NWC 2009

NAFEMS WORLD CONGRESS 09

JUNE 16th - 19th **CRETE - GREECE**

The Analysis Advantage:

Perspectives on Engineering Simulation for Today and Beyond

AGENDA

- Case Studies
- Best Practices
- Breakthrough Technologies
- Future Advances

NAFEMS

THE INTERNATIONAL CONGRESS ON SIMULATION TECHNOLOGY FOR THE ENGINEERING ANALYSIS COMMUNITY

Dear Colleague,

The biennial NAFEMS World Congress was established in order to strengthen worldwide alliances and working relationships between industry, research institutes, and academia in the area of engineering analysis and simulation. This international forum provides unique opportunities for the presentation and discussion of technical and scientific efforts by leading experts and managers in the domain.

Since its very beginning NAFEMS has remained consistent in providing up-to-date information on the latest technology in this area to the engineering community. I believe that the NAFEMS organisation has been developed and refined over the past few years to take into account the rapidly changing face of the technology, the users, the market place and the ways in which engineers access information and progress their own professional development. Education and training remains a prime NAFEMS target, and there is a special panel discussion being held on this subject which has been organized by some very distinguished panellists.

International expansion has continued at a steady pace since the last NAFEMS World Congress in 2007, which was held in the bustling city of Vancouver, Canada. It is vital that we continue to expand globally, in order to enable engineering analysts worldwide to benefit from the education, training and professional support provided by NAFEMS in the area of analysis and simulation. It is our pleasure and honour to welcome you to the NAFEMS World Congress 2009 and we hope you participate actively with the many leading professionals attending the valuable programme events which have been established.

I look forward to meeting you at the NAFEMS World Congress 2009.

Dr. C. Stavrinidis
Chairman of NAFEMS Council

THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS COMMUNITY

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 900 corporate members in over 35 different countries.

More information: www.nafems.org

Dr C. Stavrinidis
Chairman of
NAFEMS Council

NAFEMS World Congress Committee

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NAFEMS World Congress Review Committee

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Jim Wood,
University of Strathclyde, GBR
Tim Morris
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Roger Oswald
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Mini-Symposium Committee: Composite Structures

Dr. Frank Abdi
Alpha Star Corp., USA
Dr Jesper Ankersen
Imperial College London, GBR
Brett Bednarcyk
NASA Glenn, USA
Prof. Ayech Benjeddou
Supméca – Paris, FRA
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Risoe National Laboratory, DEN
Emmett Nelson
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DLR German Aerospace Center, GER
Prof. Dimitris A. Saravanos
University of Patras, GRE
Prof. Constantinos Soutis
University of Sheffield, GBR

Congress at a glance

16 June	**03:00 pm – 07:00 pm**	**Author & delegate registration**
	07:00 pm – 09:00 pm	**Cocktail reception & exhibition opening**
17 June	**07:45 pm – 08:30 pm**	**Author & delegate registration**
	08:30 am – 07:00 pm	**Presentations and exhibition**
	08:00 pm	**Dinner (optional)**
18 June	**08:30 am – 05:40 pm**	**Presentations and exhibition**
	08:00 pm	**Congress Banquet**
19 June	**08:30 am – 04:15 pm**	**Presentations and exhibition**
	04:15 pm	**End of Congress**
20 June		**Post Congress tour to Knossos and Heraklion (optional)**

Preliminary Agenda, June 16 - 17 (Tuesday - Wednesday)

Tuesday, June 16

Author & delegate registration (15:00 - 19:00)

Cocktail reception & exhibition opening (19:00 - 21:00)

Wednesday, June 17

08:30am *Chair: C. Stavrinidis, European Space Agency, NED; Chairman of the NAFEMS Council*
Opening of the Conference
C. Stavrinidis, European Space Agency, NED; Chairman of the NAFEMS Council

08:45am **NAFEMS World Congress 2009: Three Days to Remember**
T. Morris, NAFEMS CEO

09:00am Invited Speakers:

Forward Challenges and Opportunities for Simulation
J. Leuridan, Executive Vice-President and CTO, LMS International

Industrial Applications of Realistic Simulation
B. Engelmann, Vice President and CTO, Simulia

Advances in Engineering and Scientific Simulation - End to End Virtual Prototyping
A. de Rouvray, Chairman and CEO, ESI Group

A Virtual Build and Test Platform
R. Sadeghi, CTO, MSC.Software

10:30am **Refreshment Break and Product Showcases: Simulia, Beta CAE**

11:10am

Session 1A - Dynamics 1
Chair: M. Zehn, Technical University Berlin, GER
On the Need for and Benefits of the Effective Integration of Analysis and Test in Structural Dynamics (setting the scene)
D. Ewins, Imperial College London / University Bristol, GBR
– NAFEMS Dynamics and Testing Working Group
From Dynamic Model to Acoustic Results
R. Helfrich, Intes , GER
Seismic Response in Synchrotron Accelerator of Diamond Light Source
H. Huang, Diamond Light Source, GBR
Computational Methods of Rotordynamics Simulation
A. Beley, Ansys, USA

Session 1B - Optimization 1
Chair: G. Steven, Strand7 Pty, AUS
Design for Real-World Product Performance Using Realistic Optimization and Simulation
A. Van der Velden, Simulia, USA
Application Examples of Optimization and Reliability Studies in Automotive Industry
H. Müllerschön, DYNAmore, GER
Topology Optimization of Dynamically Loaded Structures with Respect to Issues of Noise, Vibration and Harshness (NVH)
B. Hessenauer, University Karlsruhe, GER
CAE Framework for Aerodynamic Shape Development
S. Seitanis, Beta CAE Systems, GRE
Linear-Optimization Codes with Neuberization Technique for Weight Reduction of Aero-Engine Components
K. Kumar, Triveni Engineering & Industries , IND

Session 1C - Fatigue/Fracture/Durability 1
Chair: J. Reijmers, Nevesbu, NED
Fatigue Life Calculation for Military Vehicles Under Real Service Conditions
G. Willmerding, Steinbeis Transferzentrum New Technologies in Traffic Engineering, GER
Durability Analysis of a Harvesting Vehicle
A. Kristensen, Aalborg University, DEN
Dynamic and Fatigue Analysis of Structural Components and Subsystems Using an Equivalent Load Method
– A Case Study
A. Bevan, Manchester Metropolitan University, GBR
Numerical Investigations of Fatigue Crack Growth in Shafts
A. R. Maligno, University Nottingham, GBR
Prediction of Crack Growth in Bridge Roller Bearings
N. K. Prinja, Amec Nuclear, GBR

12:50pm **Lunch**

2:20pm - 2:50pm *Chair: P. Newton, NAFEMS*
Keynote Presentation: **State of Research, Challenges, Future Requirements and Developments for Structures in Aviation**
M. Wiedemann, DLR German Aerospace Center, GER

3:00pm

Session 2A - Materials 1
Chair: N. K. Prinja, Amec Nuclear, GBR
A Robust Methodology to Calibrate Crash Material Models for Polymers
H. Lobo, DatapointLabs, USA
Computer-Aided Modeling of the Dynamic Behavior of Polymers: Material Properties Obtained from Transmissibility Curves
C. Pagliosa, Nokia Institute of Technology, BRA
Advanced Simulation of Nonlinear Elastic Materials
J. Hurtado, Simulia, USA

Session 2B - Optimization 2
Chair: M.-C. Oghly, Enginsoft France, FRA
Application of Structural Optimization Software for Ceramic Components
M. Wagner, University Stuttgart, GER
Design Optimization of an Intake Port
A. Boland, Aansys, USA
Structural Topology Optimization Using Finite Element Based Level Set Methods
M. Y. Wang, The Chinese University of Hong Kong, CHN
Integrated Topology and Controller Parameter Optimization in Dynamic Systems
A. Albers, University Karlsruhe, GER

Session 2C - Integration 1
Chair: J.-F. Imbert, Airbus, FRA
Integrated Design, Search and Optimization For All
A. de Souza, Dezineforce, GBR
Advanced Simulation Methodologies for Optimizing the Driving Dynamics of Intelligent Vehicle Systems
S. Donders, LMS International, BEL
Design for Six Sigma & Reliability of Washing Machine Plastic Lid
L. Ballesteros Martínez, Mabe, MEX
Better Designs through Finite Element Simulation
K. S. Raghavan, Infotech Enterprises, IND
Simulation and the Creative Process – A New Paradigm
U. Schramm, Altair Engineering Inc., USA

4:20pm **Refreshment Break and Product Showcases: Siemens, Autodesk**

5:00pm 6:20pm

Session 3A - Materials 2
Chair: Z. Guo, Sente Software, GBR

Workshop / Discussion

Session 3B - Optimization 3
Chair: H. Müllerschön, DYNAmore, GER
Optimization and Sensitivity Methods for Finite Element Models
L. Wright, National Physical Laboratory, GBR
Structural Optimization of Chassis and Engine Parts
– the Nonlinear Multidisciplinary Challenge
B. Lauber, FE-Design, GER
Benefits of Structural Optimisation in the Aerospace Design Process: Recent Industrial Applications on Composite Structures
U. Schramm, Altair Engineering, USA
Kinematic Optimization of an Automotive Door
A. Harrich, Graz University of Technology, AUT

Session 3C - Environmental Issues
Chair: M. Jicha, University of Technology Brno, CZE
Design of Flue Gas Scrubbers using CFD Methods
U. Maatje, Hitachi Power Europe, GER
Exhaust Gas Dispersion Modeling around Offshore Platforms
S. Ducruix, Fluidyn France / Transoft International, FRA
CFD Model of Flue Gas Desulfurization Reactor
M. Jicha, Brno University of Technology, CZE
CFD Modelling of a Petrochemical Tank Loss of Containment and its Consequences
S. Ducruix, Fluidyn France / Transoft International, FRA

6:30pm -7:00pm **Panel Discussion with refreshments**
Chair: C. Stavrinidis, European Space Agency, NED; Chairman of the NAFEMS Council and T. Morris (NAFEMS CEO)
Panellists:
- J. Leuridan, Executive Vice-President and CTO, LMS International, USA
- A. de Rouvray, Chairman and CEO, ESI Group, USA
- B. Engelmann, Vice President and CTO, Simulia, USA
- J. Marczyk, Founder of Ontonix, ITA
- L. Komzsik, Chief Numerical Analyst, Siemens PLM Software, USA
- R. Sadeghi, CTO, MSC.Software, USA
- U. Schramm, CTO HyperWorks, Altair Engineering, USA

8:00 pm **Optional Dinner**

Invited Speakers

J. Leuridan
Executive VP and CTO,
LMS International

A. de Rouvray
Chairman and CEO,
ESI Group

B. Engelmann
VP and CTO,
Simulia

R. Sadeghi
CTO,
MSC.Software

Keynote Speaker

Martin Wiedemann

DLR German Aerospace Center, Germany

Prof. Dr.-Ing. Martin Wiedemann is head of the Institute of Composite Structures and Adaptive Systems

1980 - 1986	Scientist at the Institute for Space and Aviation, Technical University Berlin
1991	Promotion „Sensitivity analysis in the measurement technique with heat waves for determination of thermal properties in micro structures"
1989 - 1992	Assistant at the Institut for Space and Aviation, TU Berlin, Development of computer programs for dynamic calculations
1992 - 2007	Scientist at Airbus
1999 - 2001	Head of Structure Mechanics Department DA-EMA, Site Germany Hamburg
2001	Head of Specific Design Work Structure Department ESGA, Site Germany Hamburg
2001 - 2004	Head of Specific Design Work Structure, ESG, and Site Representative Structure, Site Germany, Vice President
2004 - 2005	Head of Development Processes and Payload Accommodation Architect, Site Germany / France, Vice President
2005 - 2007	Chief-Engineer A400M ACMT IFA&VTP, Site Germany Bremen, Vice President
Since 2007	Full Professor, Adaptronics, Technical University Braunschweig
Since 2007	Head of DLR Institute of Composite Structures and Adaptive Systems, Braunschweig

Session 1D - Welding

Chair: J. Wood, University of Strathclyde, GBR

Accurate Thermo-Mechanical Modelling of Friction Stir Welding Using Simple Material Data and Commerical CFD Software
S. Smith, TWI, GBR

The Structural Behaviour of an Inertia Friction Welding Machine
M. Lotz, University Munich, GER

Monitoring and Simulation of Laser Welding for Industrial Applications
W. Schulz, Fraunhofer Institute ILT, GER

Multiphysics Models for Friction Stir Welding Simulation
D. Mackenzie, University of Strathclyde, GBR

An Assessment of Modelling Assumptions in the Prediction of Residual Stresses Following an Eight Pass V-Groove Tig Weld
I. Symington, Serco, Technical and Assurance Services, GBR

By Courtesy of Fundación ITMA
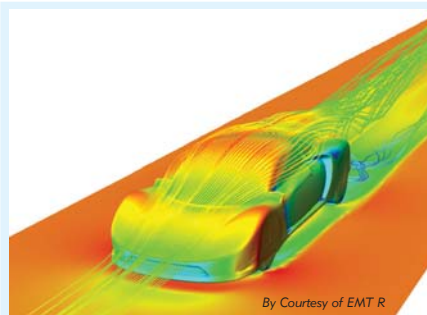
Session 2D - Manufacturing 1

Chair: I. Pérez, Labein-Tecnalia, ESP

Extrusion Benchmark 2007
D. Pietzka, University Dortmund, GER

Simulation of the Hotforming Process
M. Skrikerud, ESI Group, FRA

Analyses of Roll Bending Processes Based on Finite Element Simulation
V.-N. Le, Ecole de Technologie Superieure, CAN

Evaluation of Residual Stress Distribution in Laser Sintered Gas Turbine Engine Blades
U. Chandrasekhar, Gas Turbine Research Establishment, IND

HDW
By Courtesy of Howaldtswerke-Deutsche Werft AG

Session 3D - Manufacturing 2

Chair: U. Chandrasekhar, Gas Turbine Research Establ., IND

Two Different Approaches to the Flowforming Simulation Problem
I. Pérez, Labein-Tecnalia, ESP

Cutting Parameters Optimization through an Advanced CAE-CAM Procedure
M. Parodi, University Salento, ITA

Simulation of Part Distortions Resulting from Heat Input During Grind Hardening
T. Föckerer, Technical University Munich, GER

Studies of Tube Drawing, Tube Sinking and Tube Extrusion Process Using Finite Element Analysis
M. Sendilkumar, Tube Investments of India, IND

By Courtesy of EMT R

Final program could be subject to alterations.

8:30am -9:00am
Chair: R. Dreisbach, The Boeing Company, USA
Keynote Presentation: **CAE 2015 – Current Status, Directions and Challenges**
E. Schelkle, Dr. Ing. h.c. F. Porsche AG and Automotive Simulation Center Stuttgart e.V., GER

9:10am -10:30am

Session 4A - Crash / Impact / Passive Safety 1
Chair: M. Rassaian, The Boeing Company, USA, and R. Doubrava, VZLU, CZE
Numerical Simulation of 737 Fuselage Section Drop Test
M. Rassaian, The Boeing Company, USA
The Influence of Impact on the Real Aircraft Structure
R. Doubrava, VZLU, CZE
Study of Impact of Projectiles on Mild Steel Armour Plates Using Three Different Finite Element Modelling Approaches
R. Munusamy, University Leeds, GBR
Design and Analysis of Lightweight Energy Absorbers for a Rail Vehicle Cab
M. Grasso, Newcastle Centre for Railway Research (NewRail), GBR

Session 4B - Education and Training 1
Chair: C. Stavrinidis, European Space Agency, NED

Special Panel Session including an introduction to the NAFEMS Skills Management Initiative
Panelists:
- A. de Rouvray, ESI Group, FRA
- D. Ewins, University of Bristol, GBR
- P. Gaudenzi, University Rome, ITA
- J.-F. Imbert, EADS/Airbus, France
- J. Leuridan, LMS International, BEL
- R. Matela, The Open University, GBR
- S. Odorizzi, EnginSoft, ITA
- D. Robinson, Psi-tran, GBR
- J. Wood, University of Strathclyde, GBR
- M. Zehn, Technical University Berlin, GER

Session 4C - Simulation Data Management 1
Chair: G. Wills, Siemens PLM Software
Using a Platform Approach to Increase the Availability of Material Data for CAE
H. Lobo, Matereality, USA
Compression of NVH Simulation Results
J. Lidzba, Fraunhofer Institute SCAI, GER
Product Performance Life Cycle Management
A. Joshi, Altair Engineering, USA
SimPDM – A Harmonized Approach for the Strategic Implementation of Simulation Data Management
J. Malzacher, University Darmstadt, GER

10:30am Refreshment Break and Product Showcases: Altair, cd-adapco

11:10am -12:30am

Session 5A - Crash / Impact / Passive Safety 2
Chair: M. Rassaian, The Boeing Company, USA, and R. Doubrava, VZLU, CZE
Analysis of Fluid-Structure Interaction Using Meshless Particle and Finite Element Methods: Biomechanics Applications
I. Lee, Hyundai Motor Company, KOR
Coupled FEM Calculations – a CAE Tool to Improve Crash-Relevant Automotive Body Components by Local Hardening
K. Wolf, Fraunhofer Institute SCAI, GER
Crashworthiness of Composite Structures: Numerical and Experimental Guidelines
M. Rassaian, The Boeing Company, USA
Optimization Study of a Parametric (CAD) Vehicle Bumper Subsystem under Multiple Load Cases
T. van Langenhove, LMS, BEL

Session 5B - Education and Training 2
Chair: C. Stavrinidis, European Space Agency, NED

cont´d

Special Panel Session including an introduction to the NAFEMS Skills Management Initiative

Session 5C - Simulation Data Management 2
Chair: R. Dreisbach, The Boeing Company, USA
Virtual Testing for Highlift Systems
T. Krüger, Airbus Deutschland, GER
3D-Visualization and Communication Solutions for CAE Workflows
R. Habig, Ceetron, GER
Integrated Process, Data & Resources Management – a Solution for the Contemporary CAE Workflows
S. Seitanis, BETA CAE Systems, GRE

12:30pm Lunch

1:40pm -2:10pm
Chair: M. Zehn, Technical University Berlin, GER
Keynote Presentation: **Lessons Learned from Earth Simulator**
T. Yasuki, Toyota Motor Corporation, JAP

2:20pm -3:40pm

Session 6A - Composites Symposium - 1
Chair: E. Nelson, Firehole Technologies, USA
Composite Crush Simulation – Emerging Technologies and Methodologies
A. Prior, Simulia, GBR
Simulation Tools for Progressive Damage
J. San Millan, INTA - Structures and Mechanisms Area, ESP
Nonlinear Failure Analysis of a Fibre Reinforced Composite Curved Beam with Delamination and Ply Degradation
C. Brauner, Samtech Deutschland, GER
Thickness Dependence of Out-of-plane Strength in a Curved Composite Beam
C. Hühne, DLR German Aerospace Center, GER

Session 6B - Education and Training 3
Chairs: J. Wood, University of Strathclyde, GBR, R. Matela, The Open University, GBR

Workshop / Discussion:
CAE Academy, EnginSoft's Training and Recruitment Initiative

Session 6C - Multibody Simulation
Chairs: A. Puri, Selex, GBR; M. Oppelt, TU Hamburg, GER
Astronaut Exercising Device Dynamics Analysis and Validation Based on Multibody Software
M. Toso, ESA/Estec, NED
Model Order Reduction Package for Coupling Rigid and Elastic Multibody Dynamics
P. Koutsovasilis, Technical University Dresden, GER
A General Approach for the Coupling of Independent Analysis Components: Applied to Multi Body Dynamics and Non Linear Finite Elements
S. Rennich, MSC.Software, USA
Multi-Objective Optimization of Multibody Systems in Circuit Breaker Applications
S. Kotilainen, ABB, SUI

3:40pm Refreshment Break and Product Showcases: ESI Group, Fraunhofer SCAI

4:20pm - 5:40pm

Session 7A - Composites Symposium - 2
Chair: R. Dreisbach, The Boeing Company, USA
Submarines with Composite Pressure Hulls
J. Reijmers, Nevesbu, NED
Failure Analysis of Large Composite Space Structures Using Multicontinuum Theory
E. Nelson, Firehole Technologies, USA
A Comprehensive Process for Composite Design Optimization
U. Schramm, Altair Engineering, GER
Rupture Test of an Airbus Vertical Tail CFRP Fitting: Design of Loading and Tracking of Test Results by Non Linear FEA
U. Barthold, Cadfem, GER

Session 7B - Fatigue/Fracture/Durability 2
Chair: A. Prior, Simulia, GBR
Industrial Applications of the Extended Finite Element Method for Crack Propagation Simulations in Aeronautical Structures
M. Duflot, Cenaero, BEL
Fracture of Thin Structures
F. Oikonomidis, University Bristol, GBR
Computational Fracture Mechanics to Model Toughness of Modern Pipeline Steels
F. Van den Abeele, OCAS NV, BEL
An Experimental and Finite Element Study of the Low Cycle Fatigue Failure of a Galvanized Steel Lighting Column
J. Wood, University Strathclyde, GBR

Session 7C - Integration 2
Chair: S. Saltiel, Beta CAE Systems, GRE
Integrative Mechatronic Design Using Multi-Body-Dynamic-Simulations
M. Oppelt, Siemens Energy and Automation, USA
Cost Reduction During an Aircraft PropulsionSystem Development Phase
F. Ribour, Ingeliance, FRA
Recent Integration Achievements in Virtual Prototyping for the Automotive Industry
F. el Khaldi , ESI Group, FRA
Openness and Modularity of Design and Analysis Tools
M. Grau, Prostep ITS, GER

8:00pm **Congress Banquet**
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 the registration form on the last page.

Final program could be subject to alterations.

Session 4D - Software Methods 1
Chair: C. Durand, EDF, FRA
FE-Formulations for Real-Time Simulation of Large Deformations
D. Marinkovic, Technical University Berlin, GER
Model Order Reduction Method Applied to Modal Analysis of Cyclic Symmetry Structures
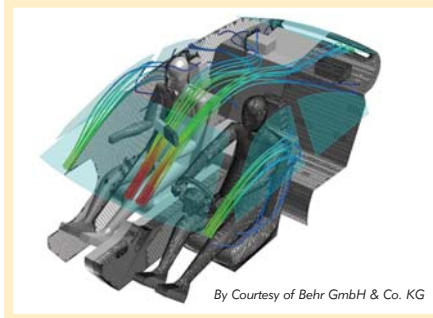A. Beley, Ansys, USA
4-Node Hybrid Tetrahedron Elements for Implicit and Explicit Solutions
A. Beley, Ansys, USA
Energy Relaxation Method for High Speed Flow Problems
S. P. Nagdewe, Andong National University, KOR

By Courtesy of Behr GmbH & Co. KG

Session 5D - High Performance Computing (HPC)
Chair: M. Duflot, Cenaero, FRA
Accelerating Commercial FEA Software through High-Performance Computing
V. Belsky, Simulia, USA
Glyph and Streamline Placement Algorithms for CFD Simulation Data
R. S. Laramee, Swansea University, GBR
GPGPU Acceleration on Field and Feature} Extraction from Unstructured Simulation Data
S. Zhang, Mercury Computer Systems, USA
Parallel Processing Efficiency of Computational Fluid Dynamics (CFD) Simulations
M. Shakaib, NED University of Engineering and Technology, PAK

Session 5E - NAFEMS Membership and General Information
Chair: P. Steward, NAFEMS

Information about NAFEMS membership - opportunities and tailored options

Session 6D - Computational Fluid Dynamics
Chair: A. de Souza, Dezineforce, GBR
Transport and Deposition of Aerosol in Human Airways – Steady and Transient
M. Jicha, University of Technology Brno, CZE
Computational Fluid Dynamics (CFD) Aided Design of a Shower Pump
S. Chiwanga, PDD Group, GBR
The Application and Validation of a CFD Thermal Model for Use within Aircraft Fuel Systems
R. Devine, Airbus UK, GBR
Horizontal Well Performance Flow Simulation CFD Application
F. Zeboudj, University Algeria, ALG

Session 6E - Simulation Data Management 3
Chair: O. Tabaste, MSC.Software, FRA

Workshop / Discussion

SDM Frameworks in Airbus Engineering Structure
Workshop contribution by J.-M. Delahaye, Airbus France, FRA
Why Manage the CAE data? An Analyst's View
Workshop contribution by G. Wills, Siemens PLM, USA
SDM-PLM integration / Gaps between SDM Solutions and CAE Expectations
Workshop contribution by J.-M. Delahaye, Airbus France, FRA

Session 7D - Stochastic Analysis
Chair: J. Marczyk, Ontonix, ITA
Simulation of Aircraft Cabin Interior Considering Uncertain Load Conditions
D. Vogt, EADS Innovation Works Germany, GER
Robust Brake-Feel Design
U. Sellgren, Royal Institute of Technology (KTH), SWE
The Use of the LDL^T Decomposition for Stochastic Simulation
A. Notin, Cetim Senlis - Pôle DSL, FRA
Robustness Optimization of Suspension Fatigue Life Using Multibody Simulation
S. Donders, LMS International, BEL

Session 7E - Computational Fluid Dynamics
Chair: A. de Souza, Dezineforce, GBR, chair of the NAFEMS CFD Working Group

Workshop / Discussion

Keynote Speakers

Erich Schelkle

Dr. Ing. h.c. F. Porsche AG and Automotive Simulation Center Stuttgart e.V., Germany

Senior Manager Strategy and Methods CAE Body - Porsche AG and General Manager Automotive Simulation Center Stuttgart e.V.

Prof. Dr. Erich Schelkle took his engineer's degree (Dipl.-Ing.) in Air and Space Technology at the University of Stuttgart, Germany, in 1974. Afterwards he worked as a research assistant at the Institute of Static's and Dynamics of Air and Space Structures (ISD) at the University of Stuttgart (Prof. Dr. Dr. h.c. mult. John H. Argyris), Germany, for 8 years. His principal work was the theoretical derivation of nonlinear finite element formulations of beam, plate and shell structures and the development of efficient solving algorithms for nonlinear finite element programs.

He took his engineer's degree (Dipl.-Ing.) in Static's and Dynamics of Air and Space Structures at the University of Stuttgart in 1981. The theme of his thesis was: "The Calculation of Stability- and Post Buckling Behavior of Thin Shell Structures With the Finite Element Method." Prof. Dr. Schelkle has worked at the Porsche Research & Development Center at Weissach since 1981 focusing on the implementation of Computer Aided Engineering (CAE) tasks in the development process. One of the crucial subjects was related to nonlinear FE calculations regarding vehicle crashworthiness and occupant safety.

Prof. Dr. Schelkle has been in charge of the Structural Analysis Department in Full Vehicle Development since 1989. At the time being he holds the position of a Senior Manager for Strategy and Methods with regard to CAE-body. In this function he is also responsible for the testing and introduction of new simulation methods. A special focus is on the implementation of "Virtual Prototyping" at Porsche.

Prof. Dr. Schelkle has had a lectureship in Methods of Computational Science and Engineering at the University of Stuttgart since 1992, lecturing about "Computer-aided Simulation Methods (MCAE) in a Modern Development Process". In April 2001, he was awarded the title of an honorary Professor.

Prof. Dr. Schelkle has also been the Chairman of the Finite Element working group of the German Automotive Research Association (FAT) in Frankfurt/Main since 1994.

Further, he holds the position of the Managing Director of the new founded Automotive Simulation Center Stuttgart e.V. (ASCS) since July 2008 and he is additional a consultant for national and European research projects.

Tsuyoshi Yasuki

Toyota Motor Corporation, Japan

Mr. Tsuyoshi Yasuki, project general manager with Toyota Motor Corporation, leads crashworthiness, occupant protection, human FE modeling and computational fluid dynamics areas of Advanced CAE division.

Mr. Yasuki has 27 years experiences in developing new methodologies, validation, application of large scale computing systems including automotive body structures and chassis systems subject to static and dynamic loading conditions.

Mr. Yasuki holds a B.S. and an M.S. in naval architecture engineering from Osaka University.

Preliminary Agenda, June 19 – Friday

8:30am *Chair: F. Costes, NAFEMS, FRA*
Keynote Presentation: Design, Validation and Verification of Large Structures - Examples from Shipbuilding Industry
F. Besnier, Principia, FRA

09:10am -10:30am

Session 8A - Composites Symposium 3
Chair: F. M. Jensen, Risoe National Laboratory-DTU, DEN
Lifetime Prediction for Structural Components made from Composite Materials – Industrial View & One Idea
R. G. Cuntze, formerly MAN-Technologie, GER
A New Nonlinear Beam Finite Element for Large Wind-Turbine Composite Blades
D. A. Saravanos, University Patras, GRE
Active Damping of Composites
R. Helfrich, Intes, GER
Crashworthiness of Composite Structures: Numerical and Experimental Guidelines
M. Rassaian, The Boeing Company, USA

Session 8B - Multi-Disciplinary Analysis 1
Chair: D. MacKenzie, University of Strathclyde, GBR
Multi-Disciplinary Simulation of Internal ARC Fault
R. Perez, Schneider Electric Industries SAS, FRA
Aero-Acoustics - Noise Prediciton of Climate Ducts
A. Boland, Ansys, USA
Structural - Thermal - Electric Coupled Field Analysis of the Spes Target Heating System - Ion Source Assembly and Comparison with Experimental Data
M. Manzolaro, University Padova, ITA
Fluid Structure Interaction Analysis of the Airship Structure
A. Tripathi, Fluidyn, FRA

Session 8C - Software Methods 2
Chair: F. Costes, NAFEMS, FRA
Advances in Eigenvalue Solutions and Linear Dynamics Capabilities with Particular Application to Automotive Noise and Vibration Analysis
V. Belsky, Simulia, USA
Simulation Methods in New Concepts for Data Test-Analysis Comparisons
P. Pawlewski, Poznan University of Technology, POL
A Fast and Fully Automated CFD Meshing Solution for Dirty CAD Geometries
D. Vinteler, ESI Group, GER
Mesh-Based Modeling Towards Engineering Analysis
S. Pena Serna, Fraunhofer Institute IGD, GER

10:30am Refreshment Break and Product Showcases: LMS, MSC.Software

11:10am -12:30pm

Session 9A - Composites Symposium 4
Chair: K. Rohwer, DLR German Aerospace Center

Workshop / Discussion:
Analysis and Simulation of Composite Structures, including Damage and Failure Simulation

Session 9B - Multi-Disciplinary Analysis 2
Chair: M. Moatamedi, Cranfield University, GBR, member of the NAFEMS Multi-Physics Working Group, and K. Wolf, Fraunhofer SCAI, GER
Advanced FSI-Simulations Using a Pseudo-Cyclic Shell Structural Model for Flutter Motion in Transonic Flows
A. Tripathi, Fluidyn, FRA

Workshop / Discussion:
Multi-Physics Analysis and Multi-Physics Simulation - Advanced Coupling Algorithms and Strategies

Session 9C - Verification & Validation
Chair: C. Rogers, CREA, GBR, chair of the Analysis Management Working Group
Challenges in Simulating Molded Micro Components and Systems
A. Albers, University Karlsruhe, GER
Updating of Simulation Model using Experimental Modal Analysis
D. Mariappan, TechPassion Technologies Pvt., IND

Workshop / Discussion:
Substituting Physical Test with Simulation

12:30pm Lunch

1:30pm -2:30pm *Chair: N. Knowles, GBR*
Keynote Presentations: Future Trends in Computer-Aided Engineering
Jacek Marczyk, Ontonix, ITA

Industrial Finite Element Analysis – Evolution and Current Challenges
L. Komzsik, Siemens PLM Software, USA

2:40pm -3:40pm

Session 10A - Industrial Applications
Chair: G. Steven, Strand7 Pty, AUS
Free Software for Computational Mechanics
C. Durand, EDF, FRA
Simulation of Complex Non-linear Structures in Large Scale Analysis
N. Jaksic, Max-Planck-Institute for Plasma Physics, GER
Mechanical Development of an UAV
I. Armendariz Benitez, Instituto Nacional de Técnica Aeroespacial (INTA), ESP

Session10B - Heat Transfer
Chair: G. Miccoli, Imamoter, ITA
Prediction of Turbulent Heat Transfer for Industrial Drying Processes – Turbulence Model Assessment
Q. Ye, Fraunhofer Institute IPA, GER
Hybrid Finite Analysis Simulations of Steady Laminar Natural Convection in Horizontal Concentric Annuli
S. Huang, Wuhan University, CHN

Session 10C - Contacts
Chair: R. Helfrich, Intes GmbH, GER
Rotating Bending Stresses in Shrink-fit Assemblies Using FEM
V.-N. Le, Ecole de Technologie Superieure, CAN
Some NAFEMS Contact Benchmarks Revisited in Detail
G. Steven, Strand7 Pty Ltd, AUS
General Contact for Implicit FEA
H. Harkness, Simulia Corp., USA

3:40pm Refreshment Break and Product Showcases: ANSYS

4:00pm -4:15pm **Best paper awards**
*Chair: M. Zehn, Technical University Berlin, GER,*

Most Innovative Use of Simulation Technology — Sponsored by DS SIMULIA

Best Practical Use of Simulation Technology — Sponsored by SIEMENS

Best Presented Paper — Sponsored by ANSYS

Farewell
M. Zehn, Technical University Berlin, GER
Vice chairman of the NAFEMS Council

Close of Conference

Final program could be subject to alterations.
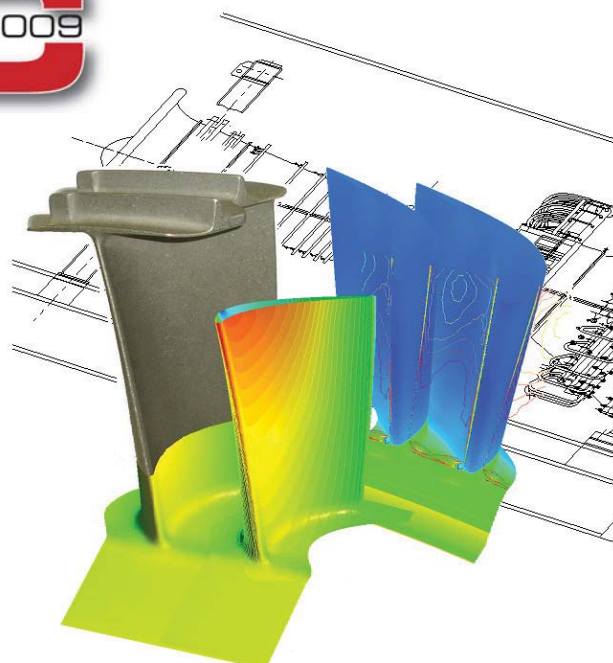
Session 8D - Civil Engineering / Seismic / Geo
Chair: N. Knowles, GBR
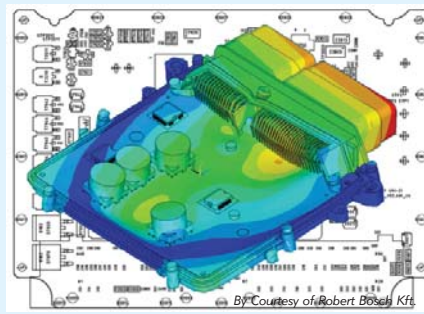Geotechnical FEA with Eurocode F7
A. Lees, University Cyprus / Geofem, CYP
Remaining Load Capacity of a Two-Cell Box Girder
Concrete Bridge
A. de Boer, Ministry of Transport, Public Works and
Water Management, NED
Efficient Simulation of Built Environments Using Open
Source CFD Applications
F. Campos, Icon, GBR

By Courtesy of Robert Bosch Kft.

Session 9D - Integration 3
Chair: D. Vogt, EADS Innovation Works, GER
Avoiding the Traps of CAD/CAE Integration:
Real Life Experiences from Integration Projects
M. Grau, Prostep ITS, GER
Efficient Computational Proceeding
J. Cwifeld, OKB, SWE
Why Integrated Analysis is Essential for the Management
of Change throughout the Product Design Lifecycle
G. Wills, Siemens PLM Software, USA
Automatic Producibility Analysis of the Draw Bending
of Aluminium Tubes with Several Bends
J. Johansson, Jönköping University, SWE
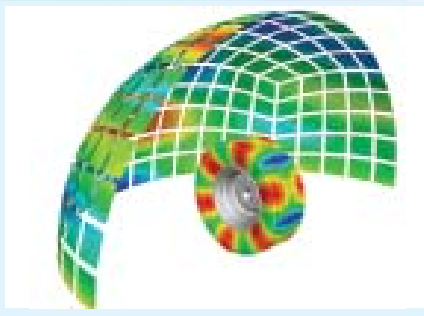
Session 10D - Emerging Technologies and Business Needs
Chair: F. Peeters, Simulia, NED
Engineering Intelligence: Concept to Reality
A. Joshi, Altair Engineering, Inc., USA
Nonlinear Simulation of Large-Scale Aircraft Structures –
Implications for Certification Methodology and High-
Performance Computing Infrastructure
A. Prior, Simulia, GBR
Virtual Prototyping – An Analyst's Dream:
Progress, Challenges and Future Path
S. Choudhry, MSC.Software Corporation, USA

*By Courtesy of
Nuovo Pignone S.p.A.*

Keynote Speakers

François Besnier

Principia, France

Since 1970, Francois Besnier has acquired a huge expertise in the field of numerical simulation applied to industrial problems and is recognized as one of the leading figures in the engineering analysis community in France. His skills extend from numerical methods, particularly finite element methods and related software development (CAD integration), to solving industrial problems and analyst team management.

The most important projects and industrial fields he has been involved in include:
Energy and nuclear: structural study of nuclear power plants and nuclear reactors components, static, thermal and thermo mechanics, seismic, fatigue, accidental situations, ASME and RCCM code checks, pipes (EDF, CEA, NERSA and subcontractors).
Aerospace; dynamic studies and developments linked to the Ariane programs (launcher vibrations, fluid structure coupling), satellites (thermo mechanic, dimensioning, vibrations). Airplane and helicopter projects (Airbus, Belouga, HN90).
Car and surface transportation: static, vibration, comfort, fatigue of cars, car components, trucks and carriages.
Shipbuilding: scientific manager of a R&D and engineering company in maritime industries, including monitoring and sea trial measurements.
Engineering and structural analysis software development team management.
Technical and scientific direction of services companies.
R&D project definition and management in shipbuilding industry.

Francois Besnier has presented courses and lectures for over 30 years in the most prestigious French Engineer Schools, including Ecole Centrale de Paris, Nantes, Lyon, Ecole Nationale des Ponts et Chaussées, Faculté des Sciences de Nantes, ANAST (Liège)… François is a well-respected consultant with a wealth of industrial experience.

Jacek Marczyk

Ontonix S.r.l., Italy

Dr. Marczyk, the founder of Ontonix, has over twenty five years of experience in Computer-Aided Engineering in the aerospace, automotive and off-shore industries in which he established and led various successful international R&D projects. He holds an MS in Aeronautics Engineering (Politecnico di Milano), MS in Aerospace Engineering (Politecnico di Torino) and a Ph.D in Civil Engineering (Universidad Politecnica de Catalunya).

In the mid 1990s he has introduced to the industry the first commercial tool for large-scale stochastic simulation, ST-ORM. He has actively pioneered innovative methodologies for uncertainty and complexity management and has published four books on stochastic and nonlinear mechanics.

During his career, he has worked for EADS/CASA (Manager High Performance Computing Applications), BMW AG, Centric Engineering Systems, ESI (Director, Advanced Mechanics Development), Silicon Graphics (Director, Integrated Simulation), Tecnomare, EASi Engineering (Vice President, Advanced Technologies) and MSC Software (Chief Scientist). While at MSC, he led the development of award-winning MSC.Robust Design.

Louis Komzsik

Siemens PLM Software, USA

Dr. Louis Komzsik is Chief Numerical Analyst, Office of Architecture and Technology, Siemens PLM Software

Louis Komzsik is a graduate of the Technical University of Budapest, Hungary, with a doctorate in mechanical engineering and worked in the industry for almost four decades, including 20 years at the MacNeal-Schwendler (now MSC Software) Corporation. He is currently the chief numerical analyst in the Office of Architecture and Technology at Siemens PLM Software.

His industry accomplishments include computational methods that became de-facto industrial standards in the area of commercial finite element analysis tools such as NASTRAN. He is the original author of the NASTRAN Numerical Methods Handbook, first published by MSC almost 20 years ago. His book on the Lanczos method published by SIAM has also been translated to Japanese, Korean and Hungarian.

He captured his industrial experience and expertise in an engineering mathematics trilogy, starting with a 2004 book about Computational Techniques of Finite Element Analysis, currently in its second edition. The second book titled Approximation Techniques for Engineers was published in 2006 and the closing book of Applied Calculus of Variations for Engineers appeared in 2008.

He is an editor of the International Journal of Engineering with Computers, published by Springer Verlag and serves on the editorial board for the International Journal of Computer Aided Design, published by Elsevier Sciences.
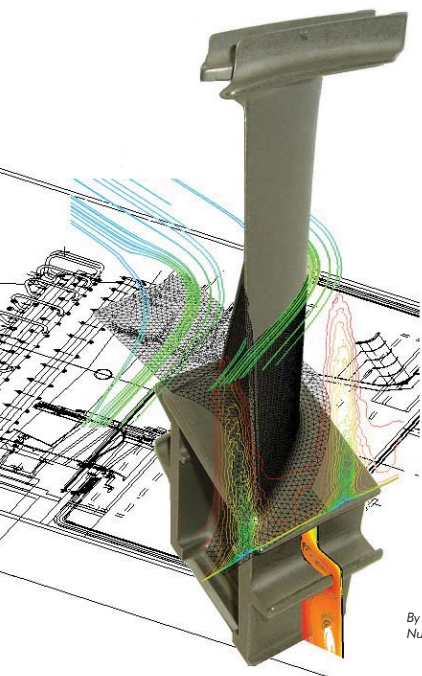
Additional Courses, Workshops and Parallel Activities

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.

Wednesday, June 17

Workshop / Discussion

Materials

Chaired by NAFEMS and Dr. Zhanli Guo, Sente Software Ltd., GBR

Session 3A

Panel Discussion with refreshments

Question & Answers by CTO´s and …

Chaired by C. Stavrinidis, European Space Agency, NED, and Tim Morris, NAFEMS
- J. Leuridan, Executive Vice-President and CTO, LMS International, USA;
- A. de Rouvray, Chairman and CEO, ESI Group, USA
- B. Engelmann, Vice President and CTO, Simulia, USA
- J. Marczyk, Founder of Ontonix, ITA
- L. Komzsik, Chief Numerical Analyst, Siemens PLM Software, USA
- R. Sadeghi, CTO, MSC.Software, USA
- U. Schramm, CTO HyperWorks, Altair Engineering, USA

Thursday, June 18

06:30 - 7:00 pm

Panel Discussion / Workshop

Education and Training

Chaired by C. Stavrinidis, European Space Agency, NED, and P. Newton, NAFEMS
- A. de Rouvray, ESI Group, FRA
- P. Gaudenzi, University Rome, ITA
- J. Leuridan, LMS International, BEL
- S. Odorizzi, EnginSoft, ITA
- J. Wood, University of Strathclyde, GBR
- D. Ewins, University of Bristol, GBR
- J.-F. Imbert, EADS/Airbus, France
- R. Matela, The Open University, GBR
- D. Robinson, Psi-tran, GBR
- M. Zehn, Technical University Berlin, GER

Session 4B - 5B

Workshop / Discussion

Education and Training

CAE Academy, EnginSoft´s Training and Recruitment Inivitative Chaired by J. Wood, University of Strathclyde, GBR, and R. Matela, The Open University, GBR

Session 6B

Workshop / Discussion

Simulation Data Management

Chaired by NAFEMS and O. Tabaste, MSC.Software, FRA

Session 6E

Symposium + Workshop / Discussion

Analysis and Simulation of Composite Structures, including Damage and Failure Simulation

Chaired by members of the Symposium Committee

Session 6A - 7A

Workshop / Discussion

Computational Fluid Dynamics

Chaired by A. de Souza, Dezineforce, GBR

Thursday, June 18, Session 7E

Friday, June 19

Workshop / Discussion

Engineering Analysis Quality, Verification and Validation

Chaired by C. Rogers, CREA, GBR

Session 9C

Symposium + Workshop / Discussion

Analysis and Simulation of Composite Structures, including Damage and Failure Simulation

Chaired by members of the Symposium Committee

Session 8A - 9A

Discussion

Multi-Physics Analysis and Multi-Physics Simulation - Advanced Coupling Algorithms and Strategies

Chaired by M. Moatamedi, Cranfield University, GBR, and K. Wolf, Fraunhofer SCAI, GER

Session 9B

Please find more information as well as detailed workshop descriptions at www.nafems.org/congress

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SIMULIA is the Dassault Systèmes brand that delivers a scalable portfolio of Realistic Simulation solutions including the Abaqus product suite for Unified Finite Element Analysis, multiphysics solutions for insight into challenging engineering problems, and SIMULIA SLM for managing simulation data, processes, and intellectual property.

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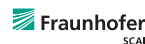
Organization

Congress Hotel

Creta Maris Conference Center
Greece-Crete
700 14 Limin - Hersonissos
Greece
T: +30 28970 27110
F: +30 28970 27088
E: creta@maris.gr
W: www.maris.gr

The Creta Maris Conference Center is located near Heraklion (Iraklio), on the island of Crete, Greece. The conference and reception halls in Creta Maris are equipped with cutting–edge technological installations, recreational facilities and other amenities, ensuring that delegates at the NAFEMS World Congress 2009 will experience truly world-class surroundings for a world-class event.

The Conference Center is designed and equipped according to the most contemporary specifications, which are combined with an excellent hospitality infrastructure of the 5-star Creta Maris Hotel, with luxurious recreational hotel facilities and 693 rooms directly connected to the center.

> There are 5100 additional guestrooms to suit all budgets in 21 hotels of 3, 4 & 5 star. Many are available within walking distance. The most distant are a twenty minute drive away.

Location

The Creta Maris Hotel and Conference Center is located in the popular resort of Hersonissos, on the northern side of the Heraklion Prefecture, Crete. Hersonissos is one of the most developed locations in Crete, offering wonderful entertainment venues and stunning beaches. Hersonissos is situated approximately 30 km from Heraklion Town and Port.

Accommodation

Accommodation is available at a discounted rate. Reservations can be **made by requesting the "NAFEMS World Conference 2009"** rate. Please register directly with the hotel. A registration form may be downloaded from www.nafems.org/congress. Cut-off day for blocked rooms was May 19, 2009.
Direct booking at Creta Maris
T: +30 28970 27110, F: +30 28970 27119
E: ksylli@maris.gr (Mrs. Katerina Sylligardaki)
W: www.maris.gr

Creta Maris is a unique combination of Aegean Architecture and luxurious facilities. Situated 24 km east of the Heraklion International Airport, it is close to the Fishing village of Hersonissos, a long sweeping bay of sandy beach and crystal clear water. Creta Maris has been created with loving care and attention to detail, characterising one of the many thousands of villages on the Aegean Islands. A visit to "Thalasso" spa area will offer you the unique opportunity to indulge your senses and benefit from the rich elements of the sea.

Transportation Airport - Creta Maris / Creta Maris - Airport

Duration approx. 30 min.
- Public taxi: approx. 50 Euro/per way/taxi
- Order in advance:
  - taxi (max. 3 adults & 1 child)   40 Euro/per way/taxi
  - bus (tuesday, June 16, 3:00pm & 6:00pm,
    friday, June 19, 4:15pm)   15 Euro/per way/person
  Please order in advance at
    www.nafems.org/congress/attendees/

Social Events Included in the Registration Fee

Cocktail reception & exhibition opening *
Tuesday, June 16, 2009, 19:00 - 21:00

Conference Banquet *
Thursday, June 18, 2009, 20:00 - 23:00

For booking accompanying persons please use registration form on last page or register online at www.nafems.org/congress.

Partner Program

Wednesday, June 17

Aghios Nikolaos, Elounda and Spinalonga Island

Aghios Nikolaos (Bay of Mira-bello), a place for those who like crowds and enjoy wande-ring through the streets and going shopping – Elounda, a pictu-resque fishing village, in a long bay – A trip through sparkling blue waters to the isle of Spinalonga (Venetian fortress, haunting deserted buildings of Europe's last leper colony).
Costs: 55 Euro per person (10:00 - 16:00), include coach trans-portation, English speaking guide, Spinalonga entrance fee and boat fare. Group min. 30 persons, max. 60 persons.

Thursday, June 18

Lassithi plateau, Kera Monastery and Dicti Cave

Plateau of Lassithi (850 highmeters) – Village of Psychro, path to the cave (weather permitting) where Zeus, father of the ancient gods, was born: the cave has some impressive stalactites (one can either walk up the path, or rent a donkey) – Ambelos pass – Monastery of Panagia Kera (hidden school, pretty little church, built in the 11th century).
Costs: 46 Euro per person (10:00 - 16:00), include coach transportation, English speaking guide, cave – monastery entrance fees. Group min. 30 persons, max. 60 persons.

Friday, June 19

Archanes – Wine Tasting and Cooking Lesson with Lunch

Short visit to the small but attractive archaeological museum (impressions of life in the Archanes of Minoan times) – Introduc-tion to the preparation and cooking of Dolmades (vine leaves stuffed with seasoned rice, Cretan cuisine) in a traditional taverna – Taste a variety of local dishes – Visit to a winery and wine tasting.
Costs: 56 Euro per person (10:00 - 16:00), include coach trans-portation, English speaking guide, lunch (menu: starters, salad, main dish, dessert). Group min. 30 persons, max. 60 persons.

Special Excursion Package Offer

Book all the three tours for 126 Euro per person.

Partner Program Registration

Please register online at
www.nafems.org/congress/attractions
or contact our local partner:
Cretan Holidays, Mrs. Kallia Vourexaki,
Mafsolou 201 Str - 71601 Iraklion - Crete - Hellas,
T +30.2810.331.465
F +30.2810.221.548
E k.vourexaki@cretanholidays.gr

Optional Dinner

Wednesday, June 17

Delicious Crete Dinner
Spend an evening enjoying delicious Crete cuisine in a wonderful surrounding. Fur-ther details will be announced in due course.

Costs: 60 Euro per person
For booking please use registration form on last page or register online at www.nafems.org/congress.

Post Congress Tour

Saturday, June 20

Knossos Palace and Heraklion

The most brilliant Aegean is-land civilization was the Cretan or Minoan Civilization, which flourished in Crete mainly in the 3rd and 2nd millennia B C. and took its name from Minos, the legendary king of Knossos. While in other parts of Europe civilization had barely begun to glimmer, the great Minoan kings ruled and Crete became a mighty sea power and had amassed great riches and treasures which allowed it to build between 2200 and 1550 B.C. the renowned Cretan palaces of Knossos where the arts flourished. The Cretans enjoyed home comforts such as running water, bathtubs and complex plumbing systems. The accompanying explanations from your guide will transport you back to the time that myths and legends were made of.
Later on by coach to Heraklion city: Free time. The old front door, the Venetian Harbor, the Loggia and the city's busy out door market are few of the sites someone may enjoy visiting. This city is the ideal place for those who love shopping too.
Costs: 70 Euro per person (09:30 - duration 6 hours), include coach transportation, English speaking guide, entrance fee and lunch (menu: starters, salad, main dish, fruit)
For booking please use registration form on last page or register online at www.nafems.org/congress.

NAFEMS Council

The NAFEMS Council is made up of long-standing NAFEMS members who have actively participated in NAFEMS activities over a period of time. The council takes all policy decisions and manages NAFEMS as a company, directing and controlling the growth and activities of NAFEMS. The council also decide on the direction of future research, controlling the working groups and planning the deliverables schedule for each membership year.

Costas Stavrinidis
 Chairman

Manfred Zehn
Vice Chairman

Rodney L. Dreisbach

David Ellis

Giuseppe Miccoli

Stewart Morrison

Paul Newton

Marie-Christine Oghly

Alexander Ptchelintsev

Anup Puri

Jim Wood

NAFEMS CEO

Tim Morris, CEO

Registration Form

Title _____ Family Name _____ First Name _____

Organisation _____

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Registration

I herewith register for the NAFEMS World Congress, June 16-19, 2009

❑ NAFEMS Member   820 Euro

❑ Non NAFEMS Member Author   1,000 Euro

❑ Standard Delegate Rate   1,100 Euro

In addition I register ...

❑ ___* additional persons for the **cocktail reception**   15 Euro
   & exhibition opening, June 16, 2009

❑ ___* persons for the **optional dinner,** June 17, 2009   60 Euro
   (not included in Congress fee!)

❑ ___* additional persons for the **Congress banquet**   90 Euro
   June 18, 2009

❑ ___* persons for the **Post Congress tour**   70 Euro
   to Knossos - Heraklion, June 20, 2009
   (not included in Congress fee!)

I will probably attend the following sessions/ special session / workshops: _____

Congress 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 May 19, 2009 .**

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/congress