

Modelon INNOVATE

OCTOBER 10-11, 2024



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Conference Opening

DAY 1 / OCTOBER 10

8:00

Registration and light breakfast

9:00

Opening Remarks

A brief welcome from Modelon CEO, Jan Häglund



9:15

Keynote Presentation

Decarbonaid GmbH
Prof. Dr. Ali Arnaout



10:00

Modelon Impact's Role in Innovation and Sustainability

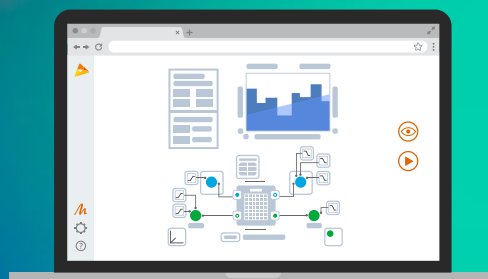
Pieter Dermont, Chief Product Officer



10:30

Coffee break

Demo stations for Modelon Impact will be available throughout Day 1 outside the Congress Hall.



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Speaker Schedule

DAY 1 / OCTOBER 10

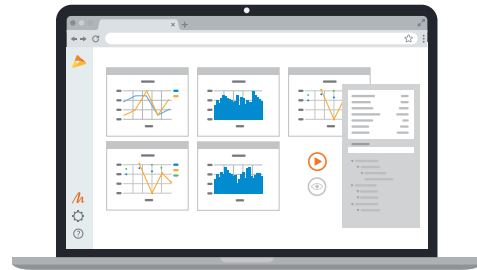
TIME	CONGRESS HALL	ROOM 105
11:00	Surveillance Aircraft Cooling Systems – A Parameter Tuning Study Saab Adelia Drego	Simulation of Scalable Automotive HVAC and TMS System for EV SynErgy Thermal Management GmbH Marc Graaf
11:35	Transition break	
11:45	Software Aided Engineering with VAS' FMU-Factory Volvo Autonomous Solutions Mohamed Takkoush	Leveraging System Dynamic Models for Advancing Large-Scale Transcritical CO₂ Heat Pump Development MAN Energy Solutions Kamran Iranshasi
12:20	Lunch	
13:35	Accelerating the Development of DAC-to-Fuel Devices with Model-based Design Aircela Kristian Tuszynski	Dispatchable Low-Carbon Power Operation and Optimization Studies of Variable Renewable Energy (VRE) and Hydrogen EPRI Jim Harper
14:10	Transition break	
14:20	Leveraging Modelica Models to Mitigate Ever-Changing Environmental Risks in Data Centers Meta Lisa Rivalin	Dynamic Modeling Activities of Multi-Vector rSOCs BoP Coupled with RES Sources by Implementing Control Architecture Fondazione Bruno Kessler Michele Bolognese
14:55	Coffee break	
15:25	Optimal Operation of a Hydrogen Plant with Energy Systems Library and OPTIMICA Compiler Toolkit ELECTROINGENIUM Lucía Royo Pascual	Innovation in Healthcare Siemens Healthineer Clément Coïc
16:00	Closing Remarks David Higbie, Chief Commercial Officer	
16:15	Happy hour	

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Experiment Setup and Analysis Views

Dedicated spaces for experimentation and results visualization

- Run Design of Experiments, specify cases and parameter distributions
- Use multiple plot types to understand your data
- Compare and analyze multiple simulations and cases



Calibration Workflow

Eliminate tedious, manual calibration processes

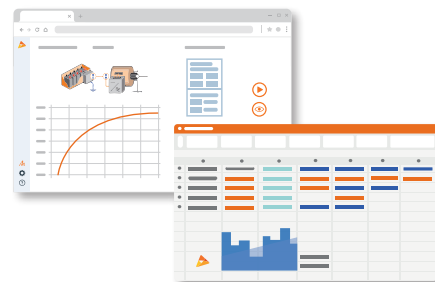
- Save hours when calibrating heat exchangers
- Visualize the results with custom calibration report
- Gets results faster with the Productivity Add-on



Excel Add-in

Set up, run, and visualize simulations in Excel

- Define experiments with case by case parameters
- Run sweeps based on formulas or data in other sheets
- Post-process and plot results directly in Excel



DAY 1 / OCTOBER 10

Dinner at SOHO

Visit Copenhagen's Meatpacking District for an evening of dinner, drinks, and networking at SOHO.

Arrive between 18:30 – 18:45. Dinner is served at 19:00.



[Directions to SOHO](#)

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Training Schedule

DAY 2 / OCTOBER 11

TIME	ROOM 104	ROOM 105
8:00	Light breakfast	
9:00	Core workflow, getting started with Modelon Impact	Deploying models through web-applications - Basic
9:45	Transition break	
10:00	Organization in Modelon Impact	Deploying models through web-applications - Advanced
10:45	Transition break	
11:00	Understanding the mathematical models behind components	Initialization of closed-loop thermal management cycles
11:45	Lunch break	
13:00	Leveraging version control	Dynamic optimization
13:45	Transition break	
14:00	Initiating a simulation from the Excel interface	Multi-point experimentation
14:45	Transition break	
15:00	Calibration using experimental data	Meet the Experts - One-on-One Free Session
15:45	Event ends	

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Track A

Core workflow, getting started with Modelon Impact

9:00 Room 104

See the latest Modelon Impact features available via the 2024.2 release. This session provides an overview and hands-on examples of the release's core features.

Learn how to:

- Use the newly released Experiment Builder
- Get started with the latest features
- Set up core workflows

Organization in Modelon Impact

10:00 Room 104

Simulation projects can get unruly very quickly. In this session, we'll walk through the usage of projects and workspaces to organize your work for more productive simulation work.

Learn how to:

- Utilize best practices with projects and workspaces in Impact
- Troubleshoot on a basic level

Track B

Deploying models through web-applications – Basic

9:00 Room 105

In this session, you will learn more about a deployment approach that allows custom interfaces to be created for parameterization and post-processing.

Learn how to:

- Develop a custom web application with data from Modelon Impact
- Utilize best practices in post-processing

Deploying models through web-applications – Advanced

10:00 Room 105

In this session, you will learn methods to reduce computational complexity of the model by replacing the physical model with a neural network-based model.

Custom web-app for reduced order model of a Heat Exchanger.

Track A

Understanding the mathematical models behind components

11:00 Room 104

In this session, we go behind the scenes to explore what happens mathematically when components are added to the model canvas and connected.

Course take-aways and learnings:

- Understand the mathematics behind Model-Based Systems Engineering
- Understand how real-world systems are represented in Modelica

Track B

Initialization of closed-loop thermal management cycles

11:00 Room 105

In this session users learn how to initialize a closed loop thermal management cycle using init records. Every component needs initial “guess” values for inlet and outlet values. We will show how these values are inter-dependent and how users can go about finding suitable initial conditions for their model.

Learn how to:

- Use init records to initialize a closed loop management cycle

Leveraging version control

13:00 Room 104

Version control is an indispensable asset when collaborating on a common model. In this session you will learn to leverage version control for improved quality and collaboration.

Learn how to:

- Track changes in models
- Set up version control repositories
- Collaborate in Modelon Impact using version control.

Dynamic optimization

13:00 Room 105

In this session, you will learn how Modelon’s dynamic optimization framework can be used to size components and optimize system control simultaneously.

Course take-aways and learning:

- When to use dynamic optimization instead of simulation
- How dynamic optimization can help you make better decisions

Track A

Initiating a simulation from the Excel interface

14:00 Room 104

In this session, you will learn how to run simulations and optimizations conveniently from Excel to analyze different what-if scenarios.

Learn how to:

- Define scenarios in Excel
- Post-process simulation results using the add-in

Calibration using experimental data

15:00 Room 104

Modelon has recently released calibration workflows in Modelon Impact! In this session, we'll walk through an example of calibrating heat transfer coefficients for tank thermal correlations using data from a reference paper.

Learn how to:

- Compose a test model using data files
- Calibrate a model using the new calibration workflows

Track B

Multi-point experimentation

14:00 Room 105

If the operating points can only be evaluated separately, a tedious iterative process is necessary for ensuring that the requirements are fulfilled for the full set of operating points. In this session, you will learn how to size a component/system that depends on requirements for multiple steady state operating points.

Learn how to:

- Solve a sizing problem
- Determine where multiple operating points are evaluated together

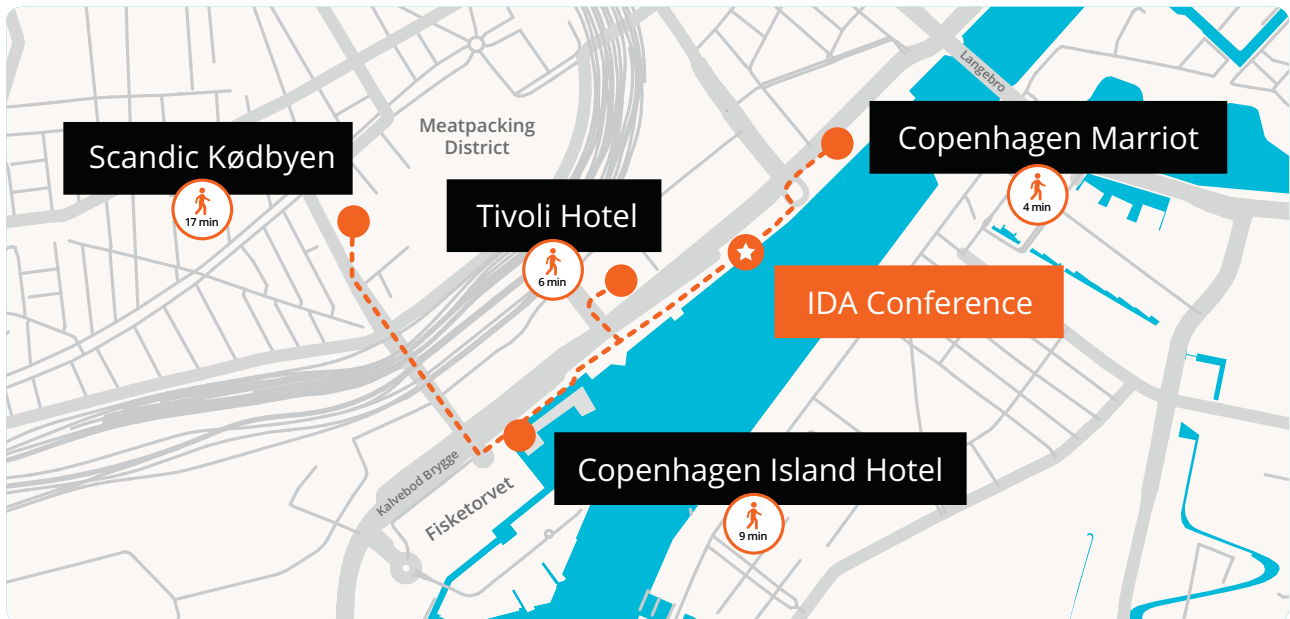
Meet the Experts – One-on-One Free Session

15:00 Room 105

If you have questions about modeling and simulation challenges not covered in a scheduled session at Innovate, take advantage of this opportunity for personalized support.

Modelon experts will be available for one-on-one assistance, offering insights and guidance on various approaches.

Transportation in Copenhagen



Taxi Companies in Copenhagen:

[DanTaxi](#)

[Taxa 4x35](#)

Bolt: [Request a Ride - Apps on Google Play](#)
[Request a Ride - On the App Store](#)

Cycling in Copenhagen:

Copenhagen is known for cycling. Bike and e-bike rentals are an affordable option. Knowing the rules (including hand signals) is essential to making biking a safe option for you and those around you. **Donkey Republic** allows you to locate, unlock, and ride a bike or e-bike directly from their mobile app. For short rides or full day rentals, Donkey Republic is a convenient option.

<https://www.donkey.bike/>

Baisikeli is just a 15-minute walk away from the IDA conference center. If you'd prefer to rent a helmet, bike light, and other accessories along with your bike or e-bike, consider contacting them. <https://baisikeli.dk/>

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Transportation in Copenhagen

Trains/Buses

The trains depart every 10 minutes from the airport to [Copenhagen Central Station](#) during the day. In the evening, trains will be every 20 minutes, and once an hour overnight.

The ride from the airport to the central station by train will take roughly 20 minutes. At Copenhagen Central Station, you will find connections to the rest of the city by train, S-train, or bus.

Walking from Copenhagen Central Station to the IDA conference center or any of the hotel accommodations listed above will take less than 25 minutes. Additionally, the 7A bus will cut the walking distance to most accommodations in half.

Look for ticket machines at the airport arrival hall and train stations. [You can also buy your bus, train and metro tickets online.](#)

The same ticket can be used in the metro, bus, train and harbor bus. Always have your ticket with you. Travelling without a valid ticket will result in a fine.

Download the app “**DOT Billetter**” in App Store and Google Play to pay for your tickets on the go. Click “Indstillinger” (settings) followed by “Sprog” (language) to select English version. From there select the fare you need and enter payment details.

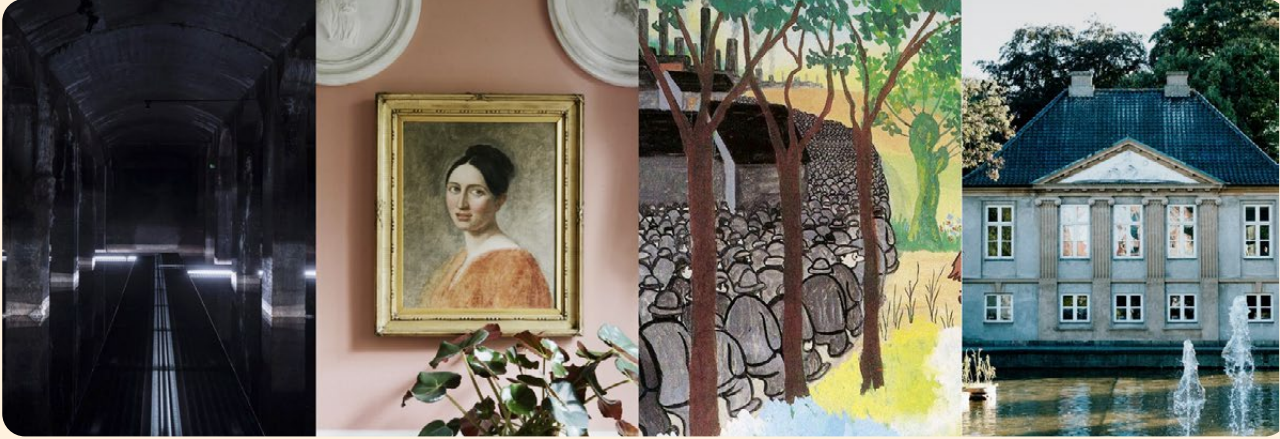


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Things to do in Copenhagen

Visit 4 Museums in Frederiksberg



The Frederiksberg Museums consist of four unique museums: STORM, Bakkehuset, Møstings, and Cisterns. All four are just a short walk from one another, connected by two beautiful parks: Søndermarken and Frederiksberg Garden. Enjoy art and cultural experiences you can't get anywhere else.

<https://frederiksborgmuseerne.dk/da/>

Experience a Garden Oasis in the City

The Botanical Garden is a beautiful oasis in the heart of Copenhagen, inviting peace and immersion in the world of nature. The garden is home to Denmark's collection of rare plants from around the world and is known for its iconic Palm House.

<https://snm.dk/en>



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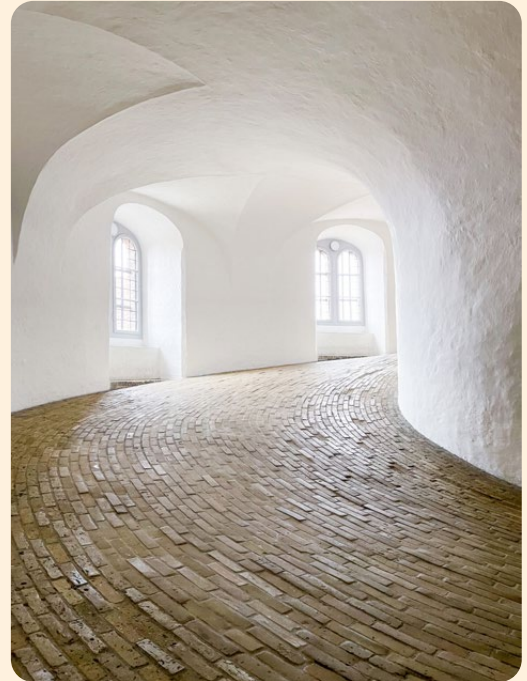
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Things to do in Copenhagen

Enjoy Charming Views at Rundetaarn

Ascend the narrow stone staircase and enjoy Copenhagen's most charming view opens at the top of the Round Tower. There is a 360-degree view where visitors can see Sweden off in the distance. For centuries, the view of the city's roofs and sights from the top of the Round Tower has been one of Copenhagen's major attractions.

<https://www.rundetaarn.dk/en/visit-us/>



Explore the Canals in a Private Boat



Join a tour or rent a small boat to see the city from a different angle and cruise through scenic canals. Discover Copenhagen's charm and see the history up close.

<https://www.visitcopenhagen.com/copenhagen/activities/boat-tours-and-boat-rentals>

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Things to do in Copenhagen

Fast-paced Fun at a Historic Amusement Park



Tivoli Gardens opened in 1843 and is one of the most beautiful amusement parks in the world. The park offers thrilling rides, lovely gardens, and live entertainment. The charming setting makes it a popular spot for locals and travelers alike.

<https://www.tivoli.dk/en/>

Event Contacts

Event Organizers

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swati.tyagi@modelon.com

Matt Bourland

Phone: +1 (920) 257-9590

matt.bourland@modelon.com

Jenny Nilsson

jenny.nilsson@modelon.com

Tivoli Hotel & Congress Center

[Arni Magnussons Gade 2
1577 Copenhagen, Denmark](#)

Phone: 32 68 40 00

Marriot Hotels and Resorts

[Kalvebod Brygge 5](#)

Phone: 88 33 99 00

Emergencies

Call 112

24-hour pharmacy

There is a pharmacy near Copenhagen Central Station where you can get a prescriptions and medications round the clock.

[Københavns Steno Apotek](#)

Vesterbrogade 6C
1620 Copenhagen V

Phone: 33 14 82 66

Copenhagen Island Hotel

Kalvebod Brygge 53
Kobenhavn V

Phone: 33 38 96 00

Scandic Kødbyen

Skelbækgade 3A
Copenhagen V

Phone: 72 18 33 40

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Keynote Presentation

9:15 Congress Hall DAY 1 OCTOBER 10

Decarbonaid GmbH

Prof. Dr. Ali Arnaout

CFO & Senior Vice President – AIDA Cruises

Prof. Dr. Ali Arnaout has 30 years of international management experience as a Financial & Strategy Consultant, Global Investment & Asset Manager and CFO & CIO of a leading international cruise line. Throughout his career his focus was on managing the interface between commercial and technical functions within organizations with a strong bottom line orientation. For the last decade he collected in-depth experiences managing the sustainability challenge for asset heavy companies.

Ali holds a Diploma in Technical Business Administration, a Doctorate in International Life Cycle Cost Management and research experience in the US, UK, France, Japan and Germany. The winner of the German Green Controlling Award today is teaching as a university professor and management consultant.

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Surveillance Aircraft Cooling Systems – A Parameter Tuning Study

11:00 Congress Hall DAY 1 OCTOBER 10

Saab

Adelia Drego

Industrial PhD Candidate in Aircraft Systems Engineering

[Speaker Bio](#)

Saab has modified several passenger aircraft to be used for airborne surveillance. These include the indigenous Saab 340, Saab 2000, and the Bombardier Global 6000. These aircraft are retrofitted with airborne early warning and control (AEW&C) systems and are typically distinguished by the pod of electronics mounted atop the fuselage. They continuously conduct long-duration (8-10 hours) missions with the AEW&C system running at high power (10's of kW). However, these systems have almost zero energy efficiency and produce as much waste heat as they draw electrical power. Therefore, they require efficient state-of-the-art cooling systems to ensure their temperature-sensitive electronics are not damaged. Retrofitting a new cooling system on an existing airframe comes with its challenges. These challenges and others, such as aircraft operating conditions, are addressed in a publication in MDPI Aerospace titled 'Parameter Tuning of a Vapor Cycle System for a Surveillance Aircraft.' The paper proposes a two-part method. The first part focuses on how to set up a design parameter study. The second part is an analysis method for the results of the parameter study. The models for the study were set-up and solved using Modelon Impact and its component libraries.

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Software Aided Engineering with VAS' FMU-Factory

11:45 Congress Hall DAY 1 OCTOBER 10

Volvo Autonomous Solutions

Mohamed Takkoush

Simulation & Analysis Engineer

[Speaker Bio](#)

In an ever-growing and constantly changing world, companies are striving to meet the expectations requested by customers while navigating through mandated legislation and environmental needs. In the race for autonomous driving, VAS leads in its innovation towards a safe autonomous transport system with an increasing focus on virtual development to meet customer deliveries, regulatory compliances (be that machine directives or automotive regulations), and Volvo Group's safety standards, as well as provide a safe and efficient environment for engineers to thrive. There are a lot of bits and pieces to this puzzle. This presentation will focus on the need for representative vehicle dynamics models used throughout different stages of development. We will share a glimpse of VAS' FMU factory, where vehicle models are developed.

The FMU factory at VAS is based on a Modelica library built using Modelon's Vehicle Dynamics Library. To be in control of the quickly growing FMU factory, engineers are to focus on product development and rely on automated processes and a set of tools that make their work traceable and seamless. This is what we call Software Aided Engineering (SAE) - where engineers benefit from software processes for the development of engineering products. At the core of this automated process is the short and quick feedback loop that engineers get from regression testing of the Modelica library.

Join the session to see how VAS capitalizes on the Modelon Testing Toolkit (MTT) for regression testing to ensure a robust and ever-growing vehicle model library.

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Accelerating the Development of DAC-to-Fuel Devices with Model-based Design

13:35 Congress Hall DAY 1 OCTOBER 10

Aircela

Kristian Tuszynski
Chief Technology Officer

[Speaker Bio](#)

Aircela is building a small-scale system that produces carbon-neutral fuels from carbon dioxide in the air captured using our Direct Air Capture (DAC) system. To meet the aggressive timeline to get to market, Aircela is deploying a range of different model-based design workflows.

This presentation will explain Aircela's approach to making e-fuels, the technology behind the device being built, how model-based design workflows are deployed in the unit design, and the development, verification, and validation of the control systems.

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Leveraging Modelica Models to Mitigate Ever-Changing Environmental Risks in Data Centers

14:20 Congress Hall DAY 1 OCTOBER 10

Meta

Lisa Rivalin

Research Scientist – Physical Modeling

[Speaker Bio](#)

Data centers provide key infrastructure for many industries, and their management is becoming increasingly complex as server technology advances at pace. To address these challenges, Meta has developed a digital twin approach based on physics-based modeling in Modelica.

In this presentation, we will discuss why we built the digital twin, how we leveraged Modelica to build it, what's the current critical use cases and what future developments we have planned with Modelon. Our digital twin approach can be applied to other industries and infrastructure, and we look forward to discussing its potential applications and co-simulation possibilities with other companies.

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Optimal Operation of a Hydrogen Plant with Energy Systems Library and OPTIMICA Compiler Toolkit

15:25 Congress Hall DAY 1 OCTOBER 10

ELECTROINGENIUM

Lucia Royo
Innovation Manager

[Speaker Bio](#)

The case study addresses the optimal operation of an electrolysis facility that injects hydrogen into the gas grid using ESL (Energy Systems Library) and OCT (Optimica Compiler Toolkit) tools. The optimization problem seeks to minimize the daily operation costs considering inputs such as meteorological forecasts and hourly electricity prices, fulfilling constraints such as daily hydrogen injection target and maximum flow injected into the gas grid.

The electricity comes from solar photovoltaic panels and a bidirectional connection with the electricity grid, therefore the electricity produced by PV panels can be self-consumed or sold in the electricity market. The main result shows the operation profile and the daily costs against the baseload operation to help the plant's operator to schedule the operation of the next day. The simulation and optimization framework developed in this study has the potential for future applications, including integrating more renewable energy sources and planning long-term hydrogen production strategies.

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Simulation of Scalable Automotive HVAC and TMS System for EV

11:00 Room 105 DAY 1 OCTOBER 10

SynErgy

Marc Graaf
Managing Partner

[Speaker Bio](#)

Many new electric vehicle companies are interested in using off the shelf products to reduce development time and cost. SynErgy Thermal Management GmbH has developed a scaleable HVAC for automotive applications in cooperation with Glenpro Ingenieurgesellschaft GmbH.

This HVAC can be used for direct or indirect heat pump systems. In this presentation, we present the performance and efficiencies of the different architectures that be assessed using Modelon's Air Conditioning Library.

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Leveraging System Dynamic Models for Advancing Large-Scale Transcritical CO₂ Heat Pump Development

11:45 Room 105 DAY 1 OCTOBER 10

MAN Energy Systems

Kamran Iranshahi
R&D Engineer

[Speaker Bio](#)

Industrial transcritical carbon dioxide (CO₂) heat pumps, such as those developed by MAN Energy Solutions Schweiz AG (MAN ES), provide a proven method for decarbonizing district heating and hold potential for sector coupling applications. However, transitioning from conventional energy sources to decarbonized renewable solutions increases grid frequency dynamics, necessitating complex dynamic models for optimal energy management.

This presentation addresses the need for precise dynamic models to manage the risks and opportunities of this energy transition. We introduce a detailed Modelica model of a high-temperature CO₂ heat pump, emphasizing the refrigerant's thermodynamic states during load variations. The model is validated against testbed data from a MAN ES heat pump, which delivers over 35 MW of heat with a temperature lift from 40 to 100 K. Insights from dynamic simulations enhance our understanding of how decarbonized energy networks respond by linking electricity and heat supply, ultimately aiding in the development and optimization of complex control strategies.

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Dispatchable Low-Carbon Power Operation and Optimization Studies of Variable Renewable Energy (VRE) and Hydrogen

13:35 Room 105 DAY 1 OCTOBER 10

Electric Power Research Institute

Jim Harper
Technical Lead, Principal

Nick Pilot
Technical Lead

[Speaker Bio](#)

[Speaker Bio](#)

EPRI is a more than 50-year-old non-profit research organization with a foundational mission to drive innovation to ensure the public has clean, safe, reliable, affordable, and equitable access to electricity. To that end EPRI is engaged in multiple projects evaluating the capabilities of low-carbon dispatchable power generation and energy storage. Hydrogen is a potential avenue for this dispatchable power and energy storage. Through demonstrations, studies, and the Low-Carbon Resources Initiative (LCRI), EPRI has been engaged in researching hydrogen across the power generation industry. This presentation will discuss some of these projects. The EPRI team has been working with utilities and developers focusing on the design, optimization, and control of power and hydrogen generation storage and utilization configurations. This research includes modeling work utilizing the Modelica systems and Modelon Impact simulation environments. Specifically, this presentation will exhibit study results on the challenges, opportunities, and pitfalls of hydrogen power generation through thermal assets such as gas turbines with hydrogen fuel and will discuss dynamic and optimization studies on plant systems designed to meet power demand and hydrogen generation. Modeling results have suggested that the most pessimistic and the most optimistic suggestions around hydrogen likely miss the point that hydrogen as an energy storage mechanism is judged best based on the specific application and operational requirements, and a “one-size-fits-all” analysis will not reveal the best design for all applications. These examples show that specific system design analysis is required to determine technical and economic feasibility.

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Dynamic Modeling Activities of Multi-Vector rSOCs BoP Coupled with RES Sources by Implementing Control Architecture

14:20 Room 105 DAY 1 OCTOBER 10

Fondazione Bruno Kessler Sustainable Energy Center

Michele Bolognese
Researcher

[Speaker Bio](#)

The workflow of FBK activities with Modelon Impact started from the modeling and the validation of the single component to the creation of the entire BOP model by implementing all the different control loops defined in an appropriate control strategy. The simulation results verify the technical/thermodynamic behavior and flexibility of a stack box of 70 cells for an SOE system and a six-cell stack for a direct ammonia solid oxide fuel cell (DA-SOFC). Dynamic modeling allowed teams to evaluate the effect of the reagent inlet temperatures on the operation and hydrogen production/consumption in terms of yield and the transients between the different operative modes. The validation process generated polarization curves at different temperatures, aiming for a maximum relative error of less than 3%.

Subsequently, with the full BoP model encompassing all system components, it became possible to analyze the behavior and functioning of the various control loops during transitions between the main operating modes, with particular attention to scalability aspects and monitoring the main Key Performance Indicators (KPIs).

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Innovation in Healthcare

15:25 Room 105 DAY 1 OCTOBER 10

Siemens Healthineers

Clément Coïc

Technology Cluster Lead – Digital Mechatronics

[Speaker Bio](#)

Innovating within the healthcare industry is challenging. Strict regulations combined with the contained number of units produced are slowing down innovation. Yet, Siemens Healthineers is driving a transformation to pursue its mission: sustainably pioneer breakthroughs in healthcare for everyone everywhere.

Discover how Siemens Healthineers leverages model-based technologies to enhance their mechatronic products' design and operation using Modelon technology.

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Speaker Bios



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Speaker Bio



Lucía Royo Pascual 

Innovation Manager
ELECTROINGENIUM

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Lucía Royo Pascual holds degrees in Industrial Engineering specializing in energy, fluids, and heat transfer from the University of Zaragoza, an MSc in renewable energy and energy resources from CIRCE, an MSc in Internal Combustion Engines from the Polytechnic University of Valencia, PhD in Transport Propulsion Systems at the Polytechnic University of Valencia, an MSc in Big Data and Business Analytics with IMF Business School, and an MSc in Mathematical Engineering and Computer Science (ongoing).

Lucía's research work, conducted from 2013 to 2017 at the Polytechnic University of Valencia in CMT – Motores Térmicos, has made a significant impact in the field. Her R&D projects, both at the national level (AUTORC) and Internationally, with private stakeholders of the automotive industry, focused on improving the energy efficiency in automotive vehicles. This was achieved by utilizing the Organic Rankine Cycle as an efficient method for Waste Heat Recovery. The culmination of these efforts resulted in the publication of 5 scientific articles in indexed international journals and several congresses. Furthermore, she serves as a reviewer for two high-impact journals: Applied Thermal Engineering and Energy.

Additionally, Lucía worked with the automotive company Applus IDIADA in the Thermal Management, HVAC, and engine cooling departments. She was involved in the H2020 project (DOMUS) related to mathematical optimization using GA and machine learning applied to thermal comfort in vehicles. Furthermore, she participated in the prototypes' final validation and testing (data acquisition).

Afterward, she started at CIRCE as a researcher in the Combustible and Combustion Technology Group, focusing on flame visualization in gaseous combustibles and machine learning algorithms. Then, she became a Technology Project Manager, with her work focused on multiphysics simulation, data analysis, and machine learning in energy projects.

Currently, she works as an Innovation Manager at Electroingenium.

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Speaker Bio



Adelia Drego

Senior Associate Research Scientist
Saab

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Adelia is a mechanical and aerospace engineer with over ten years of work experience in the Swedish industry. She has used multi-physics finite element modelling for applications in the automotive and marine industry.

Previously, she was part of the team responsible for creating and updating finite element models in the Gripen E/F aircraft project at Saab Aeronautics. She is currently a research scientist and industrial PhD student at the system simulations team at Saab. Her research project focuses on design and modelling methods for efficient energy management for future aircraft platforms.



Michele Bolognese

Hydrogen and Sustainable Energy Researcher
Fondazione Bruno Kessler

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Michele's work at Fondazione Bruno Kessler started with a study of the integration of solar thermal energy in industrial processes for the particular case study of a pasta factory based in northern Italy followed by the study of the potential of Hydrogen systems. Michele has been actively involved in the Italian project, Comesto, dedicated to the aggregated management of energy storage systems, contributing to the development of models in Ansys Simplorer environment involving different storage systems, including hydrogen technologies, coupled and controlled by DC/DC devices.

Today, Michele is involved with the Prometo project in which he's utilizing dynamic modeling to integrate solar heat with a hydrogen production system and storage system that considers temperature fluctuations.

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Speaker Bio



Mohamed Takkoush

Vehicle Dynamics Analyst
Volvo Autonomous Solutions

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Mohamed Takkoush originates from Lebanon where he received his bachelor's degree in mechanical engineering. In 2018, Mohamed relocated to Sweden to further hone his engineering skills and earn his master's degree in automotive engineering from Chalmers University of Technology with a focus on vehicle dynamics and active safety.

He completed his master thesis with Volvo Autonomous solutions in 2020 on the topic of model validation using reach set conformance. During his masters, Mohamed worked as a project assistant with Professor Mathias Lidberg at the Department of Vehicle Dynamics at Chalmers. After my graduation, he joined Fraunhofer Chalmers Center for 6 months to support the initiation of projects related to multibody and vehicle dynamics, where Mohamed was first exposed to the FMI standard used for model sharing.

Today, Mohamed works as a vehicle dynamics analyst at Volvo Autonomous solutions where he develops, validates and integrates vehicle models to support virtual development at Volvo Autonomous Solutions.

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Speaker Bio



Marc Graaf 

Managing Partner,
Synergy Thermal Management GmbH

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Marc Graaf is the owner and managing director at SynErgy Thermal Management. Marc studied Mechanical Engineering at the Aachen University of Technology with a specialization in heat transfer technology.

Marc's previous experience includes 13 years at Hanon Systems, with 6 of those years as Manager of Advanced System Development. At Hanon Systems, Marc's team worked on alternative refrigerants, heat pump systems, and TMS for electrical vehicles.



Kristian Tuszynski 

Chief Technology Officer
Aircela

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Kristian comes to Aircela from a long career at UTC/Carrier, where he was Global Controls Manager and his work included building digital models of hydroelectric dams.

Kristian shepherds Aircela technology from the drawing board to production, and is building the brains of the system, with his controls software allowing Aircela systems to work together as an interconnected swarm.

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Speaker Bio



Jim Harper 

Principal Technical Lead
EPRI

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Jim Harper has over 20 years' experience as a thermal systems engineer in a range of industries. Jim is a Principle Technical Lead in the Gas Turbine Technology Division at EPRI. EPRI is the Electric Power Research Institute headquartered in the US but with a presence across the world.

EPRI's mission is advancing safe, reliable, affordable, and clean energy for society through global collaboration, science and technology innovation, and applied research. Jim has extensive gas turbine design, control, testing and fleet experience. He was a Combustion Technical Leader at General Electric where he was a system owner of Gas Turbine combustion system mechanical, thermal and control architectures.

In addition, Jim worked in the electric vehicle automotive industry where he was a senior thermal systems design lead responsible for all thermal systems design, validation and fleet support including battery, motor, power electronics and cabin thermal systems. He has authored over 10 patents in Gas Turbine Design and control as well as EV thermal system control architectures.

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Speaker Bio



Lisa Rivalin 

Research Scientist
Meta

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Lisa Rivalin is a Research Scientist for IDC's physical modeling team at Meta, a team focusing on modeling to bridge the gap between the physical and digital world. Her current projects include data center modeling from chip to region, leveraging physics-based models and machine learning to optimize data center designs and operations and help Meta reach its sustainability goals.

Before joining IDC, Lisa was a Lead Research Scientist and Project Manager at Engie, a leading energy services and sustainability company in Europe. There, she focused on creating new energy performance contracts using innovative statistical methods and implementing smart building technologies. Lisa also served as an Affiliate Research Scientist at Lawrence Berkeley National Lab, renowned for its contributions to energy and environmental research, where she worked on predictive modeling for the built environment.

Lisa holds a PhD in Applied Statistics and Energy from Mines ParisTech. Additionally, she has a Master of Science in Engineering from the University of Poitiers and a Master of Arts in History and Philosophy of Science from Paris Diderot University.

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Speaker Bio



Nicholas Pilot 

Technical Leader
EPRI

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Nicholas Pilot is a Technical Leader in the Low-Carbon Resources Initiative (LCRI) team at the Electric Power Research Institute (EPRI).

Nick supports LCRI through technoeconomic studies currently focused on green hydrogen production (e.g. renewables + electrolysis), hydrogen compression systems, and community-scale resilient energy systems. Nick's PV system performance modeling, and technoeconomic and cost-benefit analyses supports research efforts throughout the Generation Sector, as well as the Energy Delivery & Customers Solutions sector at EPRI.

Prior to joining the Renewable Generation program at EPRI in 2018, Nick worked for three and a half years as a mechanical engineer at AECOM in the field of HVAC design and building energy. Nick led and supported the HVAC design of several commercial, government, and health care facilities. He also worked on building energy modeling, successful LEED certification for a command-and-control facility (C2F) and was responsible for the drafting and 3-D modeling of HVAC designs via AutoCAD®, Bentley MicroStation, and Autodesk Revit®

Nick earned a bachelor's degree in chemistry and biology with minors in mathematics and physics from The University of North Carolina at Pembroke and a master's degree in mechanical engineering from Virginia Polytechnic Institute and State University. Nick's undergraduate research focused on clean biodiesel production and his graduate research focused on the energy efficiency and energy modeling of deployable military shelters.

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Speaker Bio



Kamran Iranshasi 

Research and Development Manager
MAN Energy Solutions

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Kamran Iranshasi graduated with a Master's in Mechanical Engineering from Politecnico di Milano in 2019, specializing in Internal Combustion and Turbomachinery. Following this, he pursued a Ph.D. at ETH Zurich, obtaining his Dr. sc. ETH Zurich degree in 2022. From 2018 to 2024, Kamran was employed as a Researcher at Empa (Swiss Federal Labs) and Hochschule Luzern. Since June 2024, he has transitioned to a role as a Simulation Engineer at MAN Energy Solutions. His professional interests are focused on multiphase flow, electrohydrodynamics, digital twins, and process optimization via combination of multiphysics simulations and experimental methods.

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Speaker Bio



Clément Coïc 

Technology Cluster Lead – Digital Mechatronics
Siemens Healthineers

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Clément Coïc is leading the Technology Cluster for Digital Mechatronics at Siemens Healthineers. He is responsible for building up a team of experts in digitalization and leading technological projects to enhance the development of Siemens Healthineers' mechatronic products.

This role leverages the past experiences of Clément as a Team Lead and Model-based Development expert at Modelon and at other industry leaders such as Airbus Helicopters and Dassault Systèmes. Clément holds two MSc - in France and Spain - in System Engineering and Mechanical Engineering, and a PhD on model-based hydraulic actuation system design for helicopters.

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Modelon Innovate Social Media Challenge

#Innovate2024

Be one of the lucky winners of a
Fjällräven Skule 28 Backpack!



Entry rules:

1. Post to LinkedIn with a picture from Copenhagen
 2. Tag Modelon in your post
 3. Add the hashtag #Innovate2024 in your post
- ✓ Winners will be announced at the end of Day 2.
 - ✓ If a winner isn't present during the announcement, Modelon will mail them the prize

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