NAFEMS

World Congress 2007

Vancouver, Canada
May 22nd - 25th

GENERAL INFORMATION AND AGENDA

Contents

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-> **see page 11**

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.

NAFEMS

THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS COMMUNITY

Welcome to the 2007 NAFEMS World Congress

On behalf of NAFEMS, I would like to extend a warm welcome to our 11th World Congress. For the past twenty years this biennial meeting has been the premier international, independent event focused entirely on engineering analysis and simulation.

This year's event promises to be more exciting than ever. Whether you are new to the Congress or returning for the 11th time, you're going to see first hand the power and breadth of simulation technology. You'll have the opportunity to meet industry experts from around the world, network with peers, and attend an exhibition which showcases solutions from all the leading simulation solution providers. In addition to 6 plenary keynote sessions and 33 in-depth technical sessions, there are 8 workshops centred on selected topical themes.

At NAFEMS, we believe that sharing ideas, expertise and technological developments fosters progress and improvement. The World Congress is for engineers who use simulation to inspire new concepts, improve existing designs and drive innovation.

I'm confident that you will find this year's event to be a rewarding experience. I'd like to thank you for participating in the activities of the NAFEMS community.

Enjoy the World Congress!

Tim Morris, NAFEMS Chief Executive Officer

Review Committee

Nigel Knowles
Consultant, GBR

Vic Rollo
Consultant, GBR

Jim Wood
University of Strathclyde, GBR

Tim Morris
NAFEMS

Roger Oswald
NAFEMS, GER

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Renault, FRA

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Boeing, USA

Fernando Espiga
Labein, SPA

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Nokia Research Center, FIN

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CAE Lab, JAP

Jesse Ruan
Ford, USA

Myron A. Semegen
Virtual Reality Centre, CAN

Vijay Sharan
Sony Ericsson, SWE

Costas Stavrinidis
ESA ESTEC, NED

Grant Steven
Strand7, AUS

Manfred Zehn
University of Magdeburg, GER

Agenda, May 22 - 23 (Tuesday - Wednesday)

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

Wednesday, May 23

Salon D-F (Plenary) Chair: C. Stavrinidis (European Space Agency / Estec)

8:30 **Opening of the Congress**
C. Stavrinidis (European Space Agency); Chairman of NAFEMS Council

8:40 **NAFEMS – Overview and Challenges**
T. Morris, NAFEMS CEO

9:00 **Keynote Speaker: Leveraging Simulation for Competitive Advantage**
R. Dreisbach, The Boeing Company, USA

9:30 **Refreshment Break**

Salon A

Session 1A – Dynamics
Chair: M. Zehn, University of Magdeburg, GER

1 10:00 **1 The Dynamics Testing Working Group: An Introduction**
N. Lieven, University of Bristol, GBR

2 10:20 **2 Accurate and Consistent Dynamic Modelling and Simulation of Aerial Refuelling**
G. Z. H. Zhu, York University, CDN

3 10:40 **3 Improving the Dynamic Response Analysis Process**
M. Donley, Siemens-UGS PLM Software, USA

4 11:00 **4 Dynamic Response and Fatigue Loading of the Swiss F/A-18 Vertical Tail Due to Buffeting**
B.Bucher, RUAG Aerospace, SUI

Salon B

Session 1B – CFD 1
Chair: T. Curry, LMS International, USA

1 The Challenges of Fluid Structure Interaction from a CFD Perspective
A. Mueller, CD-adapco, USA

2 Numerical Investigation of the Effects of Cohesion in Gas-Solid Flows
K. Jain, ESI CFD Inc., USA

3 Flow Instabilities in Feed Channels of Spiral-Wound Membrane Modules
M. Shakaib, NED University of Eng. & Technology, PAK

Salon C

Session 1C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Chair: C. Stavrinidis, European Space Agency / Estec;
L. E. Schwer, Schwer Eng. & Consulting Services, USA;
C. Rogers, CREA, GBR

1 Guide for Verification and Validation in Computational Solid Mechanics
L. E. Schwer, Schwer Eng. & Consulting Services, USA

2 Full-Scale Testing and Finite Element Simulation of a 34Metre Long Wind Turbine Blade
A. Morris, E.ON-UK, GBR

3 Investigation by FE Analysis into the Material and Geometric Parameters Influencing the Transverse Rupture of Lugs
N. Dev-Anand, ESDU International, GBR

4 NAFEMS Analysis Management Working Group
C. Rogers, CREA, GBR

11:20 **Refreshment Break and Product Showcases: SIMULIA, SIEMENS-UGS PLM SOFTWARE (EXHIBITION STAGE)**

Session 2A – Material Modeling 1
Chair: R. Matela, The Open University, GBR

1 11:50 **1 Materials Properties Database: Where we were, where we are and where we should go**
T. Wong, Pratt & Whitney Rocketdyne, USA

2 12:10 **2 Modeling of Material Properties Critical to Process Simulation**
Z. Guo, Sente Software, GBR

3 12:30 **3 Composite Damage and Delamination Modeling Using a Specific Multi-Layered Element in Transient Analysis**
J.-B. Mouillet, Altair Toulouse, FRA

4 12:50

Session 2B – Manufacturing Simulation
Chair: R. Bush, Siemens-UGS PLM Software, USA

1 Numerical Investigation of Tailor Welded Blanks Formability
S. Gaied, Arcelor Innovation, FRA

2 Simulation of Dynamic Positioning for Machine Tools
D. Siedl, Technical University Munich - iwb, GER

3 Exploring new Horizons in the Solid-Shell Element Technology for General Nonlinear Applications with Bending
S. Choudhry, MSC.Software, USA

Session 2C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Chair: C. Stavrinidis, European Space Agency / Estec;
R. L. Crane, ASME, USA

1 Simulation of Post Weld Heat Treatment of Pressure Vessel and it's Experimental Validation
N. D. Patel, Reactor, Cracker, Oil & Gas Group, IND

2 Failure Prediction and Integrity Assessment of Steam Chests Using Finite Element Method and Monitored Plant Data
X. Zhang, E.ON-UK, GBR

3 Validation of a Commercial Finite Element Code Demonstrated with Buckling of a Cylinder Due to External Pressure
C. Roche, Pratt & Whitney, USA

4 Validation & Bench-marking Activities Vis-a-vis the Pace of Advanced „CAE" Software Development: The Indian Scenario in Gas Turbine Technology
K. Ramachandra, MSRSAS; IND

13:10 **Lunch**

Salon D-F (Plenary) Chair: P. Newton (NAFEMS)

14:10 **Keynote Presentation: Computational Modeling of Multi-Physics and Multi-Scale Processes – Progress and Challenges**
M. Cross, University of Wales , UK

Salon A

Session 3A – Multiphysics Analysis 1
Chair: A. Slone, Swansea University, GBR

1 14:50 **1 Why do a Multiphysics Analysis?**
K. Wolf, Fraunhofer Institute SCAI, GER

2 15:10 **2 Multiphysics Simulation of a Micromirror Device**
S. Kini, ESI CFD Inc., USA

3 15:30 **3 Simulation of Multi-Physical Phenomena in Glass Melting Furnaces**
L. Thielen, TNO Science and Industry, NED

4 15:50 **4 Multi-Disciplinary Simulation Through Code Coupling**
K. Wolf, Fraunhofer Institute SCAI, GER

Salon B

Session 3B – Education
Chair: J. Wood, University of Strathclyde, GBR

1 The Use of Advanced Material Models in the Analysis of Plate Collapse
J. Reijmers, Nevesbu b.v., NED

2 Finite Element Formulation by Direct Nodal Equilibrium
J. Zhang, Zhang, CHN

3 Minimizing Analysis Errors – Recommended Best Practices
K. S. Raghavan, Infotech Enterprises Ltd, IND

Salon C

Session 3C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Chair: C. Stavrinidis, O. Pin, European Space Agency / Estec

1 Verification and Validation of Engineering Analytical Mathematical Models
T. Henriksen, M. Klein, C. Stavrinidis , O. Pin, ESA / Estec

2 Capture, Share and Re-use to Ensure Quality, Validation and Traceability *
R. Bush, Siemens-UGS PLM Software, USA

3 Simulation Quality, Verification, & Management – A Vendors Perspective *
T. Webb, Simulia / Abaqus, Inc., USA

4 ASME NQA-1 Committee Activities and Philosophy of a Software Vendor *
B. Bryan, Ansys Inc., USA

16:10 **Refreshment Break and Product Showcases: COMSOL, FRAUNHOFER SCAI (EXHIBITION STAGE)**

Session 4A – Multiphysics Analysis 2 & Magnetics
Chair: M. Cross, Swansea University, GBR

1 16:40 **1 Load Noise Generation and Transmission at Power Transformers – Modeling and Simulation**
M. Ertl, Siemens AG, GER

2 17:00 **2 3D Thermal and CFD Simulations of the Divertor Magnetic Coils for ITER**
A. Encheva, EPFL Lausanne, SUI

3 17:20 **3 Calculation of Magnetic Flux Penetration into Steel Housing of Large Turbogenerators Using a Two Layer Model**
P. Arend, Alstom (Schweiz) AG, SUI

4 17:40 **4 NAFEMS Multiphysics Working Group**
A. Slone, Swansea University, GBR

Session 4B – Civil/Structural Engineering
Chair: J. Reijmers, Nevesbu b.v., NED

1 Determination of Fatigue Lifetime by S-N Curves Combined with Smeared Crack Material Models
A. De Boer, Ministry of Public Works, NED

2 Seismic Analysis Methodologies and Applications
V. Kinariwala, Cranes Software Inc, USA

3 Effect of Dynamic Loading on Mechanistic Parameters of Flexible Pavements Using Three-Dimensional, Dynamic FEA
J. Qureshi, Mehran University of Engineering & Technology, PAK

Session 4C – Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS
Chair: C. Stavrinidis, European Space Agency / Estec

1-4
Round table discussion
chaired by C. Stavrinidis, European Space Agency / Estec,

* Additional workshop contributions not certified by the Congress Review Committee

19:00 **Optional Dinner at Grouse Mountain** - registration necessary - please contact Congress registration desk (not included in conference fee)

Agenda, May 22 - 23 (Tuesday - Wednesday)

Salon Seymour

Session 1D – Visualization

Chair: D. J. Inman, Virginia Polytechnic Institute and State University, USA

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

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

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

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

Salon MacKenzie

Session 1E – Workshop
High Performance Computing in Engineering Simulation

Hosted by L. Margetts, University of Manchester, GBR

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

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

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

4 Tempering the Glass-House *
P. Lillian, Dell, USA

Session 2D – Integration

Chair: M. Grau, Prostep ITS GmbH, GER

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

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

3 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

1- 4 cont´d

* Workshop contribution - no manuscript available

Salon Seymour

Session 3D
– Moulding Simulation and Metal Filling

Chair: N. Dam Lerke, Nokia, DEN

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

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

Salon MacKenzie

Session 3E
NAFEMS Information:
Exploring the Benefits of NAFEMS Membership

by M. Ladzinski, P. Steward, NAFEMS

1 - 4

This session is primarily for non-members to explore the benefits of NAFEMS membership. The goal of this activity is to offer non-members and current members a brief overview of the NAFEMS organization and the benefits that can be derived through membership in this international association.

Attendees will be able to ask questions about NAFEMS membership, structure, and planned activities for the North American region.

Session 4D – Software Development

Chair: E. A. Ladzinski, IBM, USA

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

2 FEM Based Analysis Of Conical Composite Shell Structures
M. Wallin, Helsinki University of Technology, FIN

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

4 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 contribution not certified by the Congress Review Committee

Session 4E – Workshop
Moulding Simulation

Hosted by N. Lerke, Nokia, DEN

1- 4

It is intended that the participants obtain knowledge of the variety in usage of Injection Moulding simulation results for evaluation of various part qualities.

This should also include the possibilities to minimize the idealizations when performing structural analyses, by taking manufacturing into account, leading towards the real virtual prototype tests.

Keynote Speakers

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.

Agenda, May 24 – Thursday

Salon D-F (Plenary) Chair: A. Ptchelintsev, Nokia Corporation, FIN

8:30 **Keynote Presentation: Will the Pringles fly? Modeling & Simulation of Everyday Products**
T. J. Lange, Procter and Gamble, USA

	Salon A	Salon B	Salon C
	Session 5A – Automotive Industry Chair: A. Moser, Virtuelles Fahrzeug GmbH, AUT	**Session 5B – CFD 2** Chair: A. Mueller, CD-adapco, USA	**Session 5C – Optimization 1** Chair: K. Rohwer, DLR, GER
1 09:10	**1 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	**1 Thermal Investigation of Rotating Electrical Machinery** H. Lang, Arsenal Research, AUT	**1 Design Optimization of Springs and Seals by Means of Finite Element Simulations** Y. Deger, HSR University of Applied Sciences, SUI
2 09:30	**2 Controlling the Complexity of Coupled Optimization – A Next Level Approach** K. Zamazal, Virtuelles Fahrzeug GmbH, AUT	**2 Finite Element Simulation of Gasless Combustion – Driven Heating Elements** L. Jiang, Martec Ltd, CDN	**2 An Optimization Tool for the Calibration of Complex Material Models in FE Simulation of the Crushing of Composite Structures** D. Papapostolou, Airbus UK, GBR
3 09:50	**3 Speeding up the Turnover in Engine Analysis is Crucial for the Design Process** S. Nageswaran, SimLabCorporation, USA	**3 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	**3 Multi-Objective Design-Optimization of Composite Structures** J. Baylor, Convergent Mechanical Solutions LLC, USA
4 10:10	**4 FEA – A Powerful Numerical Tool for Automotive Component Design** A. S. Dhoble, Visvesvaraya National Inst. of Technology, IND	**4 Fast Robust Design Optimization of a Cooling Duct Using CFD** S. Weston, Icon Simulation Services, GBR	**4 Topology Optimization in Controlled Dynamic Systems** J. Ottnad, IPEK - Institute of Product Development, GER

10:30 **Refreshment Break and Product Showcases: ANSYS, ALTAIR** **(EXHIBITION STAGE)**

	Session 6A – Automotive Industry / Crashworthiness Chair: C. Roche, Pratt & Whitney, USA	**Session 6B – CFD Large Scale Applications** Chair: R. J. Benko, Ansys/Fluent, USA	**Session 6C – Optimization 2** Chair: G. Steven, Strand7, AUS
1 11:00	**1 Finite Element Optimization of a Truck Transmission Housing** Y. Song, Romax Technology, GBR	**1 Impact of Improved Inlet Conditions on Internal and External Building Air Flows** A. Goehring, ARUP, GBR	**1 Automatic Optimal Design of Structures Using Swarm Intelligence** J. Bland, The Nottingham Trent University, GBR
2 11:20	**2 Prospects & Barriers For Up-front CAE Simulation in the Automotive Development** A. Moser, Virtuelles Fahrzeug GmbH, AUT	**2 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	**2 Design for Manufacturing Optimization for an Aeronautic Seat Structure** D. Mazzotta, University of Lecce, ITA
3 11:40	**3 Reverse Engineering and Validating 2001 Ford Taurus Passenger Car** V. Nagabhushana, National Crash Analysis Center, USA	**3 Numerical Simulation of Vortex Shedding Dynamic Induced Loads for Free Standing Structures** I. Giosan, West Coast Engineering Group Limited, CDN	**3 Multi-objective Optimization of an EGR Cooler** N. Fateh, Esteco North America Inc., USA
4 12:00		**4 The Application of CFD in Dam Spillways** D. Ho, WorleyParsons Services Pty Ltd, AUS	

12:20 **Lunch**

Salon D-F (Plenary) Chair: M. Zehn, Femcos GmbH, GER

13:20 **Keynote Presentation: Modeling for Smart Materials for Vibration Applications**
D. J. Inman, Virginia Polytechnic Institute and State University, USA

	Salon A	Salon B	Salon C
	Session 7A – Automotive Industry / Joints Chair: A. Eichberger, Intec GmbH, GER	**Session 7B – Biomedical Applications** Chair: Y. Deger, HSR University of Applied Sciences, SUI	**Session 7C – Composites** Chair: V. Rollo, Consultant, GBR
1 14:20	**1 Fasteners Modelling Technique For Static & Fatige Structure Calculation** R. Doubrava, VZLU, CZE	**1 Coupling FEA to CFD to Investigate the Effects of Pulsatile Blood Flow on the Dilatation of Artery Walls** R. Fu, Abaqus, USA	**1 FEA Simulation of Fracture in Z-Pinned Composites** E. Ruolo, ATA Engineering Inc, USA
2 15:00	**2 Optimized Spot Weld Patterns Regarding Stiffness and Fatigue** K. Puchner, Magna Steyr, AUT	**2 Automated Meshing of 3D Imaging Data: New Clinical Applications for CFD and FE Analysis** L. Margetts, University of Manchester, GBR	**2 Simulating Postbuckling Behaviour and Collapse of Stiffened CFRP Panels** K. Rohwer, DLR, GER
3 15:20	**3 An Investigation on Mechanically Fastened Joints: Modeling for Crash Simulation and Testing** M. Wissling, University of Paderborn, GER	**3 Comparison of Finite Element and Finite Volume Methods for Fluid - Structure Interactions of Biological Studies** D. Espino, University of Birmingham, GBR	**3 Modelling and Influence of Manufacturing Induced Material Imperfections on the Buckling Behaviour of Thin-walled CFRC Structures** M. Zehn, Femcos GmbH, GER
4 15:40	**4 Accurate and Efficient Modeling of Point and Surface Engineering Connections** V. Oancea, Simulia, USA	**4 Fluid Structure Interation of the Mitral Valve within the Heart** D. Espino, University of Birmingham, GBR	

16:00 **Refreshment Break and Product Showcases: MSC.SOFTWARE** **(EXHIBITION STAGE)**

	Session 8A – Automotive Industry / MBS Chair: K. Zamazal, Virtuelles Fahrzeug GmbH, AUT	**Session 8B – Material Modeling 2** Chair: A. Morris, E.ON-UK, GBR	**Session 8C – Industrial Applications** Chair: M. Arold, Altair Engineering, USA
1 16:30	**1 Crankshaft Durability Calulation Using a Combination of MBS, FEA and Fatigue Software** D. Berki, Intec GmbH, GER	**1 Characterization of Bulk Material Properties Based on Microstructural Simulation** L. Margetts, University of Manchester, GBR	**1 Guidelines for Transient Modeling of Board Level Drop Tests** A. Dasgupta, Center for Advanced Life Cycle Eng., USA
2 16:50	**2 Hardware-In-The-Loop Simulation of Multi-Body Models** A. Eichberger, Intec GmbH, GER	**2 Modeling of Complex Three-Dimensional Grain Structures** J. Ottnad, IPEK - Institute of Product Development, GER	**2 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
3 17:10	**3 Modal Integration of Finite Element Structures with Bolted Joints in the Multi Body Simulation** W. Witteveen, Linz Center of Mechatronics GmbH, AUT	**3 Interactive Simulation of Materials with Complex Architectures** L. Margetts, University of Manchester, GBR	**3 Seismic Analysis and Testing of a Dry Type Cast Resin Transformer** R. Agarwal, Bharat Heavy Electricals Limited, IND
4 17:30			

19:00 **CONGRESS BANQUET – SUN SET DINNER SHIP CRUISE**
included in registration fee - space is limited, please register for additional persons on registration desk

Agenda, May 24 – Thursday

Salon Seymour

Session 5D – Methods Development

Chair: R. Helfrich, Intes GmbH, GER

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

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

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

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

Salon MacKenzie

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

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

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

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

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

Session 6D NAFEMS Information: Exploring the Benefits of NAFEMS Membership

by M. Ladzinski, P. Steward, NAFEMS

1 - 4

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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

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

2 - 4 cont´d

* Workshop contribution - no manuscript available

Salon Seymour

Session 7 D – Round Table Vendors - NAFEMS

Chaired by T. Morris, NAFEMS

1 - 4

NAFEMS works with – and is supported by – all the major simulation software providers. Taking the opportunity that is provided by having representatives from them all at the World Congress, they will meet together at this workshop, along with NAFEMS, to discuss how they can work together to the benefit of all.

Anyone who provides simulation software or services is welcome to attend.

Salon MacKenzie

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

Hosted by K. Wolf, Fraunhofer SCAI, GER

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

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

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

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

Session 8 D – Round Table Vendors - NAFEMS

Chaired by T. Morris, NAFEMS

1 - 4 cont´d

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

Hosted by K. Wolf, Fraunhofer SCAI, GER

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

2 Computational Models of Flow in Normal and Diseased Airways and Blood Vessels *
M. Thiriet, Inria, USA

3 - 4 cont´d

* Workshop contribution - no manuscript available

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.

Agenda, May 25 – Friday

Salon D-F (Plenary) Chair: R. Dreisbach, The Boeing Company, USA

8:30 **Keynote Presentation: Simulation Evolution**
M. E Westphal, Lockheed Martin, USA

	Salon A	Salon B	Salon C
	Session 9A – Failure - Fatigue Chair: T. Curry, LMS International, USA	**Session 9B – CFD 4 - FSI** Chair: K. Wolf, Fraunhofer SCAI, GER	**Session 9C – Integration** Chair: R. Helfrich, Intes GmbH, GER
1 09:10	**1 FEA Based Investigation of a CTA Silo Failure** A. Abdelgalil, Sabic, KSA	**1 Validation of Vortex Flow Phenomena in Electrical Machinery Using Advanced Simulation and Visualization Techniques** M. Trenker, Arsenal Research, AUT	**1 User Defined Simulation via an Application Programming Interfaced** G. Steven, Strand7 Pty Ltd, AUS
2 09:30	**2 Building Blast Simulation** J. L. Cipolla, Abaqus Inc, USA	**2 CFD Simulation of Vehicle Soiling** S. Weston, Icon Simulation Services, GBR	**2 Blisk Vibration Phenomena In Consideration of Fluid Structure Interaction** B. Beirow, BTU Cottbus, GER
3 09:50	**3 Simulating the Mechanics of Fretting Fatigue Crack Growth** T. J. C. Curtin, Computational Mechanics Inc., USA	**3 A Rapid and Accurate Process for Simulating Intake and Exhaust Port Flow for IC Engine Geometries** P. Mandloi, Fluent India Pvt.Ltd, IND	**3 Virtual Simulation – A new Functional Design Methodology for SME's** G. Black, Delta Fluid Products Ltd, UK
4 10:10	**4 Coupling Analysis of High Speed/Pressure Thermal Flow and Pressured Thermal Stress For Pipelines Joint Fatigue Failure** Y. Bo, Harbin Inst. Tech. Harbin, CHN	**4 Piston Driven Flow and Heat Transfer in a Composite Fluid/Porous System** N. Zahi, Ecole Nationale d'Ingenieurs de Monastir, TUN	**4 A Vision for World Class Simulation** K. Perlotto, Pratt & Whitney, USA
10:30	**Refreshment Break**		
	Session 10A – Fatigue - Fracture Chair: J. McVee, Consultant, GBR	**Session 10B – Vibration** Chair: A. Svobodnik, Harman / Becker Automotive Systems, GER	**Session 10C – Contact Analysis** Chair: M. A. Semegen, Virtual Reality Centre, CAN
1 11:00	**1 Finger and Pole Tooth Cracking in Large Generator Rotors – A Case Study** A. Morris, E.ON-UK, GBR	**1 Vibration and Thermodynamic Analysis in Synchrotron Radiation** H.-C. Huang, Diamond Light Source Ltd, GBR	**1 Friction Damping Modelization in High Stress Contact Areas** A. Coro, Industria de Turbo Propulsores, ESP
2 11:20	**2 The Shrunk Finite Element (SFE) Method: Simulation of Crack Propagation in 3-D** J. Simon Weidner, Max-Planck-Inst. für Plasmaphysik, GER	**2 Finite Element Analysis of Resonant Frequencies in Surface Acoustic Wave Devices** G. A. McRobbie, University of Paisley, GBR	**2 Fast Contact Analysis as Key Technology for Virtual Engine Development** R. Helfrich, Intes GmbH, GER
3 11:40	**3 Simulation of 3D Non-Planar Crack Propagation** R. Chandwani, Zentech International Ltd, GBR	**3 Characteristics of Ultrasonic Transducers for Underwater Marine Use** G. A. McRobbie, University of Paisley, GBR	**3 Developments in Finite Element Connections Technology** T. Dame, Siemens-UGS PLM Software, USA

Salon D-F (Plenary) Chair: N. Lerke, Nokia, DEN

12:10 **Keynote Presentation: Future Trends in CAE and Analysis in Automotive Product Development**
R. Pant, Tata Motors, IND

12:40 **Lunch**

	Salon A	Salon B
	Session 11A – Fatigue - Fracture Chair: V. Rollo, Consultant, GBR	**Session 11B – Integration / Strategic** Chair: V. Oancea, Abaqus, USA
1 13:40	**1 Stress Analysis and Fatigue of Weldments** M. El-Zein, Deere & Company, USA	**1 Vendor - Independent Integration of CAD & CAE Processes Based on OMG PLM Services** M. Grau, Prostep ITS GmbH, GER
2 14:00	**2 Fatigue Life Estimation of Helicopter Landing Probe by Computer Simulation** G. Z. H. Zhu, York University, CDN	**2 Simulation-supported Decision Making** G. Allen, MSC.Software, USA
3 14:20	**3 Fatigue Life Prediction of Automotive Drive Trains by Combination of Drive Cycle Measurements and Simulation** C. Seifert, New Technologies in Traffic Engineering, GER	**3 Upfront CAE – Concepts, Examples and Implications of an Emerging Design Paradigm** M. Arold, Altair Engineering, USA

14:40 **Refreshment Break**

Salon D-F (Plenary)

15:00 **Best paper awards**
Chair: T. Morris, NAFEMS;
C. Stavrinidis, ESA/Estec;
M. Zehn, Femcos GmbH, GER

Most Innovative Use of Simulation Technology Sponsored by SIMULIA

Best Practical Use of Simulation Technology Sponsored by SIEMENS

Best Presented Paper

15:30 **Farewell**

15:45 **Close of Conference**

Agenda, May 25 – Friday

Salon Seymour

Salon MacKenzie

Session 9 E – Round Table
Realistic Simulation of a Flexible Mechanism Processes Using Different Vendor Solutions

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

1 - 4 **Attendance confirmed by**

- Altair Engineering
- Ansys/Fluent
- LMS International
- MSC.Software
- Simulia/Abaqus
- Siemens-UGS PLM Software

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

1 - 4

Education is at the heart of NAFEMS and this workshop will address the issues facing individuals and organisations engaged in education and training, in support of the effective use of analysis and simulation technologies today.
This interactive workshop will be hosted by engineers, who have been involved in Education and Training throughout their careers and have extensive experience of both traditional and cad-embedded systems. ...

Session 10 E – Round Table
Realistic Simulation of a Flexible Mechanism Processes Using Different Vendor Solutions

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

1 - 4 **cont´d**

Salon Seymour

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

1 - 4

The goal of the workshop will be to ensure effective participation of the delegates in a productive discussion of a range of relevant topics. After a short scene-setting introduction, aimed at providing a stimulus to participants, break-out groups will be formed, to address relevant issues under the guidance of a facilitator. The groups will then report back for a summary session.

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.

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.

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 23, 2007, Session 1C - 4C

Special Session:

High Performance Computing in Engineering Simulation

Chaired by L. Margetts, University of Manchester, GBR

Wednesday, May 23, 2007, Session 1E - 2E

Round Table:

Vendors meet NAFEMS

Chaired by T. Morris, NAFEMS

Thursday, May 24, 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

Round Table:

NAFEMS Information: Exploring the Benefits of NAFEMS Membership

Chaired by M. Ladzinski, P. Steward, NAFEMS

Wednesday, May 23, 2007, Session 3E
Thursday, May 24, 2007, Session 6D

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 23, 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

Room Map and Exhibition Area
Exhibitors

Cocktail reception & exhibition opening

Tuesday, May 22, 2007, 19:00 - 21:00
Please register accompanying person at the NAFEMS registration desk.

Optional dinner at Grouse Mountain

Wednesday, May 23, 2007, 19:00 - 23:30
Costs not included in registration fee.
Please register at the NAFEMS registration desk.

Imagine a wilderness sanctuary where endangered animals can play, protected and secure. You will find all this and more at The Refuge for Endangered Wildlife, a research, education, and conservation centre at the top of Grouse Mountain. Dedicated to becoming a world leader in preserving both wildlife and flora at risk, The Refuge offers leading-edge interpretative programs that make learning about nature fun and fascinating. The Refuge for Endangered Wildlife is principally comprised of a five-acre mountaintop habitat that is home to two orphaned grizzly bears and a pack of grey wolves.

Included in this spectacular evening is an overwhelming sky ride, bus transfer, welcome drink and dinner buffet including two drinks. It would be great if you could join us on Wednesday evening.

Costs per person: 49.50 GBP, $98 USD, 72 Euro

A bus will pick you up at the hotel entrance at 19:00 and will bring you back approx. 23:30

Post-Congress at The Westin Resort & Spa Whistler

May 25 – 27, 2007

With Whistler and Blackcomb Mountains in our backyard and the driving range in the front, we place you in the heart of one of Canada's great year-round recreation destinations. It really is little wonder that *Condé Nast Traveler* and *TRAVEL + LEISURE* Magazine have named us to their respective prestigious award lists of places to stay in North America. From an ideal location slope side on Whistler Mountain to finely appointed accommodations to impeccable friendly service levels your stay will be an experience worth re-living time and time again from season to season.
NAFEMS have booked an area in the Westin Whistler restaurant at 20:00 on Saturday, May 26, so that all delegates on this trip can dine together (dinner to be paid individually).

Please book by yourself: The Westin Resort & Spa Whistler
e-mail: reservations@westinwhistler.com,
toll free 1-866-412-2864
Info: www.tourismwhistler.com, hotel www.westinwhistler.com

Traveling from Westin Bayshore to Whistler
by float plane
Friday, May 25, 2007, 18:15 - 18:45
Booking: Whistler Air, www.whistlerair.ca, Costs: $149 CAD
by bus coach - Sea to Sky Highway
Friday, May 25, 2007, 16:00 - 18:15
Booking: Perimeter, Costs: $67 CAD
(10% discount if 4 or 5 persons, 20% discount if 6 or more persons)

Traveling from Whistler to Vancouver or Vancouver airport
By bus: Frequent bus connections every day from Westin Whistler to Vancouver hotels and to international airport (travel time to airport approx. 2,5 h).
By float plane: via Whistler Air
By train: Mountaineering Train, www.rockymountaineer.com

Conference Banquet - Sun Set Dinner Ship Cruise

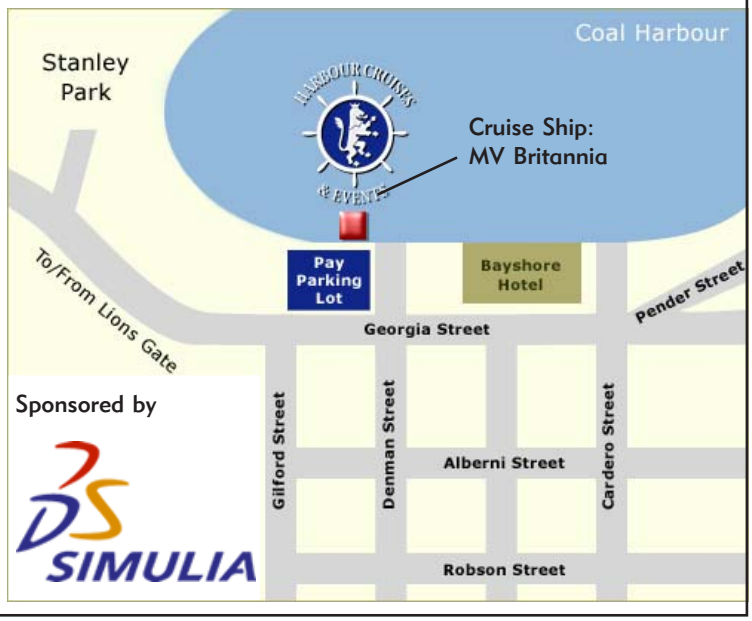
Thursday, May 24, 2007, 19:00 - 23:30

There will be a Congress Banquet held on board a SunSet Dinner Ship Cruise on Thursday evening, 24th May. Enjoy a delicious dinner buffet with entertainment and a breathtaking sunset. The cost of the dinner is included in Congress delegate registration fee. If however, you wish accompanying persons to attend the Congress dinner, they would be made very welcome.

Please register accompanying person at the NAFEMS registration desk. Costs for accompanying person:
54.50 GBP, $108 USD, 80 Euro

Just a few minutes walk from the hotel you will find the cruise ship MV **Britannia**.

The marina is „#1-North Foot of Denman Street, Vancouver", located just before the entrance of Stanley Park / one block west of the Westin Bayshore Hotel.



Optional Partner and Tourism Programmes

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

Special offers and partners programme

You can book all the following programs directly at the hotel front desk. You can also order directly:
West Coast Sightseeing Ltd, phone (1) 604 451 1600
or book online at www.westcoastsightseeing.ca

Vancouver - Victoria by bus and ferry

Monday, May 21, 2007 07:30 - 21:30
Pick up / drop off at the Hotel Westin Bayshore
Booking: direct: West Coast Sightseeing Ltd
Costs: $157.00 CAD
10% discount for NAFEMS Congress delegates
Optional activity during Victoria trip: **Whale watching**
Extra costs: $98.00 CAD
10% discount for NAFEMS Congress delegates

Vancouver - Victoria by bus and ferry outbound and fly back by float plane

Tuesday, May 22, 2007, 7:30- 19:00
Pick up / drop off at the Hotel Westin Bayshore
Costs: $263.00CAD for tour and flight. The plane back will land in walking distance to the Westin Bayshore Hotel.
10% discount for NAFEMS Congress delegates
Optional activity during Victoria trip: **Whale watching**
Extra costs: $98.00 CAD
10% discount for NAFEMS Congress delegates

B.C. First Nation People Native Culture Tour

Wednesday, May 23, 2007, 13:00 - 18:00
Pick up / drop off at the Hotel Westin Bayshore
Totem Poles at Stanley Park
Learn about the meaning of the totems and about the nations represented by each pole. The animals and human figures tell distinct stories; different poles serve diverse functions.
The tour will proceed across Burrard Bridge and along NW Marine Drive and Spanish Banks to the University of British Columbia.
The Museum of Anthropology
Enjoy a guided walking tour through the museum with its famous collection of Northwest native artefacts. You'll understand the evolution of this amazing culture in its buildings, utensils, religious and burial objects, sculpture and carving. You have time to visit the replica of a Haida village.
Optional: Authentic First Nations Lunch after the tour
Costs: $67.00 CAD incl. admission to the Museum of Anthropology at University of British Columbia
10% discount for NAFEMS Congress delegates
minimum 12, maximum 30 persons

Vancouver City and Capilano Suspension bridge tour

Thursday, May 24, 2007, 11:30 - 17:00
Pick up / drop off at the Hotel Westin Bayshore
City Highlights
- Vancouver City: with out Lookout.
- Canada Place: Cruise ship terminal
- Robson Street: The best shopping in town
- Stanley Park: With stops at the Totem Poles and Prospect Point
- Lions Gate Bridge
- Cleveland Dam
- Capilano Suspension Bridge With Treetop Adventure
- Granville Island: Public Market, marinas, galleries, time for a snack
- Chinatown: 2nd largest in North America
- Gastown: Historic Vancouver

Costs: $ 76.00 CAD
10% discount for NAFEMS Congress delegates

Northwest Coast Canoe Adventure

Friday, May 25, 2007, 11:00 - 13:00
Pick up / drop off at the Hotel Westin Bayshore
This program is unique to the area, as it offers the authentic First Nation experience of water travel in our traditional style ocean-going canoes. Learn about the area while enjoying a leisurely paddle on the ocean waters of Indian Arm with our First Nation guides. Listen to traditional songs, legends of the area and learn about the cultural history of Burrard Inlet. The tour also includes a 20 minute interpretive walk through the coastal temperate rainforest.
Costs: 59.00 CAD
already discounted, please use keyword NAFEMS
minimum 10 persons

Motorized Eco-cultural Exploration

Friday, May 25, 2007, 9:00 - 14:00
Pick up / drop off at the Hotel Westin Bayshore
This program is perfect for guests who are interested in exploring scenic Indian Arm and learning about the cultural history of the area while seated comfortably in our motorized zodiac. See authentic, ancient Native pictographs, tranquil islands, and waterfalls. Learn about ancient Native village sites and wildlife. Lunch is provided.
Costs: 135.00 CAD
already discounted, please use keyword NAFEMS

Other Activities

In addition to those activities we offered on the last pages, there are numerous other attractions (most is in walking distance from the hotel).

Big bus hop-on hop-off tour

To discover all that Vancouver has to offer, make sure you take a tour with Big Bus. We offer a hop-on hop-off service, and your pass is valid for any two days.

	2 Day Pass
Adult Vancouver Tour (age 18-64)	$35.00
Senior Vancouver Tour (age 65 and better)	$30.00
Student Vancouver Tour (age 13-17)	$30.00
Child Vancouver Tour (age 6-12 - under 6 free)	$17.00
Family Vancouver Tour (2 adults & kids under 12)	$75.00

Rates are already 20% discounted for delegates.
Prices in Canadian Dollars - rates include all taxes

Stanley Park

A huge green space smack in the middle of the 3rd largest city in Canada! Walk the seawall - all 10 kilometres (6.2 miles) of it. Say hello to the beluga whales at the aquarium or grab a hotdog from one of the street vendors, choose a seaside bench and watch the sun go down. General Information Line 604.257.8400.

Vancouver Aquarium

Come to face-to-fin with over 70,000 animals including beluga whales, Steller sea lions, dolphins, seals and more! Enjoy the dolphin and whale shows, sea otter feeds, and shark dives. Free-roaming animals abound in our popular Amazon Gallery and be sure to stop by our newest gallery that's full of interactive exhibits and a children's play learning area. For a unique hands-on adventure, ask about our Animal Encounters program. Open 365 days of the year. For more info, call 604.659.

Steam Clock

(Gastown – historic Vancouver)

And almost endless other attractions:

- Vancouver Museum
- Art Gallery
- Robson Street (The best shopping in town)
- Granville Island (public market, marinas, galleries)
- Chinatown (second largest in North America)
- Sport activities (biking, jogging, cycling, skiing, …)
- Whale watching
- Round trip with float planes
- Adventure trips
- Bear watching
- River rafting
- Etc.

Info

http://www.tourismvancouver.com/visitors/

Authors and Chairman Information

Authors

A copy of your presentation will be at the computer in the lecture room if you have already submitted it. Please also to bring a copy with you on either CD or memory stick. Please ensure that you are in the location of where your presentation will take place, **at the break before your session is due to start**. This will allow time for you to view your presentation and discussion any last minute queries with the session chairman. If your presentation requires any specialist codes for running avi files, please also bring these with you.

Presentations should last no more than **15 minutes**. An additional **5 minutes** per presentation is available for the chairman's introduction and for any questions at the end of your presentation.

There will be a time system in all lecture rooms to indicate your timing and this will be highlighted to you.

Due to the large amount of presentation, speakers are requested to keep to the times schedule as no over-run time will be given.

Chairman

Speaker biographies for your session will be left at the front table in the break before your session. Please introduce the presenter to the audience. Chairmen are asked to arrive at least 10 minutes before the start of their session. The speakers have been asked to arrive in the break before the start of the session and let the chairman know that they are present.

Chairmen must ensure that the sessions run to time. This is particularly important as other sessions will be running in parallel. Each speaker has been allocated 20 minutes (keynote presentations 30 min.). The presentations should last no more than 15 minutes. An additional 5 minutes is available for the chairman's introduction and questions from the audience after the presentation.

At the end of the session, the chairman should, if appropriate, direct the delegates to the location of the next event on the programme and notify them of the time at which they should re-convene for the next session if a coffee break is scheduled. Chairmen are encouraged to invite interesting discussion on papers presented.

There will be a time system in operation which will assist chairmen to keep to schedule. This system will be explained to you on arrival. There will be technical staff in the conference rooms helping with microphones etc.

Congress at a glance

THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS COMMUNITY

22 May

14:00 - 18:00	Author & delegate registration
19:00 - 22:00	Cocktail reception & exhibition opening

23 May

08:00	Exhibition (-18:30)				
08:30	Opening of the Congress				
09:00	Keynote-Presentation				
09:30	Refreshment break				
10:00	1A Dynamics	1B CFD 1	1C V & V *	1D Visualization	1E WS: HPC
11:20	**Product showcases** at exhibition stage & refreshment break				
11:50	2A Mat. Modeling 1	2B Manufacturing	2C V & V *	2D Integration	2E WS: HPC
13:10	Lunch				
14:10	Keynote-Presentation (-14:40)				
14:50	3A MultiPhysics 1	3B Education	3C V & V*	3D Moulding/Filling	3E NAFEMS Info
16:10	**Product showcases** at exhibition stage & refreshment break				
16:40	4A MultiPhysics 2	4B Civil/Structural	4C V & V*	4D Software Dev.	4E WS: Moulding
18:00	End of day 1				

19:00 – 23:30 Dinner at "Grouse Mountain" (optional)

24 May

08:00	Exhibition (-18.15)				
08:30	Keynote-Presentation (-09:00)				
09:10	5A Automotive	5B CFD 2	5C Optimization 1	5D Methods Dev.	5E WS: MultiPhysics
10:30	**Product showcases** at exhibition stage & refreshment break				
11:00	6A Autom./Crash	6B CFD Large Scale	6C Optimization 2	6D NAFEMS Info	6E WS: MultiPhysics
12:20	Lunch				
13:20	Keynote-Presentation (-14:10)				
14:20	7A Autom./Joints	7B Biomechanical	7C Composites	7D Vendor-NAFEMS	7E WS: MultiPhysics Open Interface
16:00	**Product showcases** at exhibition stage & refreshment break				
16:30	8A Autom./MBS	8B Mat. Modeling 2	8C Industrial Appl.	8D Vendor-NAFEMS	8E WS: MultiPhysics Open Interface
17:50	End of day 2				

19:00 – 23:00 Congress Banquet – Sunset dinner ship cruise (included)

25 May

08:00	Exhibition (-15.45)				
08:30	Keynote-Presentation (-09:00)				
09:10	9A Failure/Fatigue	9B CFD 4 - FSI	9C Integration		9E RT: Boeing vendor solutions
10:30	Refreshment break				
11:00	10A Fatigue/Fract.	10B Vibration	10C Contact	10D WS Education	10E RT: Boeing vendor solutions
12:10	Keynote-Presentation (-12:40)				
12:40	Lunch				
13:40	11A Fatigue/Fract.	11B Integration/Strat.	11D WS Education		
14:40	Refreshment break				
15:00	Best Paper Awards				
15:45	End of Congress				

16:00 Bus transfer to Whistler Resort (optional)
26-28 May: Post Congress trip to Whistler Resort (optional)

Rooms:

Keynotes = Salon D-F
A = Salon A
B = Salon B
C = Salon C
D = Salon Seymour
E = Salon MacKenzie

WS = Workshop
RT = Round table

* Engineering Analysis Quality, Verification and Validation – Joint AIAA, ASME, ESA/ESTEC, NAFEMS