Preliminary program of FMC 2026*

Tuesday 23.06.2026

10.00	Registration		
11.00-11.30	**Opening Ceremony**		
11.30-12.15	**Plenary Lecture by Prof. Ramis Örlü** *High-resolution or high-illusion?* *Revisiting the role of hot-wire anemometry in wall turbulence*		
12.15-12.45	**Semi-plenary Lecture by:** (2 parallel thematic lectures)		
	Prof. Paweł Flaszyński *Shock wave boundary layer interactions in compressor configurations*	**Prof. Maciej Marek** *Fluid flow through randomly packed particles*	
12.45-14.00	Lunch		
14.00-16.00	**Session 1**: (3 parallel thematic sessions, with 5–6 presentations each)		
	AERO1	**MULT1**	**AI&ML**
16.00-16.30	Coffee break		
16.30-17.30	**Poster teasers session**		
17.30-18.30	**Poster display**		
19.00-22.00	Get-together party		

Wednesday 24.06.2026

9.00-9.45	**Plenary Lecture by Prof. Colm-cille P. Caulfield** *In search of stratified turbulence*		
9.45-10.15	Coffee break		
10.15-12.30	**Session 2**: (3 parallel thematic subsessions, with 5–6 presentations each)		
	EXP	**CFD1**	**AERO2**
12.30-13.45	Lunch		
13.45-14.30	**Industry session**		
14.30-15.00	**Semi-plenary Lecture by:** (2 parallel thematic lectures)		
	Dr Tomasz Bobiński *Nature-inspired cloaking technology in water waveguide systems*	**Dr Michał Lipian** *Surrogate modelling in the GPU era: Rethinking the role of low-fidelity aerodynamic models*	
15.00-15.30	Coffee break		
15.30-17.45	**Session 3**: (3 parallel thematic subsessions, with 5-6 presentations each)		
	MULT2	**AERO3**	**GEN**
18.00-18.30	**Public lecture by Prof. Szymon Malinowski** *Fluid dynamics of Earth's climate*		

Thursday 25.06.2026

9.00-9.45	**Plenary Lecture by Prof. Manuel García-Villalba** *Computational modelling of flow and transport phenomena in the left atrium*		
9.45-10.15	Coffee break		
10.15-12.45	**Young researchers Prof. J. W. Elsner's competition** (6 presentations)		
12.45-14.15	Lunch		
13.45-14.15	Jury meeting of Young researchers Prof. J. W. Elsner's competition		
14.15-16.15	**Session 4**: (3 parallel thematic subsessions, with 4-5 presentations each)		
	BIOL	**TURB**	**CFD2**
16.15-16.45	Coffee break		
16.45-17.15	Meeting of the Fluid Mechanics Section of the Committee for Mechanics PAS		
17.30	Departure for the gala dinner		
18.00-22.00	Conference gala dinner		

Friday 26.06.2026

9.00-9.45	**Plenary Lecture by Prof. Paul G. A. Cizmas** *Reduced-order models and machine learning of unsteady flows*		
9.45-10.15	Coffee break		
10.15-12.30	**Session 5**: (3 parallel thematic subsessions, with 5–6 presentations each)		
	FMACH	**AERO4**	**THERM**
12.30-13.00	**Closing of the Conference**		
13.00-14.15	Lunch		

*The final conference program and session layout may be subject to modification.

Thematic sessions of the conference

Aerodynamics

AERO1. Compressible Flows and Shock-Induced Phenomena

This session focuses on compressible flow phenomena in high-speed aerodynamics, with particular emphasis on shock–boundary layer interactions, flow separation, unsteady effects, and their analysis using advanced numerical and experimental approaches.

5 presentations during Session 1 on Tuesday, 23.06.2026

1. K. Skoczylas, A. Bogusławski, S. Dykas, M. Majkut, K. Smołka: Numerical and experimental studies of low-frequency unsteadiness in shock wave boundary layer interaction
2. M. Piotrowicz, M. Kurowski, A. Hanfy, P. Doerffer, M. Śleszyński, P. Flaszyński: Effect of Inflow Conditions on Shock-Induced Separation on a Compressor Stator Profile
3. F.D. Tomczak: Explicit Algebraic Reynolds Stress Model Validation based on Shock Wave-Boundary Layer Interaction Experiment
4. S. Kubacki, K. Kurec, A. Jaworski, M. Wielgosz: Numerical study of surface thermal load on a Mars entry capsule
5. R. Ramadas, S. Advaith: Effect of Chevron-Induced Jet Mixing on Entrainment Characteristics of a Supersonic Ejector

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AERO2. Dynamics of External Flows

This session focuses on aerodynamic and hydrodynamic behavior of complex external flows in realistic configurations, combining numerical and experimental approaches to analyze flow structures, performance, and environmental interactions across engineering applications.

5 presentations during Session 2 on Wednesday, 24.06.2026

1. T. Wacławczyk: Numerical Study of a Twin-Foil System for Diode Laser Hygrometer
2. B. Potęga, E. Cieślikowski, K. Walicki, M. Remer: Understanding of the flow complexity of motorcycle while cornering
3. B. Potęga, J. Lepiarz, K. Skalska, M. Remer: Aerodynamic Characteristics of a Leaning Racing Motorcycle Under Combined Slip and Lean Angles: Experimental Study
4. M. Pisula, M. Poćwierz, J. Szumbarski: Pedestrian comfort and ventilation - Numerical analysis of airflow in a building quarter
5. B. Allweyer, S. Grün, D. Hübner, F. Rückert: Determination of Optimal Locations of River Turbines based on Simulations

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AERO3. Rotating Machinery and Propeller Aerodynamics

This session focuses on aerodynamic analysis and design of rotating machinery, highlighting the influence of turbulence, blade dynamics, noise reduction, and advanced experimental and numerical methods on propeller and wind turbine performance.

5 presentations during Session 3 on Wednesday, 24.06.2026

1. F. U. Rückert, D. Hübner, S. Grün, B. Allweyer, C. Sassen: Influence of Turbulence on the Flow Behavior of Propeller Blade Geometries
2. B. Allweyer, S. Grün, D. Hübner, F. Rückert: Experimental assessment of efficiency increase on UAV propellers using microstructures
3. O. Szulc, T. Suresh, A. Sieradzki, P. Flaszyński: High-fidelity analysis of low-noise UAV rotor designs

4. F. Wasilczuk, P. Flaszyńki, M. Piotrowicz, K. Gnebner, Y. Govers, B. Zima, M. Wójcik: Analysis of aerodynamic damping of a wind turbine blade oscillating in a cold chamber
5. A. Kolata, K. Zawadzki, W. Tomecki, M. Dorenda, K. Rozbicki, J. Klepacz, K. Juszczak, G. Widerska, J. Maciejewski, M. Lipian, M. Kulak, K. Olasek: Development of aerodynamic components in a small wind turbine by the GUST team

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AERO4. Flow Control in Aerodynamic Applications

This session focuses on experimental and numerical investigations of flow control techniques in aerodynamics, highlighting separation control, drag reduction, and advanced measurement methods for complex flow structures.

5 presentations during Session 5 on Friday, 26.06.2026

1. A. Dróżdż, M. Romańczyk, W. Elsner: Passive control of the turbulent separation induced by the convex geometry of NACA4412
2. M. Romańczyk, A. Dróżdż, W. Elsner: Experimental study of left-tilted wavy wall for turbulent separation control
3. J.A. Jankiewicz: Numerical Analysis of the Effect of Gothic Vortex Generator Chordwise Location on the Aerodynamic Characteristics of the NACA 4415 Airfoil
4. T. Suresh, N. Maynard, J.A. Khalil, R. El Akoury, M. Braza, O. Szulc, P. Flaszyński: Aeroacoustic investigation of travelling wave as flow control for airfoil drag reduction
5. W. Stryczniewicz: Application of Helium Filled Soap Bubbles for 3D PIV investigations of large scale passive flow control devices

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AI&ML. AI and machine learning in fluid mechanics

This session focuses on the use of artificial intelligence and machine learning techniques in fluid mechanics, highlighting data-driven modeling, flow control, and optimization across a range of aerodynamic and environmental applications.

5 presentations during Session 1 on Tuesday, 23.06.2026

1. J. Knight, H. Medina, C. Ellis, S. Ambrose, H. Fadhila, C. Eastwick: Neural Network Inlet Condition for Simulating Boundary Layer Natural Transition
2. K. Bukowski, T. De Maria, S. Ahizi, M.A. Mendez: Data-driven modeling and state estimation of sloshing dynamics from sparse measurements: an experimental and numerical study
3. T. Krakowski, W. Stankiewicz: Active flow control for drag reduction – machine learning strategies comparison
4. M.A. Nasr, B.Y.J. Wong, C.M.J. Tay: Deep-Learning-Based Design Optimization and Aerodynamic Performance Validation of a Natural Laminar Flow Airfoil
5. S. Grün, B. Allweyer, D. Hübner, F. Rückert: Surveying river beds with flow simulation for optimal positioning of river turbines

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BIOL. Biological flows

This session focuses on fluid dynamics in biological and bio-inspired systems, combining experimental and computational approaches to investigate flow behavior in physiological processes, micro-scale transport, and bioreactor environments.

4 presentations during Session 4 on Thursday, 25.06.2026

1. A. Bartosik, B. Jaworska-Jóźwiak, M. Sadowski, M. Pasiarski: Experiments on Human Blood Shear Stress and Viscosity at Low and Moderate Haematocrit

2. H. Saini, K. Gyoten, P. Friend, T. Pruett, J. Sushil Rao, J. Tithof: Pre-Clinically Validated Lumped Parameter Liver Model to Guide Pre-Operative Resection
3. T.A. Kowalewski: Flow of DNA Chains in Molecular and Microfluidic Systems
4. S. Telyma: Some aspects of modelling the process of organic wastewaters removal in bioreactors and influence of oxygen regime on efficiency of purification

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Computational fluid dynamics

CFD1. Numerical Methods and Analysis

This session focuses on advances in CFD methodology, presenting high-order and structure-preserving numerical schemes, stability and splitting analyses, and algorithmic tools for accurately simulating and quantifying complex convection–diffusion and incompressible flow phenomena.

6 presentations during Session 2 on Wednesday, 24.06.2026

1. A. Bogusławski, A. Tyliszczak, B.J. Geurts: Global stability analysis of multi-step time-integration methods applied to the Fourier-discretised linear convection-diffusion equation
2. A. Kajzer: Revisiting the 2nd-order semi-discrete finite volume schemes for hyperbolic conservation laws on Cartesian grids
3. A. Hokpunna: Performance of Very Higher-Order Multi-Moment Method in the Nonlinear Convection-Diffusion Equations
4. J. Gałecki, J. Szumbarski: A consistent splitting scheme for unsteady incompressible flows with exact incompressibility enforcement
5. J. Szumbarski, J. Gałecki: Simulation of unsteady internal flows with novel dissipative inlet/outlet conditions
6. J. Fabisiak, S. Gepner: Algorithm for extracting Advection-Diffusion operator eigenvalue as mixing measure in double gyre flow

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CFD2. Simulations of Complex Unsteady Flows

This session focuses on computational investigations of unsteady flow dynamics, highlighting advanced numerical approaches for capturing instabilities, transient phenomena, and complex flow behavior in both internal and external configurations.

4 presentations during Session 4 on Thursday, 25.06.2026

1. W. Stankiewicz, T. Krakowski: A Comparative Study of Physics-Based, Sparse, and Black-Box Reduced Order Models of Tandem Cylinder Wake Dynamics
2. D. Kumar: Blockage effect on linearly unstable modes in flow past elliptic cylinders
3. P. J. Ziółkowski, M. Bryk, T. Ochrymiuk, J. Badur: Critical Strouhal velocity during flow over semi-fixed industrial steel chimney
4. A. Alavi, K. Urbanowicz: 1D, 2D axis-symmetric and 3D numerical simulation of valve induced water hammer
5. A. Belghith, A. Aouadi, G. Bellakhal, J. Chahed: Analysis of Turbulence Modeling in Two-phase Particle-Laden Jet Flows

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EXP. Experimental methods in fluid mechanics

This session focuses on experimental investigations of unsteady and complex flows, emphasizing vortex dynamics, wave phenomena, flow state identification, and aeroacoustic effects, supported by advanced laboratory and field measurement techniques.

6 presentations during Session 2 on Wednesday, 24.06.2026

1. J.I. Yano: Analysis of A Thermal Vortex Ring Generated in the Laboratory: Vortex Dynamics
2. J. Spała, M. Wacławczyk, J-I. Yano: Multiscale analysis of turbulent fluxes for Reynolds averaging in atmospheric flows
3. K.K. Jani, A. Giesecke, T. Gundrum, F. Stefani: Identification of Flow States for the DRESDYN Precession Experiment Using Ultrasound Doppler Velocimetry
4. S. Biegowski, M. Paprota: Shoaling of gravity-capillary waves
5. J.M. Kopania: Impact of Orientation Angle on Vortex Shedding and Noise Generation of a Square Cylinder in Low-Velocity Airflows
6. P. Gaj, I. Czajka, J.M. Kopania: Laboratory investigation of aeroacoustic phenomena occurring during high-pressure gas ejection

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FMACH. Flow machinery and internal flow devices

This session focuses on the analysis and design of internal flow devices and flow machinery, highlighting performance, efficiency, and flow conditioning using experimental, numerical, and analytical approaches.

6 presentations during Session 5 on Friday, 26.06.2026

1. A. Olczyk, K. Sobczak, K. Kantyka, G. Liśkiewicz, B. Miller, M. Tomecka, P. Rusinow: Numerical and experimental analysis of flow uniformity in a star-type manifold
2. E. Lo Pinto, M. Katz, S. Clément, S. Gaillot, Y. Weiss: Evaluation of flow entrainment ratio of a jet-pump based system intended for JHR experimental devices
3. N. Rupasinghe, S. Michel, A. Baumann, S. Gülde, D. Biermann, P. Eberhard: Investigation of fluid flow in the ejector nozzle during ejector deep hole drilling using mesh-free methods
4. K. Rusin, W. Wróblewski: Semi-analytical flow model of low-boiling medium in Tesla turbine
5. J. Dziuba, K. Smołka: Comparison of traditional methods of industrial fan calculations with modern tools
6. A.B. Şimşek, B. Erdoğan, N.B. Üner: Multiphysics Modeling and Experimental Characterization of a Commercial High-Pressure Reciprocating Compressor

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GEN. General fluid dynamics

This session focuses on general fluid dynamics problems in complex systems, highlighting flow behavior, transport processes, and performance in applications involving non-Newtonian fluids, thermal effects, and energy and propulsion systems.

6 presentations during Session 3 on Wednesday, 24.06.2026

1. E. Smyk: On the use of entropy generation to quantify flow conditioning
2. S. Sengupta: Critical assessment of buoyant flow dynamics for enhancing the performance of a solar updraft tower
3. M. Amiri, A. Tyliszczak: NO_x emissions in NH_3/H_2 co-combustion under O_2-enrichment and steam dilution conditions
4. Ł. Ciorga, T. Banaszkiewicz: Design of a nitrous oxide filling system for sounding rocket propellant tanks
5. A. Banerjee: Rheological and Thermal Influences on Secondary Flow in Polygonal Duct Manifolds
6. M.P. Rezaei, G. Kudra, K. Witkowski, J. Awrejcewicz: Pre-, Near-, and Post-Resonance Regimes of Shear-Thickening Fluids: Distinct Dynamic Responses

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Multiphase flows and complex fluids

MULT1. Disperse Multiphase Flows

This session focuses on disperse multiphase flows, emphasizing particle and droplet dynamics, inter-particle interactions, and transport processes across a wide range of scales, supported by advanced numerical and modeling approaches.

6 presentations during Session 1 on Tuesday, 23.06.2026

1. L.H. Carnevale, K.L. Ng, P. Deuar, Z. Che, M. Klamka, T. Bobiński, P.E. Theodorakis: Many-Body Dissipative Particle Dynamics of Micro and Nano Scale Flows
2. A. Ababaei, B. Rosa, M. Manna: The effect of charge magnitude on the collision efficiency between two settling cloud droplets
3. M. Manna, B. Rosa, A. Ababaei: The effect of electric field on the collision efficiency between two uncharged settling cloud droplets
4. Ch. Shekhar, H.N. Mirajkar, P. Zdybel, Y. Melikhov, M.L. Ekiel-Jeżewska: Hydrodynamic orienting of rigid particles settling under gravity in a viscous fluid at low Reynolds number
5. Ł. Łaniewski-Wołłk, C. Leonardi: Improving of proppant screen-out modelling for rough fractures
6. M. Rajek, J. Pozorski: High-fidelity pseudo-spectral simulation of single-phase and dispersed two-phase isotropic turbulence

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MULT2. Interfacial Multiphase Flows

This session focuses on interfacial phenomena in multiphase flows, highlighting contact line dynamics, droplet behavior, and interface instabilities, as well as transport processes and modeling approaches in complex flow systems.

6 presentations during Session 3 on Wednesday, 24.06.2026

1. M. Klamka, T. Bobiński: Shaking Things Up: Dynamic contact angle hysteresis measurement using a harmonically oscillated substrate
2. M. Remer, T. Bobiński: Mesoscopic oscillations of triple line in capillary flows
3. I.P. Ungureanu, M. Boni, I.R. Andrei, A. Staicu: Control of Interface Oscillations in Hanging Droplets via Long-Range Interactions
4. P. Niegodajew, M. Wilczyński, A. Durajski, M. Marek: Effect of column wall corrugation on liquid transport in random packed beds of spherical particles
5. P. Marczak, M. Jaszczur: CFD Simulations of Multiphase Flow and Radiometric Probe Response
6. N.F. Dimitrieva: Complex flows in a ventilated cavity

THERM. Thermal-fluid problems

This session focuses on heat transfer and thermal-fluid processes, combining experimental and numerical studies of convection, advanced cooling concepts, and energy conversion in complex and multiphase systems.

6 presentations during Session 5 on Friday, 26.06.2026

1. A. Kraszewska, J. Donizak: Validation of a numerical model for thermomagnetic convection of a paramagnetic fluid in strong magnetic fields

2. M. Szydłowski, G. Górecki, A. Gutkowski: Experimental investigation of a 3D-printed heat pipe with mathematically determined operating limits
3. A. Merdjani, W. Olszewski, N. Kizilova: Fractal flow-based cooling systems for single fuel cells and fuel cell stacks
4. S. Naqvi, N. Kizilova: Fractal biomimetic fins for optimal flow-based systems for internal/external cooling/heating
5. A. Rożek, S. Rulik: Multiphase modelling of vacuum insulated TES charging process
6. I. Wardach-Święcicka: XDEM for modelling thermal conversion processes in granular media

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TURB. Turbulence and transition

This session focuses on the mechanisms of flow instability and transition to turbulence, combining theoretical, numerical, and experimental approaches across a range of configurations.

5 presentations during Session 4 on Thursday, 25.06.2026

1. J. Szumbarski: Flow instability in a channel with obliquely corrugated walls
2. E. Tuliszka-Sznitko: Subcritical transition to turbulence in the flow between counter-rotating cylinders
3. S. Gepner, G. Kawahara: From square to circle: discovering steady localised travelling waves in pipe flow through geometric homotopy
4. R. Ayats, L. Klotz, B. Hof: From directed percolation to patterned turbulence
5. J. Muller, S. Rozborski, D. Boldo: Time dependent transition on vertical heating plate

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Poster session of the conference

16 presentations during Poster teasers session and Poster display on Tuesday, 23.06.2026

1. M. Czarnecki, K. Wójciak, J.M. Kopania, P. Gaj: Acoustic properties of silencers with micro perforated panels of multiple perforation sizes in airflow
2. B. Okonokhua, M. Pahlavanzadeh, K. Rusin, W. Wróblewski: Porous Media Layer Model to account for roughness in the Mini-channel flows
3. D. Walisiak, J.M. Kopania, P. Gaj, K. Wójciak: Identification of Noise Sources in HVAC End Elements Using Acoustic Camera in an Anechoic Environment
4. K. Wójciak, I. Czajka, J.M. Kopania: Real-world aerodynamic and acoustic performance of multi-disk radial fans
5. M. Majkut, S. Dykas, K. Smołka, A. Bogusławski, K. Skoczylas: Influence of Humidity on Self-Excited Shock Wave Oscillations in Transonic Planar Nozzles
6. A. Kocoń, R. Gnatowska: Transitional flow regimes in tandem configurations of triangular cylinders
7. A.B. Şimşek, B. Erdoğan, N.B. Üner: Numerical and experimental study of external heat loss on the piston-barrel assembly of a high-pressure reciprocating compressor
8. K. Sindera: Experimental and numerical study of the biomimetic catalytic carrier based on fish gills
9. P. Hercel, D. Kardaś: Simulation of thermal–fluid phenomena during single wood particle pyrolysis with shrinkage effects
10. B. Jóźwiak: Thermal and rheological behavior of fly ash–based deep eutectic solvent dispersions
11. J. Wiśniewski, J. Szumbarski: VAWT load-limiting optimization using height-variable blade skew
12. M. Błaszczyk: Dynamics of Emulsion Droplet Transport in Cross-Capillary Microstructures
13. A. Wawrzak: Dynamics of lifted flame base influenced by global instability
14. K. Wawrzak: Influence of Diffusion Models on LES/DNS of Hydrogen Flames
15. A. Olszewska, Z. Peter: Numerical and Experimental Analysis of Drag Coefficient of a Disc-Gap-Band Parachute
16. M Pilecki, J Płuziński: Active Suppression of Vortex-Induced Vibrations: Comparative Study between PID and SMC Controllers

Young researchers Prof. J. W. Elsner's competition

6 presentations during the Competition session on Thursday, 25.06.2026

1. P. Kamiński, A. Tyliszczak: Mixing enhancement via shape altering of bluff body flame stabilizers
2. L. Caban, A. Wawrzak, A. Tyliszczak: From passive to active control of flame dynamics using bluff body stabilization and oxidizer flow excitation
3. C. Burns, M. Kulak, K. Sobczak: Low-Fidelity Geometric Shape Optimization of a Counter-Rotating Open Rotor
4. D. Żyła-Jabłońska, T. Bobiński: Towards perfect cloaking - combining cloaks for enhanced invisibility in water waveguide systems
5. Y. Li, B.R. Noack: Jet-mixing control landscapes revealed by Bayesian optimization
6. S. Król, M. Wacławczyk: Scaling of turbulence kinetic energy dissipation and temperature variance destruction rates in dry convection and in marine boundary layers