

Motor-CAD European User Conference 2020

19TH - 20TH FEBRUARY 2020 | IET AUSTIN COURT | BIRMINGHAM, UK

The 2020 **Motor-CAD** European User Conference brings together engineers and researchers working on E-Machine design to learn about technological developments, share best practice and discuss their challenges and approaches.

Join us for technical presentations, advanced modelling workshops and motor design clinics, focused on the themes of **multiphysics optimisation** and **systems integration**.

Technical presentations from world-leading experts in electric motor design



Keynote Speaker - Professor Bulent Sarlioglu, University of Wisconsin-Madison
High Performance Electric Machine Design for Electric and Hybrid Vehicles and Aircraft.



Pierre Millithaler, Schaeffler
E-Machine Optimisation Method Based on Performance Maps and Duty-Cycle Simulations.



Mark Boden, Rolls-Royce
Robust Design of Electrical Machines using Motor-CAD and iSight.



Branko Ban, Volvo Trucks
Non-Template Multi-Physics Optimization of SyRM and PMSR Machines in Motor-CAD.



John Reeve, FluxSys
ConceptEV Topics and Motor-CAD Value & Integrations.



Cleef Thackwell, Jaguar Land Rover
System-Level Simulation of an 800V Traction Drive Based on a Squirrel-Cage Induction Motor with Silicon-Carbide Inverter.



Branimir Mrak (Flanders Make) & Steven Vanhee (Dana)
Validation of High Performance Liquid Cooling Methods in Electrical Motors.



Philipp Siehr, CADFEM GmbH
Coupling the ANSYS Tools Motor-CAD, Maxwell and Mechanical to Include Advanced Electromagnetic Effects in the Design Process.



Sara Roggia, Safran Tech
Challenges and Innovative Solutions for Aerospace System Applications.



Martin Hanke, CADFEM GmbH
End Winding Inductance Calculation for Motor-CAD Usage: Comparison of Four Different Approaches.

Advanced motor design modelling workshops

Introduction to Motor-CAD v13 Workshop
Mircea Popescu and Dougie Hawkins, Motor Design Ltd.

Multi-Physics Optimisation Workshop
Nicolas Riviere and James Goss, Motor Design Ltd.

System Simulation Workshop
Melanie Michon, Motor Design Ltd.

Motor Design Clinics

Round-table sessions that enable attendees to discuss their specific questions with the design engineers and software developers who develop Motor-CAD.

Advanced Cooling

- Modelling specific cooling types, e.g. Oil Spray.
- Understand calculation mechanisms within Motor-CAD.
- Calibrating thermal models with experiments or CFD simulations.

Losses

- Modelling different losses, e.g. AC winding, iron loss and magnet losses.
- Understand loss modelling approaches in Motor-CAD.
- Accounting for manufacturing effects on electric steel losses.

System Modelling

- FMU co-simulation for electromagnetic, control and thermal modelling.
- Combined motor and gearbox NVH.
- Thermal modelling of integrated drive units.

Mechanical

- Stress analysis of high speed IPM and IM rotors.
- Force analysis and NVH modelling.

Optimisation

- Multi-physics optimisation.
- Meta model based optimisation.
- Multi-objective optimisation methods.

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DAY 1 | Multiphysics Optimisation

08:30 – 09:00	Registration and Coffee
09:00 – 09:30	Welcome and Introduction – James Goss, Motor Design Ltd
09:30 – 10:15	Keynote Speaker: High Performance Electric Machine Design for Electric and Hybrid Vehicles and Aircraft – Professor Bulent Sarlioglu, University of Wisconsin-Madison
10:15 – 10:45	Coffee Break
10:45 – 12:15	Introduction to Motor-CAD v13 Workshop – Mircea Popescu and Dougie Hawkins, Motor Design Ltd
12:15 – 13:15	Lunch
13:15 – 13:40	E-Machine Optimisation Method Based on Performance Maps and Duty-Cycle Simulations – Pierre Millithaler, Schaeffler
13:40 – 14:05	Robust Design of Electrical Machines using Motor-CAD and iSight – Mark Boden, Rolls-Royce
14:05 – 14:30	Non-Template Multi-Physics Optimization of SyRM and PMASR Machines in Motor-CAD – Branko Ban, Volvo Trucks
14:30 – 14:50	Q&A with session speakers
14:50 – 15:20	Coffee Break
15:20 – 17:00	Multi-Physics Optimisation Workshop – Nicolas Riviere and James Goss, Motor Design Ltd
19:00	Conference Dinner (included in ticket price)

DAY 2 | Systems Integration

08:30 – 09:00	Registration and Coffee
09:00 – 09:25	ConceptEV Topics and Motor-CAD Value & Integrations – John Reeve, FluxSys
09:25 – 09:50	System-Level Simulation of an 800V Traction Drive Based on a Squirrel-Cage Induction Motor with Silicon-Carbide Inverter – Cleef Thackwell, Jaguar Land Rover
09:50 – 10:15	Validation of High Performance Liquid Cooling Methods in Electrical Motors – Branimir Mrak (Flanders Make) & Steven Vanhee (Dana)
10:15 – 10:35	Q&A with session speakers
10:35 – 11:05	Coffee Break
11:05 – 12:05	System Simulation Workshop – Melanie Michon, Motor Design Ltd
12:05 – 12:25	Coupling the ANSYS Tools Motor-CAD, Maxwell and Mechanical to Include Advanced Electromagnetic Effects in the Design Process – Philipp Siehr, CADFEM GmbH
12:25 – 13:25	Lunch
13:25 – 13:50	Challenges and Innovative Solutions for Aerospace System Applications – Sara Roggia, Safran Tech
13:50 – 14:10	End Winding Inductance Calculation for Motor-CAD Usage: Comparison of Four Different Approaches – Martin Hanke, CADFEM GmbH
14:10 – 14:25	Q&A with session speakers
14:25 – 14:55	Coffee Break
14:55 – 17:00	Motor Design Clinics: Round-table Discussions on Advanced Cooling, Losses, System Modelling, Mechanical Analysis and Optimisation.

Not a Motor-CAD user but interested in finding out how simulation tools can help with your electric motor designs?

Join our free, pre-conference 'Introduction to Motor-CAD' workshop on the 18th February, where participants will work through a modelling example for a synchronous permanent magnet machine and learn how to calculate electromagnetic, thermal and mechanical behaviour—including generating outputs such as efficiency maps—and perform analysis over duty cycles.

Visit www.motor-design.com/motorcad-euuc-2020 to find out more.

A two-day conference pass costs £300 (excl. VAT) and includes a ticket to the conference dinner. Visit www.motor-design.com/motorcad-euuc-2020 to find out more and register.

