19 - 20 October 2022, Prague, Czech Republic

NAFEMS Eastern European Conference

This event offers a unique opportunity to meet professionals from industry and academia, manufacturers, consultancies, and software developers. It is a fantastic chance to learn about the newest industry trends and developments, to boost your knowledge of industrial applications and meet managers and senior experts.

Venue

Panorama Hotel Prague, Milevska 7, Prague 4, 14063, Czech Republic
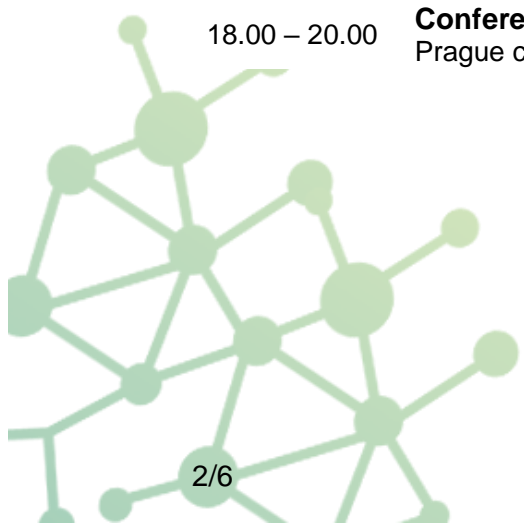

Gold Sponsor

Exhibitors

19.10.2022 – Wednesday, First day of the conference

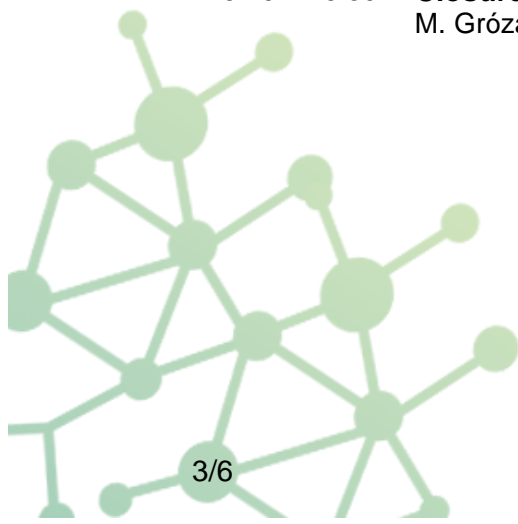(The organiser reserves the right to make any necessary changes to the programme.)

9.30 – 10.00	Welcome reception
10.00 – 10.15	**Opening and introduction** M. Gróza, NAFEMS Eastern Europe
10.15 – 11.00	**Fatigue Design of Additive Layer Manufacturing Materials (Keynote lecture)** Y. and C. Nadot, Institut Prime, ISAE-ENSMA
11.00 – 11.15	Forenoon break
11:15 – 11.30	**(Presentation from Simulia, Gold Sponsor)**
11.30 – 12.15	**5G Applications in the Context of Human Exposure (Keynote lecture)** I. Munteanu, Dassault Systèmes
12.15 – 13.15	Lunch break
13.15 – 13.35	**Variability of Fatigue Simulation Predictions for Automotive Components** M. Majerczak, E. Czerlunczakiewicz, M. Bonato, Valeo Thermal Systems
13.35 – 13.55	**Modelling energy absorption via viscoelasticity: a railway application case study** Á. Rikli, Knorr-Bremse Rail Systems
13.55 – 14.15	**New way to understand heat treatment** B. Farkas, Knorr-Bremse Systems for Commercial Vehicles
14.15 – 14.35	**Reusable Model Data for Electric Drive Development** S. Kandasamy, Y. Cho, Dassault Systèmes
14.35 – 15.00	Afternoon break

15.00 – 15.20	**Automate simulation processes simply, quickly, and reliably with low code tools** P. Karlheinz, B. Webster – Crossover Solutions, Novus Nexus	
15.20 – 15.40	**Fatigue strength assessment on a gearbox cover made of fiber-reinforced plastic** M. Frank, Magna Powertrain - Engineering Center Steyr	
15.40 – 16.00	**Modelling and vehicle dynamics simulations of a model car for further uses in a digital environment** P. Ungár, Bay Zoltán Nonprofit Ltd. for Applied Research	15.00 – 17.00
16.00 – 16.20	**Coupled thermo-mechanical simulation of a laser powder bed fusion process** J. Michalski, BudSoft	**Theoretical and practical introduction to the Digital Twin concept** J. Teichman, P. Pečený, TechSoft Engineering
16.20 – 16.40	**Vibroacoustic simulation of electric motor** J. Vojna, Siemens Advanta Development	

18.00 – 20.00	**Conference dinner and networking event** Prague city centre

20.10.2022 – Thursday, Second day of the conference
(The organiser reserves the right to make any necessary changes to the programme.)

8.30 – 9.00	Welcome reception
9.00 – 9.45	**Cloud-based Simulations in Rimac Technology (Keynote lecture)** I. Krajinović, Rimac Technology
9.45 – 10.15	**Various Aspects of Using Open Source in CAE (Invited presenter)** L. Pirkl, CFD Support
10.15 – 10.35	Forenoon break
10.35 – 10.50	**Explicit solver - Building an Open-Source Community (OpenRadioss™) (Presentation from Altair, Gold Sponsor)** M. Kuklik, M. Bulla, Advanced Engineering
10.50 – 11.20	**Aircraft air-intake optimisation using AI supported Virtual Blade Model (Invited presenter)** G. Zipszer, eCon Engineering
11.20 – 11.40	**Increasing simulation efficiency and accuracy of prediction by means of Digital Twins concept (Invited presenter)** T. Łukasik, A. Król, Tenneco
11.40 – 12.00	**Multi-domain optimization of directional control valve** A. Čelik, Poclain Hydraulics
12.00 – 13.00	Lunch break

13.00 – 13.20	**Automotive, Mining, Energy, and Construction case studies in the CAE Cloud** W. Gentzsch, E. Bornhöft, UberCloud		
13.20 – 13.40	**CFD analysis of a Retrofit Drone** S. Castravete, L. Giurca, CAELYNX Europe		
13.40 – 14.00	**Using discrete event simulation to design efficient logistics systems** J. Hloska, SDZ		
14.00 – 14.20	**Electrical and thermal conceptual modelling of the propulsive battery for hybrid-electric regional aircraft** I. Gellai, D. Dvorak, H. Kühnelt, Austrian Institute of Technology	13.00 – 15.00	**Theoretical and practical introduction to CFD (Seminar)** J. Nagy, eulerian-solutions
14.20 – 14.40	**Development of Simulation Model for Autonomous Emergency Braking Performance of Integrated Dynamic Brake System** S. Yeol Oh, Mando Corporation		
14.40 – 15.20	**Presentations**		

15.20 – 15.30	**Closure and summary** M. Gróza, NAFEMS Eastern Europe

https://www.nafems.org/nrc22-ee

Seminars at the event

Theoretical and practical introduction to Computational Fluid Dynamics

Tutor: Dipl.-Ing. Dr.techn. József Nagy

Tutor biography

Dr. József Nagy graduated from the Vienna University of Technology in Physics and finished his PhD in Chemical Engineering. For six years he held the position of a post-doc at the Johannes Kepler University, where he worked on polymer materials. He is the Chair of the Technical Committee for Tutorials and Documentation in the OpenFOAM Governance System and is Chief-Editor at the OpenFOAM Journal. He has the biggest YouTube channel with specialized tutorials for learning Computational Fluid Dynamics (CFD) with OpenFOAM. Currently he is a CFD engineer at eulerian-solutions. His areas of interest are diverse, multiphase flows, complex materials, porous media, fire and species dispersion, Fluid-Solid Interaction (FSI) and model development and implementation as well as custom workflows for specific applications.

Seminar details

1) Theoretical introduction to Computational Fluid Dynamics (CFD) with application examples

   (50 min)

   a) Theoretical introduction to CFD,
   b) Theoretical introduction to CFD,
   c) Small live introduction to simple application cases,

2) Practical introduction to CFD, industrial applications (50 min)

   a) Droplet breakup simulations,
   b) Injection moulding simulations,
   c) Fire safety simulations,
   d) Biomechanical simulations: aneurysm dynamics.

A full set of notes in PDF format as well as simulation case files in ZIP format will be available for download for the seminar attendees.

What will you learn?

You will learn about the basics of Computational Fluid Dynamics. You will see how simulations can be run and evaluated with live demo cases. You will learn about application use cases of CFD in academia, industry, and medicine.

What questions will this course answer?

- What is CFD?
- How to run CFD simulations?
- How can simulation help solving complex problems in academia, industry, and medicine.

Who should attend?

Everyone is welcome to attend. The seminar will be most interesting for

- Mechanical and chemical engineers required to perform challenging turbulent fluid flow simulations,
- Building Professionals, project managers, developers, building owner, facility managers and other stakeholders involved in fire safety projects,
- Bio-medical engineers and physicians required to perform estimations on difficult medical procedures,
- Academic researcher trying to build their own models in CFD flows.

The course is code independent. Analysis examples will be presented with the use of the open source CFD tool OpenFOAM.

Theoretical and practical introduction to the Digital Twin Concept

Tutor: Ing. Jiří Teichman, Ing. Bc. Petr Pečený, Fluid Specialists

Tutor biography

Ing. Jiří Teichman, graduated from Czech Technical University in Prague in Aerospace Engineering, where he continues his PhD in advanced aerodynamics control systems. For five years he participated in Formula Student competition as an aerodynamicist and now continues as a competition organizer and judge. He currently works as a CFD engineer at TechSoft, mainly focusing on external aerodynamics, heat transfer, flow optimization and reduced order modelling. He teaches at the Department of Aerospace Engineering in space technology specialization and is part of the LVICE2 Lunar probe design team responsible for orbital dynamics and thermal control. (teichman@techsoft-eng.cz)

Ing. Bc. Petr Pečený, graduated with a master's degree from Czech Technical University in Prague in Energy Engineering. Moreover, he graduated with a bachelor's degree from Masaryk Institute of Advanced Studies in Prague in Teaching. More than eight years he worked in TechSoft, focusing on internal aerodynamics, heat transfer, multiphase flow, and battery cooling. In recent years he was actively engaged with digital twins. In addition, he teaches Fundamentals of Energy Conversions at Czech Technical University in Prague. (peceny@techsoft-eng.cz)

Seminar details

1) Theoretical introduction to the Digital Twin concept with application examples (50 min)
    a) Digital Twin in engineering simulations
    b) Basics of Reduced order modelling
2) Practical introduction to the Digital Twin concept industrial applications (50 min)
    c) Failure prediction demonstration on physical device
    d) Reduced Order Model (ROM) extraction
    e) System modelling in Ansys Twin Builder and Digital Twin construction

What will you learn?

You will learn about the Digital Twin concept in engineering simulations, its advantages, and its industrial applications. Reduced Order Model theory will be introduced as a basis of modern Digital Twin. Physical demonstrator predicting failure in the thermal system will be shown as well as a short demonstration of Reduced Order Model extraction using machine learning and its implementation in the Digital Twin.

What questions will this course answer?

- What is a Digital Twin?
- How is a Digital Twin constructed?
- How Digital Twin helps solving complex system problems and predicts system behaviour

Who should attend?

The seminar is intended for a wide audience from simulation specialists to managers. The seminar will be most interesting for
- System engineers
- CFD/FEM engineers
- Project managers
- Academic researchers

The course is code independent. Analysis examples will be presented with the use of Ansys Twin Builder.

Venue

Panorama Hotel Prague, Milevska 7, Prague 4, 14063, Czech Republic

Tel.: +420 261 161 111

E-Mail.: welcome@panoramahotelprague.com

https://www.panoramahotelprague.com/

Accommodation

Executive King rooms in Hotel Panorama can be booked with a discounted rate at: https://www.nafems.org/events/nafems/2022/nafems-eastern-europe-conference/venue/.

Registration fees

For NAFEMS members: 200 EUR + 21% VAT, or 4 Member Credits
For non-members: 400 EUR + 21% VAT

Language of the conference

English

Contact

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About NAFEMS

NAFEMS is the International Association for the Engineering Modelling, Analysis and Simulation Community. We are a not-for-profit organisation which was established in 1983.

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.

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