PROGRAM SPACE TRENDS

DAY 1	
9:30 Registration and morning cup of coffee	
10:00	Welcome to Space Trends Conference! Opening remarks: • Łukasiewicz Research Network – Institute of Aviation • Warsaw University of Technology • Polish Space Agency
10:15	Introduction speech • **Green propulsion**: from AMBER Rocket to orbital operations Adam Okniński, Director of Space Technologies Center (Łukasiewicz - Institute of Aviation)
10:30	**KEYNOTE SPEECH** Michael Gozin (Tel Aviv University) Janus-type Hypergolic Fuels for Hybrid Systems using H_2O_2 and HAN – based oxidizers.
11:00 Coffee break	
11:15	Panel Discussion 1 **HOW WE DO IT. TECHNICAL CHALLENGES IN DEVELOPMENT OF GREEN SPACE PROPULSION. ENVIRONMENTAL IMPACT VERSUS COSTS AND AVAILABILITY. INDUSTRY CASE STUDIES** *Moderator:* European Space Agency *Panelists:* 1. Ariane Group 2. German Aerospace Center (DLR) 3. Łukasiewicz - ILOT 4. Arkadia Space 5. Benchmark Space System
12:30	Busch Group – market insight: How vacuum technology enables progress in spaceflight (Ingo Heitz; Jan-Hendrik Doerr)

12:45 Lunch	
13:45	Panel Discussion 2 **BRINGING NEW SPACE PROPULSION SOLUTIONS TO THE MARKET. COST IMPLICATIONS AND FEASIBILITY FOR LARGE-SCALE ADOPTION.** *Moderator:* Sylwester Wyka – Deputy Director for Research **Łukasiewicz - Institute of Aviation** *Panelists:* TBD: 1. MAIA Space 2. Thaliana Space 3. ESA 4. Airbus Defence and Space 5. Dawn Aerospace
15:00-17:00	LABOLATORY TECHNICAL TOUR Discover the Łukasiewicz - Institute of Aviation Laboratories for space application including vacuum propulsion hotfire facility

DAY 2	
8:30 Registration and morning cup of coffee	
09:00	**KEYNOTE SPEECH** Maurizio Natali (University of Perugia) „State-of-the-art of high temperature materials for rocket motors: a review”
09:30	Technical Session 1 **”Propulsion testing and modeling’** • Overview of Cryogenic Propulsion Components Tests at the DLR M3 Infrastructure – Justin Hardi (German Aerospace Center (DLR)) • The commissioning of the high-altitude test facility for space rocket propulsion testing - Michał Zieliński (Łukasiewicz - Institute of Aviation) • Challenges in developing students’ remote test stand for rocket propulsion systems - Michał Kret (Warsaw University of Technology) • Dynamics of E-pumps Developed for the RELIANCE Rocket Engine - Jiří Kozak (Inpraise Systems s.r.o.)

	• The influence of flash-boiling conditions on droplets from impinging-jet spray - Hernan Amaya (Warsaw University of Technology) • Effect of flash-boiling on spray-wall interaction under low-pressure injection - Rohit Thokala (Warsaw University of Technology) • Overview of Rocket Propulsion Test Activities at Łukasiewicz – Institute of Aviation in 2023-2024 - Tobiasz Mayer (Łukasiewicz - Institute of Aviation) • Throttleable Liquid Propulsion Demonstrator Simulation - Krzysztof Matysek (Łukasiewicz - Institute of Aviation)
11:00 Coffee break	
11:15	Panel Discussion 3 **SPACE PROPULSION BEYOND LEO - THE NEXT DECADES** *Panelists TBD*: 1. Polish Space Agency 2. The Exploration Company 3. Moog Space and Defense Group 4. Ariane Group 5. Nammo Raufoss AS 6. European Space Agency
12:15	**"SOLID AND HYBRID PROPULSION"** TECHNICAL SESSION 2 • Low smoke solid propellants based on GAP and ADN - Michał Chmielarek (Warsaw University of Technology) • Development of a ø610 mm solid rocket motor - Dariusz Sokołowski (Military Institute of Armament Technology) • 3D printing as a viable method of inhibiting solid propellant grains - Michał Tomporowski (Warsaw University of Technology) • Green Flip Control System – a hybrid propulsion solution for rotating a launcher's first stage - Adam Matusiewicz (SpaceForest) • Hybrid rocket motors' development in Students' Space Association - Bartosz Hyży (Warsaw University of Technology)
13:15 Lunch	
14:15	**"GREEN PROPULSION"** TECHNICAL SESSION 3 • Green Propellant Research at DLR Lampoldshausen – Christoph Kirchberger (German Aerospace Center (DLR))

	• Grace Development Programme: A green Engine for Future Spacecraft and Space Transportation – Paweł Surmacz (Łukasiewicz – Institute of Aviation) • Engine control unit for a green microsatellite propulsion system – Konrad Wojciechowski (Łukasiewicz – Institute of Aviation) • Demonstration of deep throttling with green storable propellants – a step towards future flexible space propusion – Dawid Cieśliński (Łukasiewicz - Institute of Aviation)
	”FUTURE PROPULSION SYSTEMS” TECHNICAL SESSION 4 • Detonative Propulsion Research - Michał Kawalec (Łukasiewicz - Institute of Aviation) • Water Electrolysis Propulsion for Spacecraft: A Comprehensive Review and Status Assessment - Puneeth Bheesetty (Warsaw University of Technology) • Electric propulsion activities in IFPiLM - Maciej Jakubczak (Institute of Plasma Physics and Laser Microfusion)
16:00	Conference Conclusion and Conference Awards
16:30	End of the Event