NAFEMS

World Congress

Vancouver, Canada
May 22nd - 25th

2007

Engineering Simulation:
Innovation Leads to Competitive Advantage

case studies • best practices • breakthrough technologies • visions of the future

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THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS COMMUNITY

World Congress
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NAFEMS

THE INTERNATIONAL ASSOCIATION FOR THE
ENGINEERING ANALYSIS COMMUNITY

Dear Colleague,

It is our pleasure to invite you to attend the 11th NAFEMS World Congress. For the past twenty years this biennial NAFEMS occasion has been the premier international event focussing solely on engineering analysis and simulation. The 2007 World Congress is being held in the spectacular waterside Westin Bayshore hotel, right in the heart of the vibrant and bustling city of Vancouver.

We are delighted to report that the response to the event so far has been overwhelming. The Congress Committee has had a tough job over recent weeks and months selecting the best papers from the record number of abstracts that were submitted. In the end, over 130 papers from leading experts have gone forward for inclusion in the draft agenda you can see on the following pages.

As well as the traditional conference sessions, the Congress this year will also include a series of other events which have been especially selected for the benefits that they can bring to the delegates. A variety of workshops, round table discussion sessions and other meetings will add to the mix of opportunities that are provided for learning about the latest developments in the technology, and how they can be applied to real world practical applications.

We are proud to announce that this year our World Congress will be co-sponsored by both the AIAA and the ASME, who have recognised the technical value that the event offers to all engineers with an interest and a passion for the world of engineering simulation: a one-time specialist niche which is currently experiencing an explosion in its popularity and uptake around the world.

Whilst the conference will cover many aspects of the use of simulation, a particular focus will be how the appropriate deployment of simulation can lead to a further competitive advantage through helping to stimulate innovation. It will bring together world leading industrial practitioners, consultancies, academic researchers and software developers with a common interest in engineering analysis.

We are confident that the 2007 NAFEMS World Congress will be the International Congress of the year on Simulation Technology for the Engineering Analysis Community. I do hope that you will get the opportunity to attend, and that I will have the pleasure of meeting you there.

Tim Morris, NAFEMS Chief Executive

Congress at a glance

18 – 21 May	Pre-Congress trip to Whistler Resort (optional)	
21 – 22 May	09:00 – 17:00	V & V Training Course (optional)
22 May	14:00 – 18:00	Author & delegate registration
	19:00 – 22:00	Cocktail reception & exhibition opening
23 May	07:30	Chairman and author breakfast
	08:30 – 18:00	Presentations and exhibition
	19:00 – 23:30	Dinner at "Grouse Mountain" (optional)
24 May	07:30	Chairman and author breakfast
	08:30 – 17:50	Presentations and exhibition
	19:30 – 23:00	Congress Banquet – Sunset dinner ship cruise
25 May	07:30	Chairman and author breakfast
	08:30 – 15:45	Presentations and exhibition
	15:45	End of Congress
	Post-Congress (optional)	
	16:00	Bus transfer to Whistler Resort
26 – 28 May	Post Congress trip to Whistler Resort (optional)	

Congress Committee

Jean-Marc Crepel
Renault, France

Alexandr Ptchelintsev
Nokia Research Center, Finland

Costas Stavrinidis
ESA ESTEC, The Netherlands

Rodney Dreisbach
Boeing, USA

Sherif Rashed
CAE Lab, Japan

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Fernando Espiga
Labein, Spain

Jesse Ruan
Ford, USA

Manfred Zehn
University of Magdeburg, Germany

John McVee
Consultant, United Kingdom

Myron A. Semegen
Virtual Reality Centre, Canada

Stefano Odorizzi
EnginSoft, Italy

Vijay Sharan
Sony Ericsson, Sweden

Review Committee

Nigel Knowles (Consultant, GBR)
Tim Morris (NAFEMS)

Vic Rollo (Consultant, GBR)
Roger Oswald (NAFEMS, GER)

Jim Wood (University of Strathclyde, GBR)

About NAFEMS

NAFEMS is the International Association for the Engineering Analysis Community: an independent, not-for-profit association. The scope of its activities encompasses all simulation technology, including Finite Element Analysis and Computational Fluid Dynamics. As new application areas and techniques constantly evolve, NAFEMS becomes involved to create awareness and deliver appropriate education and training. In line with its objectives, NAFEMS is continually seeking to create awareness of new analysis methodologies, deliver education and training, stimulate the adoption of best practices and effective use of technology by offering a platform for continuous professional development. NAFEMS and its members are involved in the application of many different types of engineering simulation covering both products and processes. Membership exceeds 700 corporate members in over 30 different countries.

Sponsors

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SIMULIA is the Dassault Systèmes brand that delivers an open platform for multiphysics analysis as well as a scalable portfolio of realistic simulation solutions including Abaqus and the CATIA Analysis applications. By building on established technology, respected quality, and superior service, SIMULIA makes realistic simulation an integral business practice that improves product performance, eliminates physical prototypes, and drives innovation. Headquartered in Providence, RI, USA, with R&D centers in Providence and in Surésnes, France, the SIMULIA brand provides sales, services, and support through a global network of regional offices and distributors.
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Exhibitors (Mai 07)

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Icon
Intec GmbH
Intes GmbH
MSC Software
Magna Powertrain/
   Engineering Center Steyr
NAFEMS
ncode
Pointwise
Simlab Corporation
Simulia/Abaqus
UGS

Monday, May 21 & Tuesday, May 22: Training course (optional)
Finite Element Model Validation, Updating, and Uncertainty Quantification For Linear and Non-linear Models
for Aerospace, Civil and Mechanical Engineers, by F. Hemez, Los Alamos National Laboratory (LANL), USA

Tuesday, May 22
Author & delegate registration (14:00 - 18:00), **Cocktail reception & exhibition opening** (19:00 - 21:00)

Wednesday, May 23

Opening of the Conference
C. Stavrinidis (European Space Agency); Chairman of NAFEMS Council

NAFEMS – Overview and Challenges
T. Morris, NAFEMS CEO

Keynote Speaker:
Leveraging Simulation for Competitive Advantage
R. Dreisbach, The Boeing Company, USA

Session 1A – Dynamics	Session 1B – CFD 1	Session 1C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
The Dynamics Testing Working Group: An Introduction N. Lieven, University of Bristol, GBR **Accurate and Consistent Dynamic Modelling and Simulation of Aerial Refuelling** G. Z. H. Zhu, York University, CDN **Improving the Dynamic Response Analysis Process** M. Donley, UGS PLM Solutions, USA **Dynamic Response and Fatigue Loading of the Swiss F/A-18 Vertical Tail Due to Buffeting** B.Bucher, RUAG Aerospace, SUI	**The Challenges of Fluid Structure Interaction from a CFD Perspective** A. Mueller, CD-adapco, USA **Numerical Investigation of the Effects of Cohesion in Gas-Solid Flows** K. Jain, ESI CFD Inc., USA **Flow Instabilities in Feed Channels of Spiral-Wound Membrane Modules** M. Shakaib, NED University of Engineering & Technology, PAK **CFD Simulation of Flue Gas Scrubbers** U. Maatje, Hitachi-Power Europe GmbH, GER	**Guide for Verification and Validation in Computational Solid Mechanics** L. E. Schwer, Schwer Engineering & Consulting Services, USA **Full-Scale Testing and Finite Element Simulation of a 34Metre Long Wind Turbine Blade** A. Morris, E.ON-UK, GBR **Investigation by FE Analysis into the Material and Geometric Parameters Influencing the Transverse Rupture of Lugs** N. Dev-Anand, ESDU International, GBR **NAFEMS Analysis Management Working Group** C. Rogers, CREA, GBR

Refreshment Break and Product Showcases: Simulia/Abaqus, UGS

Session 2A – Material Modeling 1	Session 2B – Manufacturing Simulation	Session 2C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Materials Properties Database: **Where we were, where we are and where we should go** T. Wong, Pratt & Whitney Rocketdyne, USA **Modeling of Material Properties Critical to Process Simulation** Z. Guo, Sente Software, GBR **Composite Damage and Delamination Modeling Using a Specific Multi-Layered Element in Transient Analysis** J.-B. Mouillet, Altair Toulouse, FRA	**Numerical Investigation of Tailor Welded Blanks Formability** S. Gaied, Arcelor Innovation, FRA **Simulation of Dynamic Positioning for Machine Tools** D. Siedl, Technical University Munich - iwb, GER **Exploring new Horizons in the Solid-Shell Element Technology for General Nonlinear Applications with Bending** S. Choudhry, MSC.Software, USA	**Simulation of Post Weld Heat Treatment of Pressure Vessel and it's Experimental Validation** N. D. Patel, Reactor, Cracker, Oil & Gas (RCOG) Group, IND **Failure Prediction and Integrity Assessment of Steam Chests Using Finite Element Method and Monitored Plant Data** X. Zhang, E.ON-UK, GBR **Validation of a Commercial Finite Element Code Demonstrated with Buckling of a Cylinder Due to External Pressure** C. Roche, Pratt & Whitney, USA **Validation & Bench-marking Activities Vis-a-vis the Pace of Advanced „CAE" Software Development: The Indian Scenario in Gas Turbine Technology** K. Ramachandra, MSRSAS

Lunch

Keynote Presentation:
Computational Modeling of Multi-Physics and Multi-Scale Processes – Progress and Challenges
M. Cross, University of Wales , UK

Session 3A – Multiphysics Analysis 1	Session 3B – Education	Session 3C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Why do a Multiphysics Analysis? K. Wolf, Fraunhofer Institute SCAI, GER **Multiphysics Simulation of a Micromirror Device** S. Kini, ESI CFD Inc., USA **Simulation of Multi-Physical Phenomena in Glass Melting Furnaces** L. Thielen, TNO Science and Industry, NED **Multi-Disciplinary Simulation Through Code Coupling** K. Wolf, Fraunhofer Institute SCAI, GER	**The Use of Advanced Material Models in the Analysis of Plate Collapse** J. Reijmers, Nevesbu b.v., NED **Finite Element Formulation by Direct Nodal Equilibrium** J. Zhang, Zhang, CHN **Minimizing Analysis Errors – Recommended Best Practices** K. S. Raghavan, Infotech Enterprises Ltd, IND	**Verification and Validation of Engineering Analytical Mathematical Models** T. Henriksen, M. Klein, C. Stavrinidis , O. Pin, European Space Agency / Estec **UGS Views on Engineering Analysis Quality, Verification and Validation *** R. Bush, UGS, USA **Simulation Quality, Verification, & Management –** **A Vendors Perspective *** T. Webb, Simulia / Abaqus, Inc., USA **ASME NQA-1 Committee Activities and Ansys, Inc.'s Philosophy *** B. Bryan, Ansys Inc., USA

Refreshment Break and Product Showcases: Comsol, Fraunhofer SCAI

Session 4A – Multiphysics Analysis 2 & Magnetics	Session 4B – Civil/Structural Engineering	Session 4C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Load Noise Generation and Transmission at Power Transformers – Modeling and Simulation M. Ertl, Siemens AG, GER **3D Thermal and CFD Simulations of the Divertor Magnetic Coils for ITER** A. Encheva, EPFL Lausanne, SUI **Calculation of Magnetic Flux Penetration into Steel Housing of Large Turbogenerators Using a Two Layer Model** P. Arend, Alstom (Schweiz) AG, SUI **NAFEMS Multiphysics Working Group** A. Slone, Swansea University, GBR	**Determination of Fatigue Lifetime by S-N Curves Combined with Smeared Crack Material Models** A. De Boer, Ministry of Public Works, NED **Seismic Analysis Methodologies and Applications** V. Kinariwala, Cranes Software Inc, USA **Effect of Dynamic Loading on Mechanistic Parameters of Flexible Pavements Using Three-Dimensional, Dynamic FEA** J. Qureshi, Mehran University of Engineering & Technology, PAK **Simulation of Structural Vibrations Using Continuum Models** A. Chugh, U.S. Bureau of Reclamation, USA	**Round table discussion** chaired by C. Stavrinidis, European Space Agency / Estec, NAFEMS; O. Pin, European Space Agency / Estec; R. L. Crane, ASME, USA; C. Rogers, CREA, GBR; L. Schwer, Schwer Engineering & Consulting Services, USA * Additional late contributions not certified by the Congress Review Committee

Optional Dinner at Grouse Mountain
(registration necessary - not included in conference fee)

Keynote Speakers

Dr. Rodney L. Dreisbach

The Boeing Company, USA

Dr. Rodney L. Dreisbach, Senior Technical Fellow (STF) with The Boeing Company, leads the Commercial Airplanes Computational Structures Technology Group as system manager of a cross-functional initiative; its objective is implementing enterprise-wide lean systems for optimizing conceptual and detailed structural designs of aerospace vehicles.

Dr. Dreisbach has 38 years experience in pioneering the development, validation, application, support and maintenance of large-scale multitechnology computing systems, spanning linear and nonlinear response of metallic and advanced-composite structures due to static and dynamic load environments, fracture mechanics, flutter, and structural/acoustic interaction. He is the Boeing focal for NAFEMS; a member of the Technical Advisory Board for their 1997 through 2007 World Congress symposia; and a charter member and chairman of the Steering Committee for the North American Chapter of NAFEMS.

Dr. Dreisbach holds a B.S. and an M.S. in engineering from Pennsylvania State University, and a Ph.D. in structural mechanics from the University of Colorado (Boulder). He is a registered Professional Engineer, an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA), a Fellow member of The Royal Aeronautical Society in London, England, and a member of the Sigma Xi National Scientific Research Society. Dr. Dreisbach has published more than 100 technical papers since 1963.

Prof. Mark Cross

University of Wales, GBR

Born in London, Mark Cross graduated with a BSc (Hons) in Mathematics in 1969 followed by a PhD in Mathematical Modelling of Laser Physics Phenomena in 1972 both from Cardiff University, eventually followed by a DSc in Computational Modelling in 1990 from the University of Greenwich. After a short period teaching at South Bank University in London, he joined British Steel's R&D organisation to lead the development of a mathematical modelling group. His time here was formative in that he was involved in the computational modelling of a variety of complex processes, the development of a range of numerical techniques and also numerical software. After 3 years at Sunderland University, a year in the US as a visiting professor at the Universities of Minnesota and California Berkeley, and a further year at the CFD software company CHAM, he joined the University of Greenwich in 1982.

Prof Cross was at Greenwich for over 20 years, initially as Professor of Computational Modelling, Head of the School of Mathematics, Statistics and Computing, then University Director of Research and ultimately as Pro Vice Chancellor (i.e. Vice President). Whilst at Greenwich he initiated the Centre for Numerical Modelling and Process Analysis which now houses a large research programme on computational modelling and simulation. From the mid-1980s onwards his research interests increasingly involved what came to be known as multi-physics modelling. This involved the development of numerical methods and software technologies to facilitate coherent interaction amongst distinct phenomena, and strategies and tools to enable scalable simulation performance on parallel cluster performance computing systems. He has led the development of the PHYSICA software, now a commercial multi-physics simulation technology, and since the mid-1980s has been the Editor of the archival journal Applied Mathematical Modelling , published by Elsevier. The co-author of over 350 publications and the supervisor of 40+ PhD candidates, he is now the Professor of Computational Modelling in the School of Engineering at the University of Wales Swansea.

Session 1D – Visualization 1

Method for Information-Visualization in Interdisciplinary Product Develpment
M. Olbert, EADS Innovation Works, GER

CAE Process Automation Using Visual-Process for Fast-to-Market Product Development
V. Ganesan, ESI North America, USA

Advanced Visualization of Engine Simulation Data Using Texture Synthesis and Topological Analysis
E. Zhang, School of Electrical Eng. & Computer Science, USA

Virtual Reality in the Product Development Process: A Field Report
M. Linke, TWT GmbH, GER

Session 1E – Workshop
High Performance Computing in Engineering Simulation

Hosted by L. Margetts, University of Manchester, GBR

High Performance Computing for the NAFEMS Community *
L. Margetts, University of Manchester, GBR

Parallelization of a Multi-Grind FDTD Electromagnetic Application Code for Distributed Memory Systems
P. Chow, Fecit (Fujitsu), GBR

Scaling of MCAE Codes on Clusters *
M. Schulman, SUN Microsystems, USA

* Workshop contribution - no manuscript available

Session 2D – Integration

Parametric CAD and FEA Model of a Saddle Tapping Tee
A. Kristensen, Aalborg University Esbjerg, DEN

Coupled FE-CFD Simulation by Process Orientated CAE-Data Management
B. Wiermeier, Magna Steyr Fahrzeugtechnik, AUT

CAD Neutral Formats for Virtual Manufacturing
A. Belur, Malnad College of Engineering, IND

Session 2E – Workshop
High Performance Computing in Engineering Simulation

Hosted by L. Margetts, University of Manchester, GBR

Session 3D – Moulding Simulation and Metal Filling

Cure Cycle Optimization of Compression Molding Process of Silicaphenolic Composite Laminates By Mathematical Modelling And Simulation
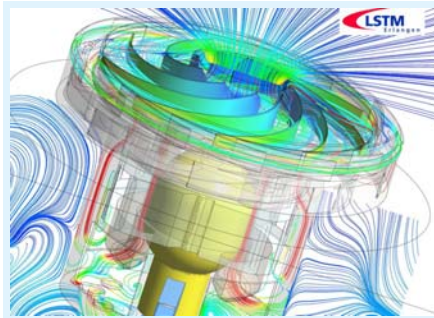K. M. Usha, Indian Space Research Organisation, IND

Fast Numerical Simulation of Molten Metal Filling in High Pressure Die Casting with Structured Hexahedral Mesh
K. Muthuraj, Neilsoft Ltd, IND

The Practical Use of Injection Moulding Simulation at Nokia Mobile Phones
N. Dam Lerke, Nokia, DEN

By Courtesy of University Erlangen-Nürnberg

Session 4D – Software Development

Balancing Quality, Innovation and Time: Developments in Software Quality Management
B. Bryan, ANSYS Inc., USA

FEM Based Analysis Of Conical Composite Shell Structures
J. Kosonen, Helsinki University of Technology, FIN

New Concepts for Finite Element Model Editing and Visualization
R. Helfrich, Intes GmbH, GER

An Open Environment for Multi-physics Simulation Applied to Thermal, Structural and Optical Aberration Analysis of Large Space Based Optical Instruments *
C. Hoff, California Institute of Technology , USA

* Additional late contributions not certified by the Congress Review Committee

Session 4E – Workshop
Moulding Simulation

Hosted by N. Lerke, Nokia, DEN

Keynote Presentation:
Will the Pringles fly? Modeling & Simulation of Everyday Products
T. J. Lange, Procter and Gamble, USA

Session 5A – Automotive Industry

The System Level Integrity Study of the Jaguar S-Type Rear Suspension Using an Integrated FEA and MBS Technique
C. Davies Taylor, Abaqus UK Ltd, GBR

FEA – A Powerful Numerical Tool for Automotive Component Design
A. S. Dhoble, Visvesvaraya National Inst. of Technology, IND

Speeding up the Turnover in Engine Analysis is Crucial for the Design Process
S. Nageswaran, SimLabCorporation, USA

Session 5B – CFD 2

Thermal Investigation of Rotating Electrical Machinery
H. Lang, Arsenal Research - Austrian Research Centres, AUT

Finite Element Simulation of Gasless Combustion – Driven Heating Elements
L. Jiang, Martec Ltd, CDN

Study of the Effect of Induced Vortex Flow in a Segment of Straight Pipe, over the Air Pressure Drop in the Adjacent Bends
D. Ionescu, University of Johannesburg, RSA

Fast Robust Design Optimization of a Cooling Duct Using CFD
S. Weston, Icon Simulation Services, GBR

Session 5C – Optimization 1

Design Optimization of Springs and Seals by Means of Finite Element Simulations
Y. Deger, HSR University of Applied Sciences, SUI

An Optimization Tool for the Calibration of Complex Material Models in FE Simulation of the Crushing of Composite Structures
D. Papapostolou, Airbus UK, GBR

Multi-Objective Design-Optimization of Composite Structures
J. Baylor, Convergent Mechanical Solutions LLC, USA

Topology Optimization in Controlled Dynamic Systems
J. Ottnad, IPEK - Institute of Product Development, GER

Refreshment Break and Product Showcases: Ansys, Altair

Session 6A – Automotive Industry / Crashworthiness

Finite Element Optimization of a Truck Transmission Housing
Y. Song, Romax Technology, GBR

Prospects & Barriers For Up-front CAE Simulation in the Automotive Development
A. Moser, Virtuelles Fahrzeug GmbH, AUT

Reverse Engineering and Validating 2001 Ford Taurus Passenger Car
V. Nagabhushana, National Crash Analysis Center, USA

Session 6B – CFD Large Scale Applications

Impact of Improved Inlet Conditions on Internal and External Building Air Flows
A. Goehring, ARUP, GBR

Simulation of the Satellite Thruster Exhaust Plume Characteristics Based on Fox Model and Mayer Model – A Comparative Study
S. Mohan Kumar, Malnad College of Engineering, IND

Numerical Simulation of Vortex Shedding Dynamic Induced Loads for Free Standing Structures
I. Giosan, West Coast Engineering Group Limited, CDN

The Application of CFD in Dam Spillways
D. Ho, WorleyParsons Services Pty Ltd, AUS

Session 6C – Optimisation 2

Automatic Optimal Design of Structures Using Swarm Intelligence
J. Bland, The Nottingham Trent University, GBR

Design for Manufacturing Optimization for an Aeronautic Seat Structure
D. Mazzotta, University of Lecce, ITA

Multi-objective Optimization of an EGR Cooler
N. Fateh, Esteco North America Inc., USA

Lunch

Keynote Presentation:
Modeling for Smart Materials for Vibration Applications
D. J. Inman, Virginia Polytechnic Institute and State University, USA

Session 7A – Automotive Industry / Joints

Controlling the Complexity of Coupled Optimization – A Next Level Approach
K. Zamazal, Virtuelles Fahrzeug GmbH, AUT

Optimized Spot Weld Patterns Regarding Stiffness and Fatigue
K. Puchner, Magna Steyr, AUT

An Investigation on Mechanically Fastened Joints: Modeling for Crash Simulation and Testing
M. Wissling, University of Paderborn, GER

Accurate and Efficient Modeling of Point and Surface Engineering Connections
V. Oancea, Simulia, USA

Session 7B – Biomedical Applications

Coupling FEA to CFD to Investigate the Effects of Pulsatile Blood Flow on the Dilatation of Artery Walls
R. Fu, Abaqus, USA

Automated Meshing of 3D Imaging Data: New Clinical Applications for CFD and FE Analysis
L. Margetts, University of Manchester, GBR

Comparison of Finite Element and Finite Volume Methods for Fluid - Structure Interactions of Biological Studies
D. Espino, University of Birmingham, GBR

Fluid Structure Interation of the Mitral Valve within the Heart
D. Espino, University of Birmingham, GBR

Session 7C – Composites

FEA Simulation of Fracture in Z-Pinned Composites
E. Ruolo, ATA Engineering Inc, USA

Simulating Postbuckling Behaviour and Collapse of Stiffened CFRP Panels
K. Rohwer, DLR, GER

Modelling and Influence of Manufacturing Induced Material Imperfections on the Buckling Behaviour of Thin-walled CFRC Structures
M. Zehn, Femcos GmbH, GER

Refreshment Break and Product Showcases

Session 8A – Automotive Industry / MBS

Crankshaft Durability Calulation Using a Combination of MBS, FEA and Fatigue Software
D. Berki, Intec GmbH, GER

Hardware-In-The-Loop Simulation of Multi-Body Models
A. Eichberger, Intec GmbH, GER

Modal Integration of Finite Element Structures with Bolted Joints in the Multi Body Simulation
W. Witteveen, Linz Center of Mechatronics GmbH, AUT

Session 8B – Material Modeling 2

Characterization of Bulk Material Properties Based on Microstructural Simulation
L. Margetts, University of Manchester, GBR

Modeling of Complex Three-Dimensional Grain Structures
J. Ottnad, IPEK - Institute of Product Development, GER

Interactive Simulation of Materials with Complex Architectures
L. Margetts, University of Manchester, GBR

Session 8C – Industrial Applications

Guidelines for Transient Modeling of Board Level Drop Tests
A. Dasgupta, Center for Advanced Life Cycle Eng., USA

Design, Simulation and Test of a Large Boom Sections with High Local Loads of Changing Directions for Concrete Boom Pumps Lightweight Construction
H. M. Baumgarten, Femcos GmbH, GER

Seismic Analysis and Testing of a Dry Type Cast Resin Transformer
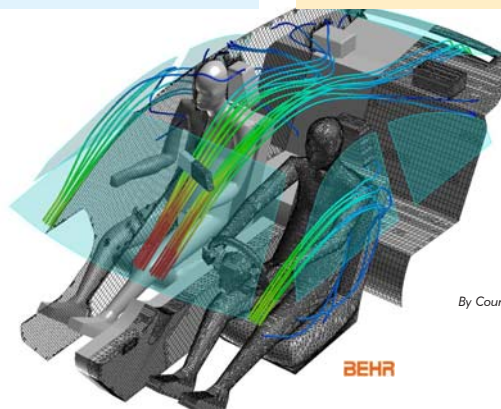R. Agarwal, Bharat Heavy Electricals Limited, IND

Congress Banquet

– Sun Set Dinner Ship Cruise

included in registration fee

Space is limited, and partners who wish to attend the banquet need to be registered seperatly at www.nafems.org or by using registration form on the page.

By Courtesy of Behr GmbH & Co. KG

BEHR

Keynote Speakers

Thomas J. Lange

Procter & Gamble, USA

Tom Lange (BSChE from University of Missouri-Columbia '78) joined Procter & Gamble in May 1978, as a Product Technical Engineer. Tom has spent his 29 year P&G career modeling and simulating product and production systems... from the aerodynamics of roasting peanuts, to how baby sizes and shapes affect urine leakage in a diaper.

Tom has held positions of increasing responsibility, including Associate Director, Modeling, Simulation and Analysis, Corporate Engineering in 1999. In August 2004, Tom was appointed Director for Modeling & Simulation in Corporate R&D. In this position, Tom heads P&G's modeling & simulation efforts including CAE (Computer Aided Engineering) and Computational Chemistry efforts.
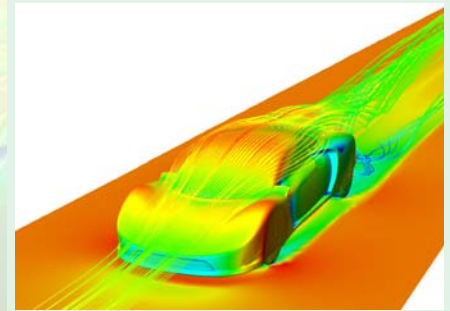
Prof. Daniel J. Inman

Virginia Polytechnic Institute and State University, USA

Daniel J. Inman received his Ph.D. from Michigan State University and is the Director of the Center for Intelligent Material Systems and Structures and the G.R. Goodson Professor of Mechanical Engineering at Virginia Tech. Since 1980, he has published six books, eight software manuals, 20 book chapters, over 185 journal papers and 375 proceedings papers, given 34 keynote or plenary lectures, graduated 43 Ph.D. students and supervised more than 60 MS degrees.

He is a Fellow of the American Academy of Mechanics, the American Society of Mechanical Engineers, the International Institute of Acoustics and Vibration, and the American Institute of Aeronautics and Astronautics. He is currently Technical Editor of the Journal of Intelligent Material Systems and Structures, the Shock and Vibration Digest, and Shock and Vibration.

Session 5D – Methods Development

Simulating Material Failure in Large Scale Analyses
H. Heidkamp, Sofistik AG, GER

Aspects of the Performance Prediction of Tidal Stream Turbines in Yawed Flow
J. Chapman, Swansea University/Swanturbines, GBR

Development of a Transient Boundary Element Method for Modeling Light-Tissue Interaction
K. Donne, Swansea Institute of Higher Education, GBR

Interactive Display of Stress Contours in Real Time
J. Trevelyan, Durham University, GBR

Session 5E – Workshop
Multi-Physics Analysis

Hosted by A. Slone, Swansea University, GBR, Chair of the NAFEMS MPA working Group, and M. Cross, Swansea University, GBR

LMS Multi-physics Developments*
T. Curry, LMS, USA

Ansys Multi-physics: Capabilities and Examples for Multi-physics Applications*
A. Rao, Ansys, USA

Multi-physics Simulation using Abaqus*
A. Kurkchubasche, Simulia, USA

Multi-physics Simulation using Comsol*
J. Dunec, Comsol, SWE

By Courtesy of Fundación ITMA

Session 6E – Workshop
Multi-Physics Analysis

Hosted by A. Slone, Swansea Universitys, GBR, Chair of the NAFEMS MPA working Group, and M. Cross, Swansea University, GBR

Multi-physics Developments in Physica*
L. Marks, Cape Engineering UK Ltd, GBR;
M. Cross, Swansea University, GBR

* Workshop contribution - no manuscript available

Session 7 D – Round Table
Vendors - NAFEMS

Chaired by T. Morris, NAFEMS

Session 7E – Workshop
Open Interfaces for Multi-Disciplinary Simulation and Code Coupling

Hosted by K. Wolf, Fraunhofer SCAI, GER

Introduction - The Concept of an Open Coupling Interface *
K. Wolf, Fraunhofer SCAI, GER

Coupling Abaqus with CFD Solvers for Fluid-Structure Interaction using Open Interfaces for Multiphysics Simulation *
A. Kurkchubasche, Simulia, USA

ANSYS Software and MpCCI Coupling *
J. Benko, Ansys/Fluent, USA

Star-CD Coupled with FEM Codes *
Alan Mueller, CD-adapco, USA

Session 8 D – Round Table
Vendors - NAFEMS

Chaired by T. Morris, NAFEMS

Session 8E – Workshop
Open Interfaces for Multi-Disciplinary Simulation and Code Coupling

Hosted by K. Wolf, Fraunhofer SCAI, GER

A good API Opens things up *
G. Steven, Strand7, AUS

Computational Models of Flow in Normal and Diseased Airways and Blood Vessels *
Marc Thiriet, Inria, USA)

* Workshop contribution - no manuscript available

By Courtesy of EMT R

Keynote Presentation:
Simulation Evolution
M. E Westphal, Lockheed Martin, USA

Session 9A – Failure - Fatigue

FEA Based Investigation of a CTA Silo Failure
A. Abdelgalil, Sabic, KSA

Building Blast Simulation
J. L. Cipolla, Abaqus Inc, USA

Simulating the Mechanics of Fretting Fatigue Crack Growth
T. J. C. Curtin, Computational Mechanics Inc., USA

Coupling Analysis of High Speed/Pressure Thermal Flow and Pressured Thermal Stress For Pipelines Joint Fatigue Failure
Y. Bo, Harbin Inst. Tech. Harbin, CHN

Session 9B – CFD 4 - FSI

A Rapid and Accurate Process for Simulating Intake and Exhaust Port Flow for IC Engine Geometries
P. Mandloi, Fluent India Pvt.Ltd, IND

Piston Driven Flow and Heat Transfer in a Composite Fluid/Porous System
N. Zahi, Ecole Nationale d'Ingenieurs de Monastir, TUN

Validation of Vortex Flow Phenomena in Electrical Machinery Using Advanced Simulation and Visualization Techniques
M. Trenker, Arsenal Research - Austrian Research Centres, AUT

CFD Simulation of Vehicle Soiling
S. Weston, Icon Simulation Services, GBR

Session 9C – Integration

User Defined Simulation via an Application Programming Interfaced
G. Steven, Strand7 Pty Ltd, AUS

Blisk Vibration Phenomena In Consideration of Fluid Structure Interaction
B. Beirow, BTU Cottbus, GER

Virtual Simulation – A new Functional Design Methodology for SME's
G. Black, Delta Fluid Products Ltd, UK

A Vision for World Class Simulation
K. Perlotto, Pratt & Whitney, USA

Refreshment Break and Product Showcases

Session 10A – Fatigue - Fracture

Finger and Pole Tooth Cracking in Large Generator Rotors – A Case Study
A. Morris, E.ON-UK, GBR

The Shrunk Finite Element (SFE) Method: Simulation of Crack Propagation in 3-D
J. Simon Weidner, Max-Planck-Institut für Plasmaphysik, GER

Simulation of 3D Non-Planar Crack Propagation
R. Chandwani, Zentech International Ltd, GBR

Session 10B – Vibration

Vibration and Thermodynamic Analysis in Synchrotron Radiation
H.-C. Huang, Diamond Light Source Ltd, GBR

Finite Element Analysis of Resonant Frequencies in Surface Acoustic Wave Devices
G. A. McRobbie, University of Paisley, GBR

Characteristics of Ultrasonic Transducers for Underwater Marine Use
G. A. McRobbie, University of Paisley, GBR

Session 10C – Contact Analysis

Friction Damping Modelization in High Stress Contact Areas
A. Coro, Industria de Turbo Propulsores, ESP

Fast Contact Analysis as Key Technology for Virtual Engine Development
R. Helfrich, Intes GmbH, GER

Developments in Finite Element Connections Technology
T. Dame, UGS PLM Solutions, USA

Keynote Presentation:
Future Trends in CAE and Analysis in Automotive Product Development
R. Pant, Tata Motors, IND

Lunch

Session 11A – Fatigue - Fracture

Stress Analysis and Fatigue of Weldments
M. El-Zein, Deere & Company, USA

Fatigue Life Estimation of Helicopter Landing Probe by Computer Simulation
G. Z. H. Zhu, York University, CDN

Fatigue Life Prediction of Automotive Drive Trains by Combination of Drive Cycle Measurements and Simulation
C. Seifert, New Technologies in Traffic Engineering, GER

Session 11B – Integration / Strategic

Vendor - Independent Integration of CAD & CAE Processes Based on OMG PLM Services
M. Grau, Prostep ITS GmbH, GER

Simulation-supported Decision Making
G. Allen, MSC.Software, USA

Upfront CAE – Concepts, Examples and Implications of an Emerging Design Paradigm
M. Arold, Altair Engineering, USA

Refreshment Break and Product Showcases

Best paper awards

Most Innovative Use of Simulation Technology

Sponsored by
SIMULIA

Best Practical Use of Simulation Technology
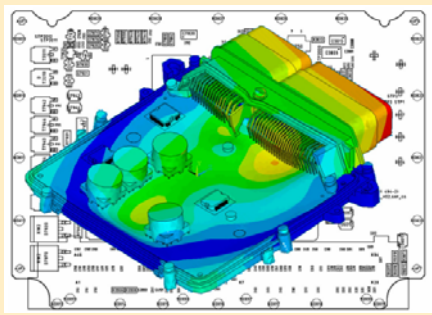
Sponsored by
UGS

Best Presented Paper

Farewell
Close of Conference

By Courtesy of Howaldtswerke-Deutsche Werft AG

By Courtesy of Nuovo Pignone S.p.A.

By Courtesy of Robert Bosch Kft.

Session 9 E – Round Table

Realistic Simulation of a Flexible Mechanism Processes Using Different Vendor Solutions

Chaired by J. Vandeventer, L. Krueger, Boeing, USA

Attendance confirmed by
· Altair Engineering
· Ansys/Fluent
· LMS International
· MSC.Software
· Simulia/Abaqus
· UGS

**Session 10D – Workshop
Education and Training**

Hosted by J. Wood, University of Strathclyde, GBR,
R. Matella, the Open University, GBR
M. Zehn, Femcos and the University of Magdeburg, GER

Session 10 E – Round Table

Realistic Simulation of a Flexible Mechanism Processes Using Different Vendor Solutions

Chaired by J. Vandeventer, L. Krueger, Boeing, USA

cont´d

**Session 11D – Workshop
Education and Training**

Hosted by J. Wood, University of Strathclyde, GBR,
R. Matella, the Open University, GBR
M. Zehn, Femcos and the University of Magdeburg, GER

Keynote Speaker

Mark E Westphal

Lockheed Martin, USA

Mark Westphal, P.E. is a Senior Systems Engineer with the Lockheed Martin Corporation in Newtown, Pennsylvania. He has over 20 years experience in design, analysis and system engineering in the Space and Aerospace Industries. He has published two NAFEMS articles in the "Benchmark" Magazine including "The Future of Mechanical Analysis" and "How Modeling and Simulation Engineers Can Add Business to their Skills".

Rajiv Pant

Tata Motors, IND

Rajiv is currently heading cab design and development of Tata Motors, Pune, India. Tata Motors is India's second largest passenger car maker and first in commercial vehicles. Rajiv has about 25 years of experience of working in North America and India in the field of product development, analysis and manufacturing. His major experience is in automotive field.

In his presentation, he will summarize the gaps in CAE and analysis which he has experienced between NA and Asia. He will also talk about generic road map which Indian OEM's are working on for closing the gaps. He will also attempt to predict the future trends of CAE and analysis in automotive product development in India.

Westin Bayshore Hotel

Vancouver, Canada

Additional courses, workshops and parallel activities

As well as the main technical tracks, attending the NAFEMS World Congress will also give you access to a comprehensive program of training courses, workshops, seminars and meetings, which are open to all attendees, as well as specific meetings of NAFEMS Technical and Regional groups.

A 2-Day Short Course:
Finite Element Model Validation, Updating, and Uncertainty Quantification For Linear and Non-linear Models
for Aerospace, Civil and Mechanical Engineers
by F. Hemez, Los Alamos National Laboratory (LANL) , USA

Monday, May 21 – Tuesday, May 22, 2007

Special Session:
Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Chaired by C. Stavrinidis, European Space Agency / Estec, NAFEMS; O. Pin, European Space Agency / Estec; R. L. Crane, ASME, USA; C. Rogers, CREA, GBR; L. Schwer, Schwer Engineering & Consulting Services, USA

Wednesday, May 22, 2007, Session 1C - 4C

Special Session:
High Performance Computing in Engineering Simulation
Chaired by L. Margetts, University of Manchester, GBR

Wednesday, May 22, 2007, Session 1E - 2E

Round Table:
Vendors meet NAFEMS
Chaired by T. Morris, NAFEMS

Thursday, May 23, 2007, Session 7D - 8D

Round Table:
Realistic Simulation of a Flexible Mechanism -Processes Using Different Vendor Solutions
Chaired by J. Vandeventer, L. Krueger, Boeing, USA

Friday, May 25, 2007, Session 9E - 10E

Workshop:
Multi-Physics Analysis
Chaired by A. Slone, Swansea University, GBR, Chair of the NAFEMS MPA Working Group; M. Cross, Swansea University, GBR

Thursday, May 24, 2007, Session 5E - 6E

Workshop:
Open Interfaces for Multi-Disciplinary Simulation and Code Coupling
Chaired by K. Wolf, Fraunhofer SCAI, GER

Thursday, May 24, Session 7E - 8E

Workshop:
Injection Moulding Simulation
Chaired by N. Dam Lerke, Nokia, DEN

Wednesday, May 22, 2007, Session 4E

Workshop:
Education and Training Workshop
Chaired by J. Wood, University of Strathclyde, GBR, R. Matella, the Open University, GBR M. Zehn, Femcos and the University of Magdeburg, GER

Friday, May 25, 2007, Session 10D - 11D

Please find more information as well as detailed workshop descriptions at

www.nafems.org/congress

Venue, Congress Hotel and Travelling

Congress hotel
Westin Bayshore Hotel
1601 Bayshore Drive
Vancouver, British Columbia
V6G 2V4, Canada

Accommodation is available at a discounted rate. Reservations can be made by requesting the "NAFEMS World Conference 2007" rate. Please use online registration at www.nafems.org/congress. **Cut-off day for blocked rooms is April 27, 2007 .**

Travelling
Regular busses from Vancouver airport to city hotels – exit Westin Bayshore Hotel. Travel time approximately 30 min.

About Vancouver
Vancouver was voted the "Best City in the Americas" for 2004 and 2005 by Condé Nast Traveler magazine, based on ambience, friendliness, culture and sites, restaurants, lodging, and shopping. A dynamic, multicultural city, Vancouver is set in a spectacular natural environment. There are indoor and outdoor activities to please adults, families, couples and business travellers no end. As the proud host of the 2010 Olympic & Paralympic Winter Games, Vancouver looks ahead to ongoing growth and great success in tourism, hospitality and business services each year.

Important note (especially for USA based delegates): New Passport Requirements as of January, 2007
New passport restrictions for air travel to and from the United States and Canada, Mexico, Bermuda, and the Caribbean will take effect in the new year. Travelers will be required to have a passport or other secure, accepted document to enter or re-enter the United States with all air travel. Most travelers can find information at http://travel.state.gov/travel/cbpmc/cbpmc_2223.html. Travelers from Canada should check http://www.voyage.gc.ca/main/sos/ci/cur-en.asp?txt_ID=852.

Social Events

Cocktail reception & exhibition opening
Costs included in registration fee.*
Tuesday, May 22, 2007
19:00 - 21:00

Optional dinner at Grouse Mountain
Costs not included in registration fee.**
Wednesday, May 23, 2007
19:00 - 23:30

Conference Banquet
- Sun Set Dinner Ship Cruise
Costs included in registration fee.*
Thursday, May 24, 2007
19:30 - 23:30

* Please register accompanying persons!
** Registration necessary!
Please register online or use registration form on last page.

Optional Partner and Tourism Programmes

Social events have been organised for partners during the congress programme. These events are available at an additional fee.

Further information about general tourism in Vancouver can be found at http://www.tourismvancouver.com/visitors/

Pre-Conference

The Westin Resort & Spa Whistler,
May 18 – 21, 2007
Info: http://www.tourismwhistler.com/ and
          http://www.westinwhistler.com
Cut-off day for blocked rooms is April 27, 2007

Special offers and partners programme

Please make all bookings for following activities directly at:
West Coast Sightseeing Ltd, online booking starting on April 1, phone (1) 604 451 1600
www.westcoastsightseeing.ca

Vancouver - Victoria by bus and ferry
(+ optional activity during Victoria trip: whale watching)
Monday, May 21, 2007, 7:30 - 21:30

Vancouver - Victoria by bus and ferry outbound and fly back by float plane
Tuesday, May 22, 2007, 7:30- 19:00

B.C. First Nation People Native Culture Tour
Wednesday, May 23, 2007, 13:00 - 18:00

Vancouver City and Capilano Suspension bridge tour
Thursday, May 24, 2007, 11:30 - 17:00

Northwest Coast Canoe Adventure
Friday, May 25, 2007, 11:00 - 13:00

Motorized Eco-cultural Exploration
Friday, May 25, 2007, 9:00 - 14:00

Big bus hop-on hop-off tour
To discover all that Vancouver has to offer, make sure you take a tour with Big Bus. They offer a hop-on hop-off service, and your pass is valid for any two days. Delegates of the NAFEMS World Congress will automatically receive a 20% discount on any tickets purchased online (registration at www.nafems.org)

Post-Conference

The Westin Resort & Spa Whistler,
May 25 – 27, 2007
Info: http://www.tourismwhistler.com/
and   http://www.westinwhistler.com
Cut-off day for blocked rooms is April 27, 2007 .

Please find more information about the social events and optional partner and tourism programmes at www.nafems.org/congress

Registration Form

Title	Family Name	First Name

Organisation

Mailing Address

	Post/Zip Code	Country
	Tel. No.	Fax. No.

Email

Payment details
(please give P.O. number if you wish to be invoiced)

Credit Card   ❏ Amex   ❏ Mastercard   ❏ Visa

Authorised Name

Card Number ⬜⬜⬜⬜ ⬜⬜⬜⬜ ⬜⬜⬜⬜ ⬜⬜⬜⬜   Expiry Date ⬜⬜ ⬜⬜

Company P.O.   Signature

Registration

I herewith register for the NAFEMS World Congress, May 22-25, 2007

❏ Author and/or NAFEMS Member $ 1050 USD

❏ Standard Delegate $ 1250 USD

In addition I register ...

❏ ___* additional persons for the **cocktail reception**
  & exhibition opening, May 22, 2007 $ 10 USD

❏ ___* persons for the **optional dinner** at
  Grouse Mountain, May 23, 2007 $ 95 USD

❏ ___* additional persons for the **Conference Banquet**
  - Sun Set Dinner Ship Cruise, May 24, 2007 $ 105 USD

❏ V&V 2-day short training course $ 1300 USD

I will probably attend the following special session / workshop / round table: _____

Conference fees include
• Attendance at the World Congress
• Lunches
• Refreshments
• Congress Banquet
• Cocktail Reception
• One set of Proceedings

* please specify number of persons
All costs per person.

Hotel accommodation
A discounted rate is available at the congress hotel. **Cut-off day for blocked rooms is April 27, 2007 .**

Exhibiting & Sponsorship Opportunities

❏ My organisation is interested in supporting the event by taking exhibition space.

❏ Please contact me to discuss sponsorship or other opportunities for participation.

www.nafems.org

Please complete and return to:-

Roger Oswald, NAFEMS Ltd

NAFEMS Ltd, Nasmyth Building, Scottish Enterprise Technology Park, East Kilbride, Glasgow, G75 0QR

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