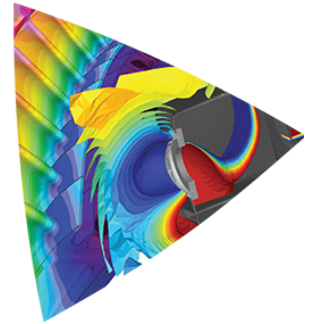**POSTPONED - NEW DATES: 16 - 17 November**

NAFEMS

The International Association for the Engineering Modelling, Analysis and Simulation Community

Invitation and preliminary conference agenda

NAFEMS20
NORDIC CONFERENCE

The Conference for Engineering Simulation and Analysis
November 16 - 17 , Göteborg, Sweden

THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS, MODELLING, AND SIMULATION COMMUNITY **NAFEMS**

Overview

➤ Plenary presentations by Aker Solutions, Tetra Pak, Technical University of Denmark

➤ 37 technical presentations

➤ Focus session on stochastics

➤ VMAP discussion session

➤ Short course on optimization

➤ Hardware and software exhibition

➤ Networking, experience and information exchange

➤ For non-members and members (free by using four seminar credits*)

www.nafems.org/nordic20

Sponsoren

Altair

BETA
SIMULATION SOLUTIONS

3DS DASSAULT SYSTEMES

COMSOL

SIEMENS
Ingenuity for life

Microsoft

* Free attendance for NAFEMS members by using four NAFEMS seminar credits.

NAFEMS, the independent international association for the engineering modelling, analysis and simulation community, is holding its Nordic conference from 26 - 27 May in Göteborg, Sweden. This two-day conference will focus on existing best practices as well as state-of-the-art in FEA, CFD and associated technologies – ensuring delegates receive a fully comprehensive overview of the technology available to them.

The conference will increase awareness and provide a discussion forum for topics that are vital to engineering industrialists and academics, offering attendees an unrivalled combination of industrial knowledge, expertise and forward-thinking to aid their deployment of CAE over the next few years.

The conference welcomes participation from every type of organisation – large and small, across all industry sectors. It is open to both, members and non-members of NAFEMS, with members able to attend the event for free towards using four seminar credits, as part of their membership benefits package.

We are looking forward to welcome you in Göteborg, Sweden.

NAFEMS Nordic Steering Committee

Radisson Blu Scandinavia Hotel

NAFEMS NORDIC Steering Committee members

A. Johansson (Altair Engineering, SWE)

M. Hermodsson (Corebon, SWE)

J. Granlund (Dassault Systemes, SWE)

L. Pilgaard Mikkelsen (DTU, DEN)

M. Redhe (DYNAmore Nordic, SWE)

A. Ptchelintsev (DynaPredict, FIN)

B. Isaksen (Dynova, NOR)

E. Weibust (Engicon, NOR/SWE)

C.-F. Stein (FS Dynamics Sweden, SWE)

J. Vernersen (Grundfos Holding, DEN)

M. Andreasson (MSC.Software Sweden, SWE)

T. Hansen (Novo Nordisk, DEN)

F. Santandrea (RISE Research Institutes of Sweden, SWE)

P. Poskiparta (Valmet Automotive, FIN)

T. Frondelius (Wärtsilä, FIN)

Already registered exhibitors

(3rd March 2020)

Altair

BETA CAE Systems

Ceetron

Comsol

Dassault Systemés

Engineering Center Steyr

HBM Prenscia

Intes

ITEA3 VMAP Project

Microsoft

Mentor, A Siemens Business

NAFEMS

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If you are interested in participating as an exhibitor or sponsor, you can find an information brochure at www.nafems.org/nordic20.
We would also be glad to advise you personally - call us at +49 176 217 984 01.
+49 176 217 984 01.

Venue and hotel accommodation

Radisson Blu Scandinavia Hotel
Södra Hamngatan 59
401 24 Göteborg, Sweden
Tel.: +46 31 758 5000
Fax: +46 31 758 5001
www.radissonblu.se/hotell-goteborg
NAFEMS NORDIC conference registrants can reserve a discounted room at the hotel. Please find a booking link on our conference website. The group code is: „NAFEMS".

Conference registration

Please register by completing the attached registration form or online at www.nafems.org/nordic20

Conference language

English

Delegate fee (per person)

- Not-NAFEMS members: 6.400 SEK
- Presenter from industry [1]:   free
- NAFEMS members
  using 4 seminar credits: free [2]
- NAFEMS member with no
  seminar credits: 4.000 SEK

All costs plus VAT.

These fees include attendance at the conference, one copy of the proceedings, lunch for all two days, break refreshments each day, and beverages and snacks in the evening of the first day. Hotel accommodation is not included.

[1] Companies for the production/processing of material goods / goods in factories/plants.

[2] NAFEMS membership fee for companies/institutes

A standard NAFEMS site membership costs 1.200 Euro per year. An academic site membership costs 750 Euro per Jahr. Beneath many others, NAFEMS members will get eight seminar credits (1 credit = 1/2 seminar/conference day) per year.

NAFEMS members can use seminar credits towards free attendance at this event. This event will charge four seminar credits per delegate. You can register 2 delegates included in your membership to this conference! Please consider becoming NAFEMS member before registering!

Cancellation policy

Cancellation up to 3 weeks before the event date:
        free of charge;
Cancellation up to 1 week before the event date:
        75% of registration fee non-refundable;
Cancellation less than 1 week before the event and no show at the event:
        all seminar credits non-refundable and
        100% of registration fee non-refundable

Hardware and software exhibition / sponsoring

We would like to extend an invitation to your company to be part of the conference as exhibitor and/or sponsor. Please request further information or download the exhibition and sponsorship opportunity brochure (pdf) at www.nafems.org/nordic20.

Conference organization

NAFEMS Deutschland, Österreich, Schweiz GmbH
Griesstr. 20, 85567 Grafing b.M., Germany
Tel. +49 176 217 984 01
e-mail: nordic@nafems.org
www.nafems.org

About NAFEMS

NAFEMS is the International Association of the Engineering Modelling, Analysis and Simulation Community. Our principal aims are to:

- Improve the professional status of all persons engaged in the use of engineering simulation
- Establish best practice in engineering simulation
- Provide a focal point for the dissemination and exchange of information and knowledge relating to engineering simulation
- Promote collaboration and communication
- Act as an advocate for the deployment of simulation
- Continuously improve the education and training in the use of simulation techniques
- Be recognised as a valued independent authority that operates with neutrality and integrity

We focus on the practical application of numerical engineering simulation techniques such the Finite Element Method for Structural Analysis, Computational Fluid Dynamics, and Multibody Simulation. In addition to end users from all industry sectors, our stakeholders include technology providers, researchers and academics. Please find more information at www.nafems.org.

Conference website:

www.nafems.org/nordic20

Room A

Session 1 A – Keynote Presentations

10:30   **Welcome and NAFEMS Introduction**
NAFEMS NORDIC Steering Committee, T. Morris, A. R. Oswald (NAFEMS)

10:40   **Using CAE to Lead the Way through the Energy Transition**
H. Alfredsson (Aker Solutions)

11:15   **Modelling & Simulation @ Tetra Pak, Our Strategy Towards an End to End Capability**
L. Carlioz (Tetra Pak)

11:50   **Digital Twins of Manufacturing Processes – From Multiphysics to Reduced Order Models**
J. Hattel (Technical University of Denmark)

12:25   Lunch

Session 2 A – Plenary Presentations

13:35   **The Global Finite Element Model for the Saab JAS 39 Gripen E/F**
A. Drego, L. Djärv, K. Jennsjö (Saab Group)

14:00   **FEA of Thread Loads in a Connecting Rod Bolt**
S. Haugland, R. Grant, K. Froysa (Western Norway University of Applied Sciences); R. Nordrik (Rolls Royce)

14:25   **Investigation of Standardization Practices for a Responsible Use of Computational Models in Engineering (SPRUCE)**
F. Santandrea (RISE Research Institutes of Sweden), M. Eriksson (Validus Engineering);
P. Jacobsson, T. Virdung (Volvo Cars); R. Lillbacka (FS Dynamics)

14:50   **VMAP Enabling Interoperability in Integrated CAE Simulation Workflows**
K. Wolf, P. Gulati (Fraunhofer SCAI); G. Duffett (NAFEMS)

15:15   **Coffee Break**

Room A	Room B	Room C
Session 3A – Fatigue/Failure/Crack	**Session 3B – CFD**	**Session 3C – Stochastics**

16:10

Room A:
Development of a Simulation Process Chain for Virtual Testing of Self-Piercing Riveting Joints with Focus on Material Damage & Failure Modelling
A. Rusia (Mercedes Benz/ University of Stuttgart), S. Weihe (University of Stuttgart)

Room B:
Comparison of CFD Modeling of Airflow in a Subway Station and on Site Experimental Measurements
L. Faugier (Royal Military Academy/ von Karman Institute for Fluid Dynamics/ University of La Rochelle), J. Vercauteren, B.G. Marinus, W. Bosschaerts (Royal Military Academy); D. Laboureur (von Karman Institute for Fluid Dynamics); K. Limam (University of La Rochelle)

Room C:
**Panel Discussion:
The Value of Uncertainty!**
Moderated by D. Vogt (Airbus), member of the NAFEMS Stochastics Working Group

- Details on page 6 -

16:35

Room A:
Probabilistic Fatigue and Reliability Simulation
A. Halfpenny, A. Chabod (HBM Prenscia); M. Bonato (Valeo Thermal Systems)

Room B:
Drag Coefficient of Cylindrical Structures Oscillating in Confined Fluidic Environments
R. Zarshat (Expro North Sea)

17:00

Room A:
A Process for Accurately Calculating Remainig Fatigue Life in Real Time
B. Isaksen (Dynova)

Room B:
VMS Implementation for CBRN Dispersion Modeling in the Atmosphere
Y. Nishio, B. Janssens (Royal Military Academy Belgium); K. Limam (Technoforum); J. van Beeck (von Karman Institute for Fluid Dynamics)

Room C:
What are the Chances of the Ship Snapping? Considerations when using Probabilistic Analysis
F. Santandrea (RISE Research Institutes of Sweden), on behalf of the NAFEMS Stochastics Working Group

- Details on page 6 -

17:25

Room A:
Crack Propagation Modelling in Tubular Joints under High Cycle Fatigue
M. Atteya, O. Mikkelsen (University of Stavanger)

Room B:
Increasing Product Reliability with Reduced Order Models
J. Parry (Mentor Graphics)

Exhibition

17:50   **Get Together with Beverages and Snacks**

20:00   End of day 1

Room A	Room B	Room C

Session 4A – Materials	**Session 4B – Automation/Integration**	**Session 4C – Optimization**

08:20 — **FE-Studies on Thermoplastic Generative Designed Parts as Functional Prototypes**
F. Althammer (Daimler/ University of Stuttgart); K. Chouhan (Daimler/ RWTH Aachen University); P. Middendorf (University of Stuttgart)

Room B: **Recognition of Structural Members Breaks the Boundaries of General FEA Programs and Enables Automatic Verification According to Standards**
O. Ishchuk (SDC Verifier)

Room C: **Short Course:
The Complete Guide
(but not today)
to Automatic Design
Optimization**
G. Duffett (NAFEMS)

- Details on page 6 -

08:45 — **From High Fidelity Models for Crash of Composites to a USER-Friendly Interface**
S. Costa, F. Stig, R. Olsson (RISE Research Institutes of Sweden)

Room B: **Integrated CAD - CAE Platform to Enable Automation of Model Build Process**
T. Khalitov, M. Lamping, B. Peddi (Siemens Digital Industrie Software)

09:10 — **Methodology to Evaluate Elastomeric Response for Well Completion Systems**
W. Chen, S. Rothnie (Rubbaratkis)

Room B: **Machine Learning: A Strong Ally in the CT-Scan to FE-Model Journey**
n.n. (BETA CAE Systems)

09:35 — **Workflow for Modeling Fiber-Reinforced Plastics (FRPs) with Multiscale Material Models**
Y. Shi, H. Ji, P. Verma, W.-Jun H (Dassault Systèmes)

Room B: **Time – the Most Limiting Boundary Condition of them all**
A. Johansson (Altair)

10:00 — Coffee Break

Session 5A – Optimization	**Session 5B – Methods / Processes**	**Session 5C – VMAP**

10:35 — **Maximizing Eigenfrequencies of PCB**
R. Helfrich (Intes)

Room B: **Comparison of Different Assessment Methods of Weld Seams Applied to Automotive Suspension Components**
H. Dannbauer, D. Hofmann, Klaus Hofwimmer, W. Hübsch (Engineering Center Steyr, Magna Powertrain)

Room C: **Workshop/Discussion:
VMAP
Standards for Engineering Data
Transfer in
CAE Simulation Workflows**
G. Duffett (NAFEMS)

- Details on page 6 -

11:00 — **Topology Optimization – Not Just a Structural Mechanics Thing**
B. Bragée, K. E. Jensen (Comsol)

Room B: **Adoption of Iso Geometric Analysis for the Generation of Explicit Simulation Models**
n.n. (BETA CAE Systems)

11:25 — **Combining GPU Accelerated Simulation with Structural Component Optimization Methodologies to Boost Product Design Cycles and Product Performance**
H. Coors-Blankenship (PTC)

Room B: **Lubrication and Cooling Efficiency Analysis of Transmissions and Engines by Moving Particle Simulation**
H. Strandberg (EnginSoft)

11:50 — **Finite-Element Crash Test Simulation of H-Shaped Steel Piles and Reinforced Concrete Barriers Designed to Stop Heavy Vehicles**
A. Ptchelintsev, O. Leino (DynaPredict)

Room B: **Understanding Powder Behaviour in an Additive Manufacturing Process by Using DEM**
M. Sousani, S. Pantalee (DEM Solutions)

12:15 — Lunch Break

Room A

Session 6A – Plenary Presentations

13:00 — **Expanding the Capabilities of Post-Processor Databases**
n.n. (BETA CAE Systems)

13:25 — **The Role of Simulation Maturity on Simulation Driven Development Success**
M. Oledal (EDRMedeso)

13:50 — **A Validated Simulation Methodology for Toxing - A Mechanical Connection Process for PCB Assemblies**
V. Krishna, D. Faller (Continental); S. Malane (Conti Temic Microelectronic)*

14:15 — **Study the Magnetic Flux Distribution in Permanent Magnet Machine using Finite Element Analysis**
T. Nur, W. Ruslan (University of Indonesia-Jakarta)*

14:40 — **Continuous Improvement of Cooking Oven Rack Stability Loadcase**
S. Shelke, A. Nalawade (Whirlpool India)*

15:05 — **Summary of Key Outcomes from the NAFEMS NORDIC 2020 Conference / Farewell**
NAFEMS Nordic Steering Committee

15:15 — End of Conference

Session 3C – Stochastics

Panel Discussion: The Value of Uncertainty!
Moderated by D. Vogt (Airbus), member of the NAFEMS Stochastics Working Group

This panel discussion is addressing the value of accounting for variation in engineering design. The panel members will discuss how uncertainty evaluation leads to better confidence in the decisions based on engineering simulations. This process also leads to a better product via improved understanding of the key influence factors and appropriate measures in the production process and operational environment. Implications on required competencies, training and design processes to enable the uncertainty evaluations will be discussed too.

Presentation: What are the Chances of the Ship Snapping? Considerations when using Probabilistic Analysis
F. Santandrea (RISE Research Institutes of Sweden), on behalf of the NAFEMS Stochastics Working Group

In the BenchMark magazine issue April 2019 two challenge problems designed as example applications of probabilistic analysis were presented. Both problems shared a common background in the field of naval engineering, although they differed for the level of complexity in the probabilistic formulations. The first one involved the derivation of failure probability from two input factors modelled as normal distributions and it was amenable to an analytical (theoretical) solution. In the second one the design variables were modelled by different types of probability distribution (normal, uniform and lognormal), and therefore an exact solution was not available. At the NAFEMS World Congress 2019 these problems were discussed and a few solutions presented. In this presentation these solutions and additional ones are discussed in combination with the theoretical background and the pitfalls of these methods.

Session 4C – Optimization

Short Course: The Complete Guide (but not today) to Automatic Design Optimization
G. Duffett (NAFEMS)

The short course will explain some practicalities of doing automatic design optimization as completely as possible. The course treats optimization generically, independent of sector, and will start by discussing design cycles, process simulation integration, design evaluations, design of experiments and move onto single and multi-disciplinary (MDO) and multi-objective optimizations (MOO). Time will limit the information provided and will not enable in depth discussion of more difficult concepts such as meta models, response surface, robust and statistical design. Examples from different sectors will be used to discuss and highlight the different issues, advantages and disadvantages of the tools available.

Session 5C – VMAP

Workshop/Discussion:
VMAP Standards for Engineering Data Transfer in CAE Simulation Workflows
G. Duffett (NAFEMS)

VMAP (vmap.eu.com) has released a public version of the vendor-neutral standard for CAE data storage and transfer to enhance interoperability in virtual engineering workflows. This open and free-to-use standard, created via the almost-complete ITEA-VMAP project, defines data structures for geometry, discretization, material parameters, results and state variables and includes a software library to read/write the VMAP data files; test cases are also provided. The standard is supported by a strong community made up of industrial and software companies and vendors, experts from academia, etc. This discussion session will present the VMAP release, current software implementations, test and use cases and the VMAP community. There will be ample time for Q&A and enable participants to discuss their simulation process requirements, their data transfer, etc. with the possibility of engaging in the creation of functioning simulation processes.

NAFEMS Nordic Student Award

Award for outstanding student work in the field of modeling, analysis and simulation
In recognition of the importance of the university sector to the advancement of numerical simulation, and to encourage students to work in these fields, NAFEMS has established a student competition! The award is aimed at those who are completing a project that involves the use of engineering simulation techniques such as finite element analysis, computational fluid dynamics or multi-body dynamics, boundary element method etc.
The winner takes part in the NAFEMS NORDIC Conference 2020 free of charge and presents the work there. The registration deadline was February 28th. Once the winner will be defined, we will arrange the contribution thematically on the agenda.

Registration

Please complete and fax to +49 3 22 11 08 99 13 41, e-mail to nordic@nafems.org
or send to NAFEMS GmbH, Griesstraße 20, 85567 Grafing b. München, Germany.

I herewith register for the NAFEMS Nordic Regional Conference, 16 - 17 November 2020 in Göteborg, Sweden:

- ❏ My company is not NAFEMS member: 6.400 SEK plus VAT
- ❏ My company is NAFEMS member – free attendance using 4 seminar credits
- ❏ My company is NAFEMS member – no more seminar credits available: 4.000 SEK plus VAT

❏ **Please send me the exhibition and sponsoring opportunities brochure.**

❏ **I am interested in NAFEMS membership. Please contact me.**

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Invoice address (if different):

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I agree that my first name, surname and company will be listed on the printed participant list for the conference participants.

❏ **Yes**   ❏ **No**

Date: _____

Signature: _____

By registering, you allow us to use and process your information in accordance with our privacy policy: www.nafems.org/about/privacy/

Online registration at www.nafems.org/nordic20

NWC 2021

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