

**Invitation & Agenda**

# NAFEMS European Conference **MULTIPHYSICS SIMULATION**2012

**16 - 17 October 2012 Frankfurt | Germany**

NAFEMS is pleased to announce the first European Multiphysics Conference. The aim of the conference is to give an overview of advances in state-of-the-art methods and to demonstrate the benefits to industry of Multiphysics Simulation within the context of CAE.

The conference will address the development of numerical methods for strongly coupled physical processes in industrial and advanced research applications.

Conference contributions deal with coupling of physical models, but also realisation of multi-scale models, combinations of 1D and 3D simulations and extending multiphysics simulation to system levels.

The ultimate goal is to bring together the multiphysics community consisting of researchers from academia, engineers from industry and commercial solution providers to discuss the current status and to drive the future of multiphysics and multi-scale simulations.

[www.nafems.org/mp2012](http://www.nafems.org/mp2012)

The conference will be organized by NAFEMS in collaboration with



MULTIPHYSICS  
The International Society  
of Multiphysics

[www.multiphysics.org](http://www.multiphysics.org)

**Fraunhofer**  
**SIMULATION**

[www.nusim.fraunhofer.de](http://www.nusim.fraunhofer.de)

Tuesday, 16<sup>th</sup> October 2012

09:00 Registration and exhibition opening

**Session 1 - Welcome / Keynotes**

- 10:45 **Welcome and NAFEMS Introduction**  
Conference Scientific Committee  
T. Morris (NAFEMS)
- 11:00 **Moisture, Temperature and Deformation Interaction in Liquid Food Packaging Systems**  
J. Tryding (Tetra Pak, SWE)
- 11:35 **Multiphysics Trends in Aerostructures Subjected to Blast Loading**  
C. Soutis (Univ. Manchester, GBR)
- 12:10 Lunch break

**Session 2 - Fluid-Structure- Interaction A**

- 13:25 **Simulation of Radial Tilting Pad Journal Bearings in Consideration of Fluid-Structure-Interaction and a Cavitating Multiphase Flow**  
C. Schemmann, N. Kluck, M. Geller  
(FH Dortmund, GER)
- 13:50 **Numerical Simulation of Fluid-Structure Interaction in the Design Process of a Novel Axial Hydraulic Pump**  
T. Zawistowski (Academy of Science, PL); L. Osiecki, P. Patrosz (Univ. Gdansk, POL); B. Landvogt (Fraunhofer SCAI, GER); J. Piechna (Univ. Warsaw, POL); B. Zylinski (Bandak Engineering, NOR)
- 14:15 **Durability Analysis of HD Engine Exhaust Manifold using CFD-FE Coupling**  
S. Eroglu (Ford, TUR)
- 14:40 **Time Domain Linear and Nonlinear FSI Simulation of the AGARD 445.6 Wing using a Structural-CFD Coupled Solution**  
F. G. Di Vincenzo (MSC.Software, FRA)
- 15:05 Coffee break

**Session 4 - Extended CFD**

- 15:45 **A Dynamic Body Fluid Interaction Simulation of a Fracture Initiation**  
D. Jamieson (Prospect, GBR)
- 16:10 **Fluid-Porous Structure Interaction (FPSI) in the Context of Simulations of Filtration Processes**  
R. Kirsch, H. Andrä, D. Iliev, O. Iliev, M. Kabel  
(Fraunhofer ITWM, GER)
- 16:35 **CoRheoS: Multiphysics Solver Framework and Simulation Infrastructure for Complex Rheologies**  
S. Schmidt, D. Niedziela, H. Zausch  
(Fraunhofer ITWM, GER)
- 17:00 Coffee break

**Session 6 - Extended CFD / MBS / Mechatronics**

- 17:45 **Stationary and Transient Sensitivity Analysis of a Highly Nonlinear Glass Forming Process**  
C. Janya-anurak, H. Birkhofer, T. Bernard  
(Fraunhofer IOSB, GER)
- 18:10 **Integrated Simulation for Virtual Test of High Lift System**  
A. Frenzel (EADS GmbH, GER);  
F. Thielecke (TU Hamburg-Harburg, GER)
- 18:35 **Co-Simulation Driven Design of Complex Vehicle Dynamic Control Systems**  
M. Benedikt, P. Wimmer, J. Zehetner (Kompetenz-zentrum - Das virtuelle Fahrzeug mbH, AUT)
- 19:00 End of day 1

**Session 3 - Electromagnetics**

- Coupling Applications for the Conception of a Steam Generator**  
D. Depeyras (Ingeliance, FRA)
- Simulation of Electric Arcs Using a Coupled STAR-CD4 - JMAG Approach**  
P. Bayrasz (Fraunhofer SCAI, GER); H. Sano (Motohito-Hirose-JSOL Corp., JAP); C. Capron (Powersys, FRA)
- Implementation of a Micromagnetic Modeling and Simulation Package and a Customized User Interface in Comsol Multiphysics**  
L. Teich, C. Schröder (Univ. of Applied Sciences Bielefeld, GER); A. Hütten (Univ. Bielefeld, GER)
- Electro-Mechanical Co-Simulation of Electro-Magnetically Actuated Medium-Voltage Reclosers**  
O. Craciun, C. Simonidis, V. Biagini, R. Schmoll (ABB AG, GER)

**Session 5 - Electrical / Thermal**

- Hybrid Thermal-Electric Battery Cell Model**  
W. Beckert, T. Frölich, C. Freytag, M. Wolter  
(Fraunhofer IKTS, GER)
- Induction Heating Coupled to Structural Analysis**  
H. Cleveringa (MSC.Software Benelux B.V., NED)
- Design of Mechatronic Devices by Electro-Thermal FE Analysis Coupled to CFD Analysis**  
J. Marchesini, R. Helfrich (Intes, GER);  
M. Henner (Valeo, FRA)

**Session 7 - Acoustics**

- Multi-Field Vibration Analysis of Electric Motors**  
D. Bachinski-Pinhal (Cadferm GmbH, GER)
- Coupled CFD and Acoustic Simulation of an Automotive Muffler Accounting Manufacturing Tolerances**  
R. Wohlgethan, G. Buccilli, G. Koottakara (EnginSoft GmbH, GER); J. Silvestri, J. Zenker (Gamma Technologies Inc. USA)
- Incompressible Numerical Large Eddy and Unsteady Reynolds-Averaged Navier-Stokes Simulations Coupled With Acoustic Solver for Combustion Instability Prediction**  
S. R. Chakravarthy, C. Balaji, A. Nath, R.K.R. Katreddy  
(Indian Institute of Technology Madras, IND)

Wednesday, 17<sup>th</sup> October 2012

08:15 Exhibition opening

### Session 8 - Thermal

- 08:30 **Conjugate Heat Transfer Analysis (CHT) of Diesel Engine Head and Block System**  
S. Guryuva (Ford, TUR)
- 08:55 **Conjugate Heat Transfer Analysis of a Cooled Turbine Blade**  
E. Lorriaux, F. Thirifay (Cenaero ASBL, BEL)
- 09:20 **Multiphysics Simulation of Molding Tools for Qualified Designers and Engineers**  
M. Mahler (Siemens Industrie Software GmbH, GER);  
R. Schmidt (Schmidt Ges. f. Werkzeug- u. Formentech-  
nik mbH, GER)
- 09:45 **A Time Dependent Crack Growth Law for High Temperature Conditions**  
R. Chandwani, C. Timbrell (Zentech Int.Ltd., GBR);  
D. W. MacLachlan, S.J. Williams (Rolls-Royce, GBR)
- 10:10 Coffee break

### Session 9 - Methods

- Iterative Coupling of Physically-based and FEM Simulation**  
F. Distel, D. Hofmann, H. Hongrong, R. Gunther  
(TU München, GER)
- Divide And Conquer? On the Future of 1D-3D CFD**  
M. Jenkins (Mentor Graphics, GBR)
- Coupled Multiphysics for Performing More Realistic Simulations**  
A. Kurkchubasche ( Dassault Systemes Simulia, USA)
- Coupling Possibilities in LS-DYNA: Development Status and Sample Applications**  
N. Karajan (DYNAmore GmbH, GER)

### Session 10 - Fluid-Structure-Interaction B

- 10:55 **FSI Simulation of Pouring Flow from Tetra Brik Aseptic**  
D. Apparuti (Tetra Packaging Solutions Spa, ITA)
- 11:20 **Numerical Study of Fluid-Structure Interaction for a Water Filled Plastic Bottle During Drop Tests Analysis**  
F. Carneiro (PIEP Innovation in Polymer Engineering, POR)
- 11:45 **Multiphysics Analysis of Shell Structures Subjected to Water Shock Wave**  
H. Khawaja, M. Moatamedi (Univ. Narvik, NOR);  
R. Messahel, M. Souli (Univ. Lille, FRA)
- 12:10 **A Multiphysics Engineering Design Process for the Marine Environment**  
J. White (Prospect, GBR)
- 12:35 Lunch break

### Session 11 - Chemical / Electrochemical

- Swelling of Rubbery Seals by Applying Coupled Physico-Chemical Modelling in Finite Element Analysis**  
M. Achenbach (Parker Hannifin Manufacturing GmbH & Co.KG, GER)
- Multiscale Physicochemistry-Based Simulation for Lithium Ion Battery Applications**  
C. Wieser ( Adam Opel AG, GER)
- Robust Integrated Simulation of Coupled Problems with a Focus on Fluid-Structure Interaction and Electrochemistry**  
V. Gravemeier, W. A. Wall (AdCo Engineering GmbH, GER)
- Multiphysics Simulation of PEM Electrolyzers**  
I. Tari, E. Ozden (METU, TUR)

### Session 12 - Multiphysics Trends

- 13:40 **Nuclear Reactors as Multi-Physics and Multi-Scale Systems**  
C. Demaziere (Chalmers Univ. of Technology, SWE)
- 14:05 **Trends in Multiphysics**  
K. D'Souza (Dassault Systemes Simulia, USA)
- 14:30 **Code-Coupling: Validation, Application and Trends**  
M. Heinz, D. Hallwachs, H. Grashof  
(Tecosim Technische Simulation GmbH, GER)
- 14:55 **Cosimulation in Automotive Applications**  
K. Wolf (Fraunhofer SCAI, GER)
- 15:20 **Wrap-up / Farewell**  
Conference Scientific Committee
- 15:30 End of conference

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— Mechanical Analysis

Silver Sponsors



### Scientific committee

Henrik Nordborg,  
Chair, HSR Rapperswil, Switzerland  
Klaus Wolf  
Vice-chair, Fraunhofer Institute SCAI, Germany  
Mojib Moatamedi  
Vice-chair, Narvik University College, Norway  
Alfred J. Svobodnik  
Vice-chair, Konzept-X, Germany

### Exhibition and sponsoring

The conference will be accompanied by an exhibition of software and hardware vendors, solution providers, and consultants. There are several exhibition and sponsoring opportunities available. Please request further information.

### Conference language

English

### Conference venue

Holiday Inn Frankfurt Airport-North  
Isenburger Schneise 40  
D-60528 Frankfurt, Germany  
www.frankfurt-airport-hi-hotel.de  
Easy access from Frankfurt Airport by free hotel shuttle service. Delegates traveling by train can travel to Frankfurt airport and use free hotel shuttle service.

### Accommodation

Please book your hotel accommodation for reduced room rates by using the keyword „NAFEMS“.

### Registration fees

NAFEMS members: Free  
NAFEMS members can use seminar credits towards free attendance at this event. This event will charge four seminar credits per delegate.  
NAFEMS member without seminar credits: 460 Euro.  
Non NAFEMS members: 690 Euro.  
The registration fee includes conference attendance, proceedings, lunches, break refreshments and attendance at the evening function on the first day. Hotel accommodation is not included.  
All plus VAT if applicable.

### Cancellation policy

Cancellation before event: Up to 3 weeks: free of charge; up to 1 week: 75% non-refundable, all seminar credits non-refundable; no show at the event: 100% non-refundable.

### Contact and further information

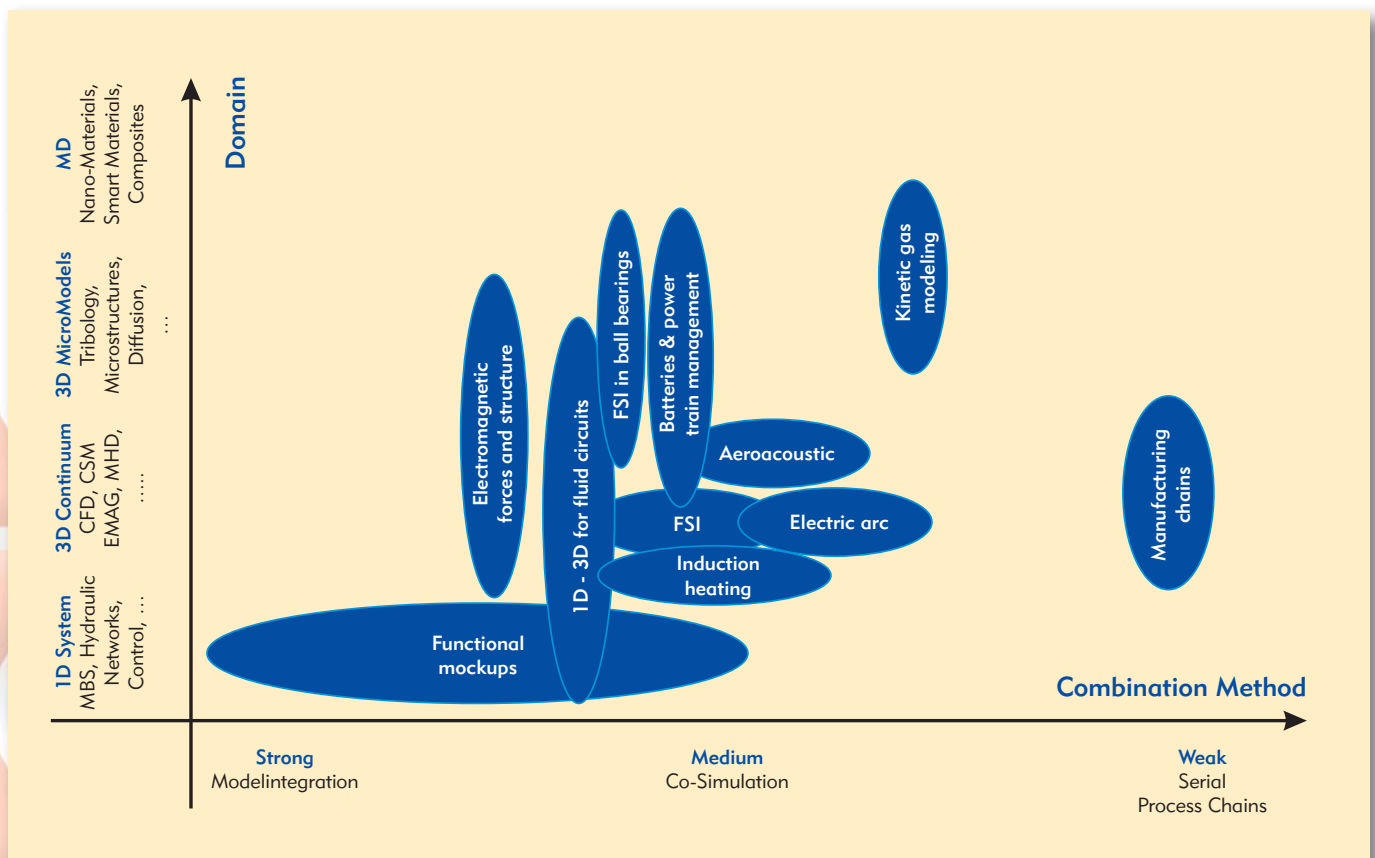
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### About NAFEMS

NAFEMS is an independent not-for-profit body with the sole aim of promoting the effective use of engineering simulation methods such as finite element analysis, multibody system dynamics and computational fluid dynamics. More than 1.000 organisations and institutions all over the world are member of NAFEMS. If you work with simulation, you should be part of NAFEMS.  
www.nafems.org

### More information about the conference

[www.nafems.org/MP2012](http://www.nafems.org/MP2012)



Please complete and fax to +49 - 80 51 – 96 74 3 37  
send registration form by e-mail to [roger.oswald@nafems.org](mailto:roger.oswald@nafems.org)

**I herewith register for the NAFEMS European Conference: Multiphysics Simulation**

16<sup>th</sup> - 17<sup>th</sup> October 2012, Frankfurt, Germany

- ☐ NAFEMS member free using 4 seminar credits
- ☐ NAFEMS member – no more seminar credits available: 460,– Euro <sup>2)</sup>
- ☐ Not NAFEMS member: 690,– Euro <sup>2)</sup>
- ☐ Please send us exhibitor information.
- ☐ Please send us information about sponsoring opportunities.

<sup>2)</sup> plus VAT if applicable

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