RECEPTION	Under the Auditorium	

Tuesday 6 May, 2008

	Auditorium	Room B032	Room B033
07h30	REGISTRATION	Registration Desk, first floor of the Main Building	
08h30	OPENING CEREMONY		
09h00	Plenary Lecture Yapa Rajapakse, Research in composite sandwich structures at ONR <i>Chair Person: A. T. Marques</i>		
10h00	Coffee Break	Coffee Break	Coffee Break
10h30	ONR Session I Chair Persons: Yapa Rajapakse, Ole Thomsen	MODELLING I Chair Persons: Y. Frostig, R. M. N. Jorge	TESTING I Chair Persons: L. Reis, B. Castanié
	Renfu Li, George A. Kardomateas and George J. Simitzes, Blast non-linear response of composite sandwich plates with compressible cores Arun Shukla and Srinivasan ArjunTekalur, Blast performance of sandwich composites Michelle Hoo Fatt and Leelaprasad Palla, Blast response of composite sandwich panels Akawat Siriruk, Dayakar Penumadu, and Y. Jack Weitsman, Effect of sea water on mechanical properties of polymeric foam and sandwich composites Isaac M. Daniel, The influence of core properties on failure of composite sandwich	Anupam Chakrabarti, Vibration and buckling of sandwich laminates having interfacial imperfections H. Talebi Mazraehshahi, B. Hamidi Qalehjigh, A. Vahedi and M.A. Vaziri Zanjani, Design of aircraft floor sandwich composite panels - Finite element analysis and experimental verification G. Hirt, R. Kopp, M. Franzke and J. van Santen, Elastic-plastic bending of welded grid sheet Manabendra Das, Erdogan Madenci and Damodar R. Ambur, Three dimensional nonlinear analyses of scarf repair in	B. Hayman, C. Berggreen, C. Jenstrup and K. Karlsen, Advanced mechanical testing of sandwich materials Jörg Feldhusen, Sivakumara K. Krishnamoorthy and Martin J. Benders, Shear strength characterization of PUR-foam core by modified 4-point bending tests H. Talebi Mazraehshahi, A. Vahedi, B. Hamidi Qalehjigh and M.A. Vaziri Zanjani, Study on indentation test methodology of aircraft floor honeycomb core sandwich composite panels Bruno Soares, Luis Reis and Arlindo Silva, Testing of sandwich structures with cork

	beams	sandwich panels Mihir K. Pandit, Abdul H. Sheikh and Bhrigu N. Singh, Analysis of laminated sandwich plates based on an improved higher order zigzag theory	agglomerate cores Monika Chuda-Kowalska, Andrzej Garstecki, Zbigniew Pozorski, Methods of experimental determination of soft core parameters in sandwich panels
12h35	Lunch	Lunch	Lunch
13h55	ONR Session II Chair Persons: Yapa Rajapakse, Mark Battley	MODELLING II Chair Persons: Y. Frostig, E. E. Gdoutos	IMPACT Chair Persons: N. Takeda, R. Brooks
	<p>Martin Johannes, Elena Bozhevolnaya and Ole T. Thomsen, Failure and fatigue of sandwich structures with core junctions</p> <p>Francesca Campi and Roberta Massabò, Interaction of skin damage on the indentation behavior of sandwich beams</p> <p>Michael L. Silva and Guruswami Ravichandran, Characterizing sandwich structures under hull slamming loading conditions</p> <p>Johnny Jakobsen, Jens H. Andreasen, Ole T. Thomsen and Elena Bozhevolnaya, Fracture mechanics modelling and experimental measurements of crack kinking at sandwich core-core interfaces</p> <p>Jørgen A. Kepler, A. H. Sheikh and P. H. Bull, A lumped-mass / spring model for localized impact on sandwich structures</p>	<p>R.A.S Moreira and J. Dias Rodrigues, A Layerwise finite element with through-thickness deformation</p> <p>Matthias Alexander Roth and Arnim Kraatz, New 3-D failure criterion for sandwich foam cores based on PMI</p> <p>Peter H. Bull and Ole T. Thomsen, Development of a design tool for initial analysis of inserts in sandwich structures</p> <p>L.M.J.S. Dinis, R.M. Natal Jorge and J. Belinha, Materials Composite Laminated Plates: A 3D Natural Neighbour Radial Point Interpolation Method approach</p> <p>Jörg Hohe and Volker Hardenacke, Probabilistic homogenization analysis of solid foams accounting for disorder effects</p>	<p>Shu Minakuchi, Tadahito Mizutani, Yoji Okabe and Nobuo Takeda, Barely visible impact damage detection by distributed strain measurement along embedded optical fiber with 10cm spatial resolution</p> <p>Sebastian Heimbs, P. Middendorf, C. Hampf, F. Hahnel and K. Wolf, Aircraft sandwich panels with folded core under impact load</p> <p>S. Mohammad, R. Khalili, Keramat Malekzadeh, Low velocity impact response of sandwich structures with transversely flexible core and FML face sheets</p> <p>Anders Lindström and Stefan Hallström, Energy absorption of sandwich panels with geometrical triggering features</p> <p>Lars Massüger, Roman Gätzi, Fabian Dürig, Ivo Lüthi and Jochen Müller, On the perpendicular and in-plane impact behavior of core materials in sandwich structures</p>

16h00	Coffee Break	Coffee Break	Coffee Break
16h30	ONR Session III Chair Persons: Yapa Rajapakse, George Kardomateas	MODELLING III Chair Persons: R. Moreira, J. Jacobsen	TESTING II Chair Persons: O. Rabinovitch, A. Shukla
	<p>M. Johannes, J. M. Dulieu-Barton, E. Bozhevolnaya, and O.T. Thomsen, Evaluation of the stresses at core junctions in sandwich structure using thermoelastic stress analysis</p> <p>C. Berggreen and L. A. Carlsson, Fracture mechanics analysis of a modified TSD specimen</p> <p>E. E. Gdoutos and V. Balopoulos, Kinking of interfacial cracks in sandwich beams</p> <p>N. Apetre, M. Ruzzene, S. Hanagud, and S. Gopalakrishnan, Spectral and perturbation analysis of sandwich beams with a notch damage</p> <p>Fu-pen Chiang and Gunes Uzer, Auxetic PVC foam as a core material for sandwich panels</p>	<p>Stanislaw Karczmarzyk, A new 2D local vibrational model for unidirectional clamped-clamped sandwich structure with edge stiffeners</p> <p>M. Linke and H.-G. Reimerdes, Systematic verification of sandwich model assumptions based on specific finite element formulations</p> <p>Ehab Hamed and Oded Rabinovitch, Viscoelastic behavior of soft core sandwich panels under dynamic loading</p> <p>R. Moslemian, C. Berggreen and J.H. Garm, Numerical and experimental investigation of buckling and post-buckling behaviour of curved sandwich panels</p> <p>R. Moslemian, C. Berggreen, K. Branner and L. A. Carlsson, On the effect of curvature in debonded sandwich panels subjected to compressive loading</p>	<p>K. Branner, F. M. Jensen, P. Berring, A. Puri, A. Morris and J. P. Dear, Effect of sandwich core properties on ultimate strength of a wind turbine blade</p> <p>David K. Hsu, Nondestructive evaluation of sandwich structures</p> <p>Yasuo Hirose, Go Matsubara, Masaki Hojo and Hirokazu Matsuda, Evaluation of new crack suppression method for foam core sandwich panel via fracture toughness test and analyses under mode-I and mode-II type conditions</p> <p>E. Saenz, A. Roth, F. Rosselli, X. Liu and R. Thomson, Mode I fracture toughness of PMI sandwich core materials</p> <p>Y. Shen, S. McKown, S. Tsopanos, C.J. Sutcliffe, R. Mines and W. J. Cantwell, The fracture properties of lightweight sandwich structures based on lattice architectures</p>
19h00	RECEPTION (under the Auditorium)		

Wednesday 7 May, 2008

	Auditorium	Room B032	Room B033
08h00	Registration	Registration Desk, first floor of the Main Building	
09h00	<p>Plenary Lecture</p> <p>Norman Fleck, The dynamic performance of sandwich beams with lattice cores</p> <p><i>ChairPerson: Isaac Daniel</i></p>		
10h00	Coffee Break	Coffee Break	Coffee Break
10h30	<p>ONR Session IV</p> <p>Chair Persons: Yapa Rajapakse, Y. Jack Weitsman</p>	<p>JACK VINSON'S SESSION I</p> <p>Chair Person: Ole Thomsen</p>	<p>NEW MATERIALS</p> <p>Chair Persons: Jörg Hohe, Leif Carlsson</p>
	<p>A. Quispitupa, C. Berggreen and L.A. Carlsson, A debonded sandwich specimen under mixed mode bending (MMB)</p> <p>J. Dean, P.M. Brown, and T.W. Clyne, The Low, Intermediate, and High Speed Impact Response of Lightweight Sandwich Panels with Metallic Fibre Cores</p> <p>John P. Dear, Amit Puri, Alexander D. Fergusson, Andrew Morris, Ian D. Dear, Kim Branner, Peter Berring and Find M. Jensen, Digital image correlation based failure examination of sandwich structures for wind turbine blades</p> <p>Kunigal Shivakumar, Huanchun Chen and Chris Ibeh, Failure modes and strength of</p>	<p>Y. Frostig, On elastics response of sandwich panels with a compliant core</p> <p>Ole T. Thomsen and Jesper Larsen, Simplified rule of mixtures approach for the accurate estimation of the elastic properties of grid-scored polymer foam core sandwich plates</p> <p>S. Kazemahvazi and D. Zenkert, The compressive and shear responses of corrugated hierarchical and foam filled sandwich structures</p> <p>R. Moslemian, C. Berggreen, L. A. Carlsson, F. Aviles and A. May, Buckling and fracture investigation of debonded sandwich columns: an experimental and</p>	<p>Hermann F. Seibert, Latest developments on high performance sandwich foam cores based on PMI</p> <p>Laurent Mezeix, Christophe Bouvet, Bruno Castanié and Dominique Poquillon, A new sandwich structured composite with entangled carbon fibres as core material. Processing and mechanical properties</p> <p>Richard Filippi, Polypropylene honeycombs for stormwater management</p> <p>W. J. Choi, Y. P. Xiong and R. A. Shenoi, Characterisation of magnetorheological elastomer materials for the core of smart sandwich structures</p>

	glass/vinyl ester face sheet-eco-core sandwich panel	numerical study C. M. C. Roque, A. J. M. Ferreira and R. M. N. Jorge, An optimized shape parameter radial basis function formulation for composite and sandwich plates using a higher order formulation	
12h35	Lunch	Lunch	Lunch
13h55	TESTING III Chair Persons: M. Rinker, L. Reis	JACK VINSON'S SESSION II Chair Person: Dan Zenkert	APPLICATIONS I Chair Persons: Jorg Feldhusen, B. Hayman
	<p>N. Raghu, M. Battley and T. Southward, Strength variability of inserts in sandwich panels</p> <p>Mohammad Adil, Marcus M. K. Lee, Behaviour of reinforced concrete sandwich panel with steel connectors under out-of-plane flexure</p> <p>Nuno Pinto, Arlindo Silva and Luís Reis, Investigation of applicability of cork agglomerates in applications under shear strength</p> <p>Alberto Zinno, Charles E. Bakis and Andrea Prota, Mechanical characterization and structural behaviour of composite sandwich structures for train applications</p> <p>Duncan A. Crump, Janice M. Dulieu-Barton and John Savage, Analysis of full-scale aerospace sandwich panels under pressure loading</p>	<p>J. Guillemot, S. Comas-Cardona, D. Kondo, C. Binetruy and P. Krawczak, Micromechanical modelling of the composite reinforced foam core of a 3D sandwich structure manufactured by the NAPCO® technology</p> <p>Oded Rabinovitch, Linear and nonlinear fracture mechanics modeling of interfacial debonding in modern sandwich panels</p> <p>I. Quintana Alonso and N. A. Fleck, Damage tolerance of a sandwich panel with a cracked square honeycomb core loaded in shear</p> <p>Mark Battley and Magnus Burman, Characterisation of ductile core materials</p>	<p>Pierre C. Zahlen, Martin Rinker and Clemens Heim, Advanced manufacturing of large, complex foam core sandwich panels</p> <p>Richard Brooks, Palanivel P. Kulandaivel and Christopher D. Rudd, Skin consolidation in vacuum moulded thermoplastic composite sandwich beams</p> <p>Jan Luedtke, Johannes Welling, Heiko Thoemen and Marius C. Barbu, Development of a continuous process for the production of lightweight panelboards</p> <p>A. C. J. M. Eekhout, P. A. van de Rotten, Free form sandwich shells as load bearing structures for liquid architecture</p>

16h00	Coffee Break	Coffee Break	Coffee Break
16h30	FRACTURE Chair Persons: M. Burman, M. Hoo Fatt	DAMAGE Chair Person: Dan Zenkert, M. F. Moura	MODELLING IV Chair Persons: José D. Rodrigues, Per Wennhage
	<p>C. Lundsgaard-Larsen, C. Berggreen and L. A. Carlsson, Design of the face/core interface for improved fracture resistance</p> <p>Anders Lyckegaard, Johnny Jakobsen, Jens H. Andreasen, Elena Bozhevolnaya, Crack propagation at core junctions in sandwich panels</p> <p>E. E. Theotokoglou, I. I. Turlomousis, A numerical study of fractured sandwich composites</p> <p>H. Rahimi, M.H.R. Ghoreishy, A. M. Rezadoust, M. Esfandeh and V. Khalili, In-plane tensile core delamination strength of tubular cell polypropylene honeycombs</p> <p>J. Dyson, G. Albertini, On the behaviour of stress fields around a laminate drop</p>	<p>G. Zhou, M. D. Hill, Damage characteristics and residual in-plane compressive strength of honeycomb sandwich panels</p> <p>M. Rinker, P. C. Zahlen and R. Schäuble, Damage and failure progression of CFRP-foam-sandwich structures</p> <p>D. A. Ramantani, A.T. Marques and M.F.S.F. de Moura, Stress and failure analyses of repaired sandwich composite beams using a cohesive damage model</p> <p>F. E. Sezgin, M. Tanoglu, S. B. Bozkurt and O. O. Egilmez, Experimental and numerical analysis of mechanical behavior of composite sandwich structures</p> <p>P. Casari, F. Jacquemin and Annick Perronet, Effect of the forming process of the foam core on the mechanical properties of a curved sandwich beam</p>	<p>E. Bozhevolnaya, A. H. Sheikh, O. T. Thomsen, Local effects in the vicinity of transitions from sandwich to monolithic laminate configurations</p> <p>R.A.S Moreira and J. Dias Rodrigues, Multilayer damping treatments: modeling and experimental assessment</p> <p>Richards Brooks, Kevin A. Brown, Nicholas A. Warrior and Palanivel P. Kudandaivel, Predictive modelling of the impact response of thermoplastic composite sandwich structures</p> <p>R .A. S. Moreira, R. A. Fontes Valente and R. J. Alves de Sousa, An Enhanced layerwise finite element using a robust solid-shell formulation approach</p> <p>Zbigniew Pozorski, Mechanical models of sandwich panels allowing for local instability</p>
19h30		CONFERENCE DINNER AT TAYLOR'S PORT WINE CELLAR (BUSES LEAVE FEUP AT 19H00)	

Thursday 8 May, 2008

	Auditorium	Room B032	Room B033
08h00	Registration	Registration Desk, first floor of the Main Building	
09h00	Plenary Lecture Torben K. Jacobsen, Sandwich structures in rotor blades for wind turbines <i>Chair Person: Ole Thomsen</i>		
10h00	Coffee Break	Coffee Break	
10h30	Plenary Lecture Dan Zenkert, Future needs for sandwich structures research and development <i>Chair Person: Yapa Rajapakse</i>		
11h30	DAMPING & ACOUSTICS Chair Persons: V. Koissin, Jens Andreasen	JOINING Chair Person: R. Natal	
	<p>A. L. Araújo, C. M. M. Soares and C. A. M. Soares, A viscoelastic finite element model for the analysis of passive damping in anisotropic laminated sandwich structures</p> <p>J. Santos Silva, R.A.S. Moreira and J. Dias Rodrigues, Application of cork compounds in sandwich structures for vibration damping</p> <p>Christopher J. Cameron, Per Wennhage, Peter Göransson and Sven Rahmqvist,</p>	<p>Jörg Feldhusen, Christoph Warkotsch, M. Benders, Evaluation of clinching and center-punching as mechanical joining processes for sandwich elements</p> <p>Jörg Feldhusen, Christoph Warkotsch, Alexander Kempf, Development of a mechanical technology for joining sandwich elements</p>	

	<p>Structural – acoustic design of a multi-functional sandwich body panel for automotive applications</p> <p>Robert Adams, Reza Maheri and Julien Hugon, The vibration properties of sandwich panels; eigenfrequencies and damping</p>		
13h00	Lunch	Lunch	
14h30	<p>MODELLING V Chair Person: A. Araújo</p>	<p>New Materials II Chair Person: C. Berggreen</p>	
	<p>Julien Rion, Samuel Stutz, Yves Leterrier and Jan-Anders E. Manson, Influence of process pressure on local facesheet instability for ultralight sandwich structures</p> <p>Calogero Macaluso, Dirk Vandepitte and Ignaas Verpoest, Feasibility of the deepdrawing process of thermoplastic sandwich structures</p> <p>Florian Klunker, Gerhard Ziegmann and Santiago Aranda, Flow simulation for sandwich structures: case studies and modelling of high permeable layers</p> <p>D. Weissman-Berman, Statistical Regression Analysis of 20 Sandwich Core</p> <p>Vitaly Koissin, Andrey Shipsha and Vitaly Skvortsov, Effect of physical non-linearity</p>	<p>Richard Filippi, The polypropylene honeycomb core for structural sandwich panels</p> <p>Thomas Krabatsch, Jörg Wellnitz, Core metal alloy – A new sandwich material with natural stone</p> <p>M. Akermo, Thermoforming of closed cell polymer foam and its residual compressive mechanical properties</p> <p>Roselita Fragoudakis and Anil Saigal, Energy absorption capacity of 3d “S” space frames partially reinforced with aluminum foam</p>	

	on local buckling in sandwich beams		
16h00	Coffee Break	Coffee Break	
16h30	END of CONFERENCE	END of CONFERENCE	END of CONFERENCE