POLITECNICO MILANO 1863

DIPARTIMENTO DI ENERGIA

11-12 March 2024

6th Two-Day Meeting

on Propulsion Simulations Using OpenFOAM Technology

DELIVERY STRUCTURE
Department of Energy – Politecnico di Milano

DURATION
Two Days: March 11th – 12th, 2024

LOCATION
Department of Energy, Politecnico di Milano
Via Lambruschini 4/A, Milano

HOW TO PARTICIPATE
Registration
In order to apply for this meeting please click on the link: https://www.polimi.it/en/programmes/specializingmasters-and-postgraduate-programmes/398 and insert your application as requested. The deadline for the application is **March 01st 2024**. Admission to the meeting follows a first-come, first-served basis.
If the minimum number of participants is reached, the meeting will start as planned. If not, it will be postponed or cancelled. This communication will be sent to participants in due time.

REGISTRATION FEES
- Participants/Presenters: **€ 200**
- VAT is not applicable to the registration fees due to art. 10 DPR 633/26.10.72 and subsequent modifications.

Coffee break and light lunch are included.

CONTACTS
Specializing Master & Continuing Education Office – Department of Energy
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SCIENTIFIC COMITEE

Prof. Gianluca D'Errico (Polimi, DENG)
Full professor at the Department of Energy at Politecnico di Milano.

Prof. Gianluca Montenegro (Polimi, DENG)
Full Professor at the Department of Energy at Politecnico di Milano.

Prof. Tommaso Lucchini (Polimi, DENG)
Associate professor at the Department of Energy at Politecnico di Milano.

Dott. Giovanni Gianetti (Polimi, DENG)
Assistant Professor at the Department of Energy at Politecnico di Milano.

Prof. Dr.-Ing. Christian Hasse (TU Darmstadt)
Full Professor at the Technical University of Darmstadt and head of the Institute for the Simulation of Reactive Thermo-Fluid Systems.

Prof. Dr. habil. Andreas Dreizler (TU Darmstadt)
Full Professor at the Technical University of Darmstadt.

Dr.-Ing. Holger Marschall (TU Darmstadt)
Head of Research Group "Computational Multiphase Flow".

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FINAL PROGRAM

March 11

09:30	**Registration**	
10:00	**Welcome and greetings**	
	Hydrogen and Alternative Fuels (part 1)	
10:15	**Alessandro Ballatore (Eindhoven University of Technology)**	LES-FGM of hydrogen jets including preferential diffusion
10:40	**Gabriela Bracho (Universitat Politècnica de València)**	Numerical investigation of the combustion behavior in a CI oxy-fuel engine fueled with OME3 for pollutant emissions reduction
11:05	**Lorenzo Sforza (Politecnico di Milano)**	Modeling of hydrogen-fueled spark-ignition engines for light-duty applications
11:30	**Viktoria Kübler-Tesch (TU Darmstadt)**	Modeling of preferential evaporation in iso-octane/ethanol sprays
11:55	**Pietro De Palma (Politecnico di Bari)**	Modelling hydrogen injection for internal combustion engines using WENO schemes in the OpenFOAM framework.
12:20	**Angelo Onorati (Politecnico di Milano)**	The Gasdyn code for 0D/1D simulations of IC Engines fed with renewable fuels
12:45	**Lunch**	
	Advanced IC Engine Concepts	
14:00	**Max Hasenzahl (TU Darmstadt)**	Investigation of near-wall processes in an optically accessible SI-Engine using wall-resolved Large Eddy Simulations
14:25	**Gabriele Milano (Marmotors s.r.l.)**	Combustion optimisation of a passive pre-chamber motorcycle engine and of an innovative rotary engine using OpenFoam
	Mesh Generation and Management	
14:50	**Rajat Soni (LEC GmbH)**	Automating the boring stuff: Mesh generation and simulation setup workflow
15:15	**Éric Lendormy (Wärtsilä)**	AATE (/ˈɑːteˣ/): Advanced Analysis Tool for Engines
15:40	**Bishal Shrestha (Aalto University)**	Simulation and validation of an internal combustion engine under motored condition using OpenFOAM
16:05	**Giovanni Gianetti (Politecnico di Milano)**	Full cycle IC Engine simulation methodology with flexible automatic mesh generation
16:30	**Coffee Break**	
	Exhaust After-Treatment Systems	
17:10	**Augusto Della Torre (Politecnico di Milano)**	CFD assessment of heating strategies of aftertreatment systems for the reduction of the catalyst light-off time
17:35	**Lorenzo Pace (Emitec Technologies GmbH)**	Full scale CFD simulation of an advanced exhaust after treatment.
18:00	**Roberto Lange (TU Darmstadt)**	Understanding Spray-Wall Interaction in SCR Systems based Reference Data Insights

March 12

	Spray - Combustion Modeling (part 1)	
09:00	**Magnus Kircher (STFS - TU Darmstadt)**	Investigation of knocking combustion initiation based on multi-cycle engine LES
09:25	**Francesco Duronio (Università degli studi dell'Aquila)**	CFD Simulation of Injection Processes in OpenFOAM: Under-expanded Jets and Lagrangian Sprays
09:50	**Andrea Di Matteo (Eindhoven University of Technology)**	Effect of turbulent mixing on ignition behavior of high-pressure spray
10:15	**Coffee Break**	
	Spray - Combustion Modeling (part 1)	
11:00	**Alberto Cuoci (Politecnico di Milano)**	Accelerating CFD Simulations of Reactive Flows through Cell Agglomeration and Adaptive Chemistry Techniques
11:25	**Hong G. Im (KAUST)**	High fidelity volume-of-fluid simulations of multiple transient injection in diesel condition
11:50	**Tommaso Lucchini (Politecnico di Milano)**	Combustion models for hydrogen and ammonia operating under premixed and diffusive dual-fuel combustion modes
12:15	**Lunch**	
	Hydrogen and Alternative Fuels (part 2)	
13:30	**Benjamin Boehm (TU Darmstadt)**	Comprehensive validation data for IC engines: The Approach of the Darmstadt Engine Workshop for Hydrogen
13:55	**Ludovico Viglione (Wärtsilä)**	Numerical modelling of 2-stroke marine engines for future fuels applications: Ammonia and Methanol dual-fuel combustion system development
14:20	**Michele Battistoni (University of Perugia)**	Accelerating multi-phase flow simulations with neural network models in OpenFOAM for fuel-air mixing under transcritical conditions
14:45	**Vinzenz Schuh (TU Darmstadt)**	Modeling of turbulent hydrogen combustion
15:10	**Coffee Break**	
	BEV - Fuel Cells	
15:50	**Margherita Bulgarini (Politecnico di Milano)**	Application of a CFD Methodology for the Design of PEM Fuel Cells for propulsion applications
16:15	**Francesco Clerici (Engys)**	Progress on adjoint-CHT for the design of battery cooling plates
16:40	**Gianluca Montenegro (Politecnico di Milano)**	Development and Application of a CFD Framework for the Simulation of Fully Coupled Electromagnetic and Heat Transfer Process Inside Electric Motors