7th Two-Day Meeting

On Propulsion Simulations using OpenFOAM Technology

Preliminary programme:

Monday November 9th			
8:30	**Registration**		
9:00	**Welcome greetings**		
SESSION 1: Spray and Combustion - Part 1			
9:15	**L. Viglione**	Wärtsilä Services Switzerland AG	*OpenFoam and LibICE methodology application to Large 2S Marine Engines*
9:30	**J. Alopaeus**	Wärtsilä Finland Oy	*Development of a CFD-Based Virtual Extension of an Optical Spray Combustion Chamber for Advanced Spray Research Using OpenFOAM*
9:45	**V. Huschka**	Technische Universität Darmstadt	*Update on LES Spray simulation*
10:00	**G. Gianetti**	Politecnico di Milano	*Conjugate Heat Transfer Methodology for Thermal Assessment of Methanol Dual-Fuel Retrofitted Marine Engines*
10:15	**F. Duronio**	Università degli Studi dell'Aquila	*Towards Advanced Simulations of Under-Expanded Multiphase Jets in Propulsion Systems: Low-Dissipation Numerics and Real-Fluid Thermodynamics*
10:30	Session discussion		
10:50	**Coffee break**		
SESSION 2: Hydrogen and Alternative Fuels - Part 1			
11:15	**M. Gülüm**	Karadeniz Teknik Üniversitesi	*Prediction of frictional losses of alternative fuels using machine learning models*
11:30	**G. Lopez**	University of the Basque Country	*Parametric study of double-pulse diesel pilot injection strategies in a retrofitted marine diesel–H2 dual-fuel engine*
11:45	**F. Schenkel**	Eindhoven University of Technology	*Modelling of a spark-ignition engine fuelled by ammonia using FGM*
12:00	**J. Moradi**	University of Oulu	*OpenFOAM-Based Investigation of Underexpanded Hydrogen Jets: Effects of Pressure Ratio and Ambient Gas on Jet Penetration and Mixing*
12:15	**V. Shuh**	Technische Universität Darmstadt	*Turbulent H2 combustion modeling – Presentation of the latest model developments*
12:30	Session discussion		
12:50	**Lunch**		
SESSION 3: Methodologies to handle moving complex geometries			
14:00	**S. Leponiemi**	Wärtsilä Finland	*Multi-Region ICE Simulations in OpenFOAM 14*
14:15	**L. Sforza**	Politecnico di Milano	*A domain-splitting framework for automatic multi-mesh, multi-solver full-cycle engine simulations in OpenFOAM/LibICE*
14:30	**C. Gößnitzer**	LEC GmbH	*LEC LEAP - An Automated, Up-to-date Engine and General CFD Workflow*
14:45	**H. Jasak**	University of Cambridge	*Propeller modelling approaches in self-propulsion of ships*
15:00	Session discussion		
SESSION 4: Panel discussion			
15:20	*OpenFOAM for propulsion: innovation vs industrial application*		
16:00	**Coffee break**		
SESSION 5: Advanced Engine Concepts			
16:30	**M. Gadalla**	Wärtsilä Finland Oy	*The OpenFOAM Technology for Multi-Cycle Partially Premixed SI Engines*
16:45	**F. Ramognino**	Politecnico di Milano	*Multi-cycle simulations in Wankel engines: computational methodology and experimental validation*
17:00	**G. Bracho**	CMT - Clean Mobility and Thermofluids	*Assessment of Operating Conditions and Combustion Performance in an Oxy-Fuel Compression Ignition Engine Using OpenFOAM: Towards NOx-free and Carbon Capture-Enabled technologies*
17:15	**G. Callegaro**	Università degli Studi di Modena	*An Open-Source 3D-CFD Methodology for Scavenging–Combustion Analysis of a Hydrogen-Fuelled Opposed-Piston Two-Stroke Engine*
17:30	Session discussion		
20:00	**Social dinner**		

Tuesday November 10th			
SESSION 6: Hydrogen and Alternative Fuels - Part 2			
9:00	**C. Baronetto**	Politecnico di Torino	*Implementation of the AUSM ccheme in OpenFOAM for underexpanded hydrogen jet simulations*
9:15	**M. Capecci, I. Cozza, V. Pezza**	Politecnico di Milano, Dumarey Automotive Italia	*In-Cylinder Mixture Formation and Combustion in H2-DI Engines: A Multi-Cycle CFD Study for Different Injection Strategies*
9:30	**G. Bracho**	CMT - Clean Mobility and Thermofluids	*From Spray Dynamics to Engine Combustion: A CFD Numerical Study of Ammonia-Fueled Compression Ignition Engines*
9:45	Session discussion		
SESSION 7: Exhaust after treatment systems and 1D-3D engine modeling			
10:00	**G. Montenegro, A. Onorati**	Politecnico di Milano	*1D-3D Coupled Simulation for engine simulation: wave action, spray targeting and injection timing*
10:15	**M. Pelosin**	Politecnico di Milano	*A CHT-CFD framework coupling spray, wall-film formation and porous-media interactions: application to a heavy-duty Diesel SCR aftertreatment system equipped with an innovative wire-mesh mixer*
10:30	**R. Lange**	Technische Universität Darmstadt	*Numerical Investigation of Solid Formation in a Generic SCR Channel*
10:45	Session discussion		
11:00	**Coffee break**		
SESSION 8: Spray and Combustion - Part 2			
11:20	**J. Pastor**	CMT - Clean Mobility and Thermofluids	*Spray combustion LES modelling framework in OpenFOAM: Application of an injection model from VOF simulations coupled with finite-rate chemistry*
11:35	**T. Lucchini**	Politecnico di Milano	*Lagrangian wall film model for spray-wall interaction in high-performance naturally aspirated SI engines*
11:50	**M. Dotteschini**	Università degli Studi di Udine	*OpenFOAM implementation of a novel flame kernel expansion model for lean hydrogen combustion*
12:05	**P. Chen**	KAUST - King Abdullah University of Science and Technology	*A compressible geometric volume-of-fluid framework for high-fidelity simulation of diesel injection*
12:20	**A. Rehman**	University of Oulu	*OpenFOAM-Based Modeling of In-Cylinder Combustion and Gaseous-Fuel Mixture Formation*
12:35	Session discussion		
12:50	**Lunch**		
SESSION 9: Open discussion			
14:00	*Innovating propulsion: OpenFOAM meets AI*		
SESSION 10: Fuel cells, BEV Powertrain modeling			
14:45	**M. Bulgarini**	Politecnico di Milano	*A CFD methodology for the design and optimisation of PEM fuel cell flow fields for propulsion applications*
15:00	**C. Antetomaso**	CNR-STEMS	*Modeling Droplet Transport and Surface Adhesion in Fuel Cell Flow Channels*
15:15	**M. Tariq**	Politecnico di Milano	*A Comprehensive CFD-Driven Approach to Thermal Modeling of Batteries and Electric Motors their Cooling System Optimization*
15:30	Session discussion		