SEEP 2026 — 18th International Conference on Sustainable Energy & Environmental Protection

20–23 July 2026 | University of Rome Tor Vergata, Italy | Draft Program v23

Keynotes details	
H.E. Dr. Nawal Al Hosany *Permanent Representative of the UAE to the International Renewable Energy Agency (IRENA)*	Renewable Energy in the UAE and GCC Region: Current Status and Future Prospects
Prof. Fawaz K Bitar FREng (Fuzzy) *Senior Vice President Health, Safety, Environment & Carbon, bp, Honorary professor at the University of Aberdeen and Brunel University, London*	When the wave hits: Reflections on a life in energy
Prof. Cristina Cornaro *Full professor of Environmental Applied Physics at the Department of Enterprise Engineering of the University of Rome Tor Vergata, Italy*	Solar Synergies: Agrivoltaics, Buildings, and the Circular Energy Transition
Prof. Adam Z. Weber *Senior Scientist and Leader of the Energy-Conversion at Lawrence Berkeley National Laboratory (LBNL, USA)*	Hydrogen Generation and Use: Importance of Transport Phenomena
Prof. Christos N. Markides *Professor of Clean Energy Technologies, Head of the Clean Energy Processes Laboratory, Imperial College London (UK)*	Recent developments in advanced solar PV-X multigeneration technologies
Prof. Ibrahim Dincer *Full professor of Mechanical Engineering at Ontario Tech University, Oshawa, Ontario*	New Developments and Direction in Hydrogen Production Technologies
Prof. David Chiaramonti *Full professor of Energy Economics and Bioeconomy at the Polytechnic of Turin and chairs the Renewable Energy COnsortium for R&D (RE-CORD)*	Biofuels e biomaterial in EU and international policies
Prof. Ana Inés Fernández *Director of the Diopma Reseach group, University of Barcelona, Barcelona*	Advances in Phase Change Materials for Thermal Energy Storage: Materials Perspectives and Engineering Challenges

Prof. Antonio García Martínez *Full Professor and Senior Researcher at the Universitat Politècnica de Valencia, Valencia*	Future sustainable mobility and its implications for CO_2 emissions and energy efficiency
Prof. Abdul Ghani Olabi *Director of the Sustainable Energy and Power Systems Research Centre at the University of Sharjah, UAE*	Solar PV Based Cooling Systems
Prof. Hussam Jouhara FREng *Full Professor at Brunel University of London and a Fellow the Royal Academy of Engineering*	Decarbonising the Oil and Gas Sector through Advanced Waste Heat Recovery: Real-World Case Studies

DAY 1 | Monday, 20 July 2026

08:30-09:00 | Registration & Welcome Coffee

09:00-11:00 | Opening Ceremony & Welcome Addresses — Prof. Nathan Levialdi Ghiron Rector of Tor Vergata University, Prof. Massimiliano Caramia, Prof. Stefano Cordiner & Prof. Abdul Ghani Olabi · Keynote Lectures: H.E. Dr. Nawal Al Hosany · Prof. Fawaz K Bitar FREng · Prof. Cristina Cornaro

11:00-11:30 | Coffee Break

Time	Room B1	Room B2	Room B3
11:30-13:00	**Master Planning of Energy Systems I** **Chair: Tomasz Sikorski**	**Circular Economy & Sustainable Materials I** **Chair:**	**Sustainable Mobility & Powertrains I** **Chair: Lorenzo Bartolucci**
11:30	[SEEP-1026] Framework for Advanced Energy Efficiency Implementation in a Complex Environment *Boris Sučić / Jozef Stefan Institute, Slovenia*	[SEEP-1081] From Waste To Resource: A Mini Review On Chemical Recycling Of Pet-Based Waste *Janset Öztemur Sezgin / Istanbul Technical University, Turkey*	[SEEP-1123] Delivery emissions estimates: measurements and optimization *Blaž Luin / University of Ljubljana, Slovenia*
11:45	[SEEP-1041] Environmental and economic assessment of integrated urban energy systems with decarbonising technologies *Ruiqi Wang / Durham University, UK*	[SEEP-1090] Sustainability aspects of using biomethane in agriculture in Slovenia *Fouad Al-Mansour / Jožef Stefan Institute, Slovenia*	[SEEP-1064] Kinetic-Based Ignition Metrics Development for High Alcohol–Diesel Blends in Single-Injection and Pilot-Assisted Dual-Fuel Low Temperature Combustion *Fatimoh Balogun / University of Vaasa, Finland*
12:00	[SEEP-1047] Life cycle assessment of onshore and offshore CO2 transportation scenarios *Alexandru-Constantin Bozonc / Babes-Bolyai University, Romania*	[SEEP-1080] Mechanical Recycling Of Pet For Textile Fibers: Can We Do Better? *Suzan Özdemir / Istanbul Technical University, Turkey*	[SEEP-1157] OBD-Driven Grey-Box Modeling of a Toyota Yaris Cross: A low-cost Reverse Engineering Framework for EMS Analysis *Edoardo Cennamo / Tor Vergata University of Rome, Italy*
12:15	[SEEP-1068] Development of an AI-driven inverse design and costing frameworks for integrated fusion fuel cycles via active learning *Hyeonjeong Lee / Gyeongsang National University, South Korea*	[SEEP-1118] Forecasting and Spatial Analysis of Biomethane Potential and CO2 Mitigation up to year 2053 by Using Machine Learning Models: A Case Study for Kirklareli-Türkiye *Betul Ozer / Kirklareli University, Turkey*	[SEEP-1173] Development of a fuel cell/battery hybrid propulsion system for a zero-emissions waterbus *Giovanni Di Ilio / University of Naples Parthenope, Italy*
12:30	[SEEP-1074] Risk-Aware Day-Ahead Scheduling of Renewable Energy Communities with EV and Battery Flexibility under Joint Uncertainty *Mehran Moradi / Karlstad University, Sweden*		[SEEP-1116] Experimental Investigation of Passive and Active Pre-Chamber Technologies on a Natural Gas Marine Engine *Vincenzo Pennino / CNR-STEMS, Italy*

12:45	[SEEP-1093] Assessing The Role Of Micro-Scale Biogas In Residential Systems For Isolated Areas: An Optimization-Based Analysis *Francesco Baldi / ENEA, Italy*		
13:00-14:00 | Lunch Break			
14:00-14:45 | Keynote Lecture: Prof. Adam Z. Weber			
14:45-16:00	**Master Planning of Energy Systems II** **Chair: Stefano Mazzoni**	**Circular Economy & Sustainable Materials II** **Chair: Vincenzo Mulone**	**SYMPOSIUM: Hydrogen Production & Fuel Cell** **Chair: Abdul G. Olabi**
14:45	[SEEP-1083] Physics-Aware Digital Twins for Climate-Resilient Water–Energy Infrastructure, Part I: Probabilistic Forecasting and Surrogate State Representation *Amir Saman Tayerani Charmchi / Onpoom R&D Center, South Korea*	[SEEP-1132] Real-World Weathering of polyethylene terephthalate: How Direct Sunlight Alters the Crystallisation Thermal Kinetics and the Shelf Life *Mohamad Khaled Aljoumaa / Brunel University of London, UK*	[SEEP-1032] Linking Spatial and Electrochemical Degradation in HT-PEMFC under Dynamic Reformate and Start-Stop Operation *Emilija Todorovski / University of Ljubljana, Slovenia*
15:00	[SEEP-1084] Physics-Aware Digital Twins for Climate-Resilient Water–Energy Infrastructure, Part II: Surrogate-driven Self-Scheduling and Adaptive Optimization *Amir Saman Tayerani Charmchi / Onpoom R&D Center, South Korea*	[SEEP-1158] CFD simulation for investigation of flow dynamics in a Double-Chamber Electromethanogenesis Reactor *Stefanie Feilner / Technische Universität Berlin, Germany*	[SEEP-1152] Multi-physics analysis of cooling channel depth in high-temperature PEM fuel cells: Trade-off between thermal management and electrochemical performance *Mahdi Kheirrouz / Tor Vergata University of Rome, Italy*
15:15	[SEEP-1155] Beyond self-sufficiency: regulation-aware predictive control of hydrogen-integrated renewable energy communities *Alessandro Polimeni / Tor Vergata University of Rome, Italy*	[SEEP-1162] Data-driven prediction of pharmaceutical and COD removal from hospital wastewater in integrated biological-electrochemical treatment systems *Muhammad Usman Saleem / NUST / University of Engineering and Technology, Pakistan (online)*	[SEEP-1059] Off-Grid Offshore Wind-to-Hydrogen Production with Hybrid Battery–Supercapacitor Storage: A Case Study of a 7.5 MW System in Körsnäs, Finland *Adebayo Agbejule / VAMK University of Applied Sciences, Finland*
15:30	[SEEP-1029] The Political Economy of Energy Efficiency: Thermodynamic Limits, Policy Misalignment and Sustainability *Zafer Utlu / Istanbul Atlas University, Turkey*	[SEEP-1023] Development of a Circular Bioeconomy Framework for Yellow Passion Fruit Rind: Bioactive Recovery, Edible Oil fortification, and Bioethanol Generation *Kakali Borah / Indian Institute of Technology Guwahati, India*	[SEEP-1060] Control-oriented 1D Anion Exchange Membrane electrolyzer model for safe operating limits under Renewable Energy Coupling *Dušan Janković / Tor Vergata University of Rome, Italy*
15:45		[SEEP-1187] Techno-economic and environmental assessment of biogas production from olive mill waste and cattle manure in Montenegro *Rafat Al Afif / BOKU University, Austria*	[SEEP-1066] Enhancing the economic viability of high-temperature PEM fuel cell systems through waste heat utilization with an absorption chiller *Yoonjae Lee / Korea Institute of Energy Research, South Korea*
16:00-16:30 | Coffee Break			
16:30-18:00	**Master Planning of Energy Systems III** **Chair: Lorenzo Bartolucci**	**Sustainable Energy for Buildings & Industrial Processes I (ENEA)** **Chair: Alessandro Lorenzo Palma**	**SYMPOSIUM: Wind Energy in Transition: Development Scenarios, Strategic Research, and System Readiness**

16:30	[SEEP-1097] Hybrid soft sensor and tandem neural network for latent state identification and physical-constrained inverse design of industrial emissions *Chanho Kim / Gyeongsang National University, South Korea*	[SEEP-1106] Laboratory spray drying of spent pharmaceutical fermentation broth *Klemen Rola / University of Maribor, Slovenia*	PANEL DISCUSSION Panelists: Alessandro Corsini, OWEMES – Sapienza Davide Astiaso Garcia, Secretary General ANEV – Sapienza Francesco Lanni, RSE Giulio Lo Bianco, BaywaRe Enrico Carloni, Energy Expert, Royal Embassy of Denmark Alessandro Severini, Project Manager at iLStudio Engineering & Consulting srl
16:45	[SEEP-1099] A System-Level Feasibility Framework for Early-Stage Evaluation of Power-to-X-to-Power Plants *Aapo Hölsä / University of Oulu, Finland*	[SEEP-1057] Measurement of photovoltaic soiling losses at three sites in the central Mediterranean: large seasonal effects degrading for increasing latitude *Alcide di Sarra / ENEA, Italy*	
17:00	[SEEP-1100] Development of a Brightway-Based Regionalized LCA Platform Integrating Spatial and Process Characteristics *Weejin Lee / Gyeongsang National University, South Korea*	[SEEP-1094] Integration Of Thermal Energy Storage To Facilitate Renewable Energy Adoption In Breweries *Francesco Baldi / ENEA, Italy*	
17:15	[SEEP-1134] Coordinated Control of PV Inverters for Curtailment Reduction in Radial Low-Voltage Networks *Tomasz Sikorski / Wrocław University of Science and Technology, Poland*	[SEEP-1160] Physics-Constrained Spatio-Temporal Graph Neural Networks for Thermal Dynamics Modelling of a Real Office Building *Marco Donnini / Tor Vergata University of Rome, Italy*	
17:30	[SEEP-1115] Modelling Flexibility for Distributed Renewable Integration: A Review of Energy System Planning, Market, Network and Stability Models *Tommaso Gallozzi / Sapienza University of Rome, Italy*	[SEEP-1200] Numerical Analysis of a Solar Driven GPU-3 Stirling Engine for Supplying Electrical Power to a VRF HVAC System *Zabihullah Bakhshi / Kabul University, Afghanistan (online)*	
17:45	[SEEP-1151] Hydrogen Vehicle-to-Grid for Peak Shaving in Renewable Residential Microgrids: An Annual Sensitivity Analysis *Leonardo Federici / Università degli Studi Niccolo Cusano, Rome, Italy*		
18:00 | End of Technical Sessions — Day 1			

DAY 2 | Tuesday, 21 July 2026

09:00-09:30 | Keynote Lecture: Prof. Christos Markides

09:30-11:00 | AI use and ethics in academic publications - Ms. Telli Faez – Senior Publisher at Elsevier / Coffee Break Available
Meet the editors — Jouhara · Markides · García Martínez

09:30-11:00 | Official opening of the Poster Session

Time	Room B1	Room B2	Room B3
11:00-13:00	**Hydrogen & Energy Storage I** **Chair: Giovanni Di Ilio**	**Next-Gen Thermochemical Conversion I** **Chair: Vincenzo Mulone & Andrea Di Carlo**	**Solar Energy & Grid Integration** **Chair: Cristina Cornaro**
11:00	[SEEP-1089] Multi-Objective Techno-Economic Optimization of Green Hydrogen Production from Treated Wastewater *Cristina Renzi / ENEA, Italy*	[SEEP-1109] High-quality syngas for bio-synthetic natural gas (bio-SNG) production from integrated pyrolysis–gasification of residual biomass: experimental investigation and system modeling *Pietro Mele / Tor Vergata University of Rome, Italy*	[SEEP-1113] An integrated approach to Price Forecasting and Optimal Control for Revenue Maximisation through Battery Energy Storage Systems (BESSs) *Filippo Onori / Università Politecnica delle Marche, Italy*
11:15	[SEEP-1036] Linking Activation-Induced Spatial Heterogeneity to Degradation: The Role of Contact Pressure in HT-PEM Fuel Cells *Filip Todorovski / University of Ljubljana, Slovenia*	[SEEP-1095] Low-Temperature Catalytic Tar Reforming for Hot Gas Cleaning under Sorption-Enhanced Gasification Conditions *Armando Vitale / University of L'Aquila, Dept. of Industrial and Information Engineering and Economics (DIIIE), L'Aquila, Italy*	[SEEP-1114] Optimal Sizing and Techno-Economic Assessment of Photovoltaic Systems for SMEs Considering the Italian Day-Ahead Market and Energy Release Incentive *Luca Pierantonelli / Università Politecnica delle Marche, Italy*
11:30	[SEEP-1179] Performance Improvement of a CuO Battery Module through Biochar Carbon Doping within a Circular Economy Framework *Michela Costa / CNR-STEMS, Italy*	[SEEP-1045] Air Pollutant Emissions Characteristics of Agricultural Biomass Burning *Hung-Lung Chiang / National Yunlin University of Science and Technology, Taiwan*	[SEEP-1125] Energy and Exergy Performance of a GaSb-Based Thermophotovoltaic System for High-Temperature Waste Heat Recovery: An Experimental Study *Zafer Utlu / Istanbul Atlas University, Turkey*
11:45	[SEEP-1042] Bridging Reactor and Regenerator: An Integrated Dynamic Mathematical Model for Advanced SER-Hydrogen Production Process *Alessandra-Diana Selejan-Ciubancan / Babes-Bolyai University, Romania*	[SEEP-1046] Exhaust Emission Profiles of Agricultural Biomass Pyrolysis *Hung-Lung Chiang / National Yunlin University of Science and Technology, Taiwan*	[SEEP-1131] Photovoltaic module degradation: experimental evaluation of soil and soot contaminants *Michele Pinelli / University of Ferrara, Italy*
12:00	[SEEP-1180] Flexible Data-Driven Framework for Battery Modeling: Reduced Time Consuming Test Protocol for Characterization *Lorenzo Bartolucci / Tor Vergata University of Rome, Italy*	[SEEP-1144] Coherent response structures in fluidized-bed reactors: a similarity framework for scale-up analysis *Matteo Baldelli / Tor Vergata University of Rome, Italy*	[SEEP-1133] Resource-Efficient Short-Term Solar PV Forecasting with Sky Imagery and Weather-Stratified Dataset Splitting *Tomasz Sikorski / Wrocław University of Science and Technology, Poland*

12:15	[SEEP-1205] Hybrid PEMFC-Battery Powertrain Modelling with LOHC Hydrogen Supply for Maritime Decarbonisation *Davide Sgambato / DG Twin S.r.l., Italy*	[SEEP-1168] Universal differential equations for dynamic mixed plastic pyrolysis modelling *Davide Sorino / Tor Vergata University of Rome, Italy*	[SEEP-1184] Life Cycle Assessment of a prototype Agri-Photovoltaic greenhouse: a case study from the REGACE Project *Beatrice Bartolucci / Tor Vergata University of Rome, Italy*
12:30	[SEEP-1105] Multi-curve calibration of reduced-order SOFC models with simultaneous H2 and CO electro-oxidation *Klemen Rola / University of Maribor, Slovenia*	[SEEP-1210] Energy and Carbon Performance of Renewable Methanol Production Using WasteDerived CO2 from Waste-to-Energy and Anaerobic Digestion Systems *Elham Ebrahimzadehsarvestani / Università degli Studi di Perugia, Italy*	[SEEP-1185] Real-Time Solar Irradiance Forecasting Using Sky-Camera Imagery, SVR and Kalman Filtering: Deployment on an Italian ASI Station *Khadija Barhmi / Utrecht University, The Netherlands*
12:45	[SEEP-1213] Valorization of Shell and Biomass Wastes into Biochar for Sustainable Water Treatment *Cheng-Di Dong / NKUST, Taiwan*	[SEEP-1136] Leucaena seeds' contribution to sustainable development: a model of bacterial and fungal media *Maher Abboudi / Atomic Energy Commission of Syria, Syria (online)*	Regulatory Compliance as a Strategic Capability *Prathna Benimadho / BP*

PARALLEL TRACK · dedicated room — ATIA-ISWA SYMPOSIUM: «Waste as a Resource» (full day, 10:30–17:30, in parallel with the main program)

10:30–11:00	**WELCOME SPEECHES** Renato Baciocchi — Univ. Roma Tor Vergata, Vice-Rector for Technology Transfer Paolo Massarini — ATIA ISWA Italia, President Stefano Cordiner — SEEP 2026 Chairman
11:00–11:45	**EU POLICY ON CIRCULAR ECONOMY & SUSTAINABILITY (Chair: G. Costa)** EU Policy — Annalisa Corrado, Europarlamentare The circular economy act — Filippo Brandolini, Gruppo Hera S.p.A. Implementation of Community policy in Italy — M. Centemero (CIC)
11:45–12:45	**AI SYSTEMS APPLIED TO WASTE TREATMENT (Chair: S. Gallo)** Principles and criteria of AI systems applied to waste and energy management — A2A S.p.A. AI applied to Combustion Technologies for Waste Treatment: Latest Developments — Simone Malvezzi, A2A S.p.A. Company experiences: TOMRA (X)· SECIT (A. Eleuteri) · Stadler Italia (P. Navarotto)
13:00–14:00	**Lunch Break**
14:00–15:00	**Keynote Lectures: Prof. Hussam Jouhara · Prof. David Chiaramonti**

15:00–16:00	**VALORIZATION & ENERGY RECOVERY FROM BIO-WASTE (Chair: A. Eleuteri)** Connecting Urban to Rural Area: the Recovery of Organic Waste Producing Biofertilizers and Promoting a Sustainable Circular Economy in Agriculture — F. Adani, Univ. Milano (DiSAA) Integrated treatment plants for OFMSW and the recovery of biomethane and — A. Confalonieri, CIC Company experiences: Acqua e Sole (V. Palomba) · AMA S.p.A. (S. Proietti)	
16:00-16:30	**Coffee Break**	
16:30–17:30	**THERMAL CHEMICAL RECYCLING FOR THE CONVERSION OF PLASTIC AND/OR MIXED WASTE AND INTEGRATED HYBRID PLANTS (Chair: M.Baldelli)** Gasification of plastic waste, a potential route to chemical recycling: producing low-carbon fuel - Andrea Di Carlo – Università dell'Aquila Thermochemical conversion of plastic wastes and possible strategies for complex feedstock streams — D. Sorino, Tor Vergata Company experiences: Herambiente S.p.A. (M. Giani) · INVECO S.r.l.(X)	
17:30	**CLOSING OF THE SYMPOSIUM — Stefano Cordiner, SEEP 2026 Chairman**	

13:00-14:00 | Lunch Break

14:00-15:00 | Keynote Lectures: Prof. Hussam Jouhara Prof. David Chiaramonti

15:00-16:15	**Hydrogen & Energy Storage II** **Chair: Vesselin K. Krastev**	**PANEL: Decarbonizing Industries** **Chair: Luca Montorsi**	**SYMPOSIUM: StreamSTEP**
15:00	[SEEP-1091] Preliminary Techno-Economic Assessment of Offshore Wind-Based Green Hydrogen Production in the Korsnäs Area, Finland *Seyedehsan Mousavizadeh / University of Vaasa, Finland*	[SEEP-1192] Carbon Border Adjustment Mechanisms and International Tax Law: Legal Challenges and Opportunities in the Global Climate Transition *Bakhtiyar Aslanbayli / Baku State University, Azerbaijan* Renewable Energy Via Aqueous Phase Reforming – Engineering Challenges and opportunities *Dr. Claudio Amorese / ICMEA Srl* Energy efficiency best practices in aluminium die casting: the Metalpres Donati Spa case study *Mr. Riccardo Bonotti / Metalpres Donati Spa* [SEEP-1193] Challenges and Lessons from Solar Project Development in a Post-Conflict Environment *Anar Mansurov / BP, Azerbaijan*	Waste heat recovery and upgrade from energy-intensive industrial processes *Hussam Jouhara / Brunel University London* The use of heat pipe heat exchangers in solidification of silicon *E. J. Øvrelid, P. Tetlie, S. Bao / SINTEF* Streamlining the optimesation of sustainable thermal energy systems & prototype technologies *S. Bao, E. J. Øvrelid, M. I. Onsøien / SINTEF* Copper sector – Advanced Heat Exchangers & HTHPs (HALCOR) *E Ziata / Halcor*
15:15	[SEEP-1159] Dynamic Modeling and Control of a Transcritical CO2 Carnot Battery *Luigi Fusco / Tor Vergata University of Rome, Italy*		
15:30	[SEEP-1079] Assessment of the AGATUR AE-T100 Quasi-Steady Simulator under High-Hydrogen Regulated Operation *Gianluca Cevolani / University of Roma Tre, Italy*		

15:45	[SEEP-1061] Parametric design and experimental analysis of PCM-enhanced passive thermal control units with graphene-based coating *Vesselin Krassimirov Krastev / Tor Vergata University of Rome, Italy*	Real-Time Mixed Reality Visualization of 1D/3D Multiphysics Numerical Simulations *Dr. Roberto Saponelli / PROTESA Spa* Efficiency for industrial processes: economic, energy and environmental aspects *Mr. Federico Ferrari / ALEA Srl*	Designing Heat Pumps for High Delivery Temperatures and Large Temperature Lifts *P. Rodríguez-deArriba, F. Crespi, L. Quirós-Gotarredona, D. Sánchez / Univ. Seville*
16:00			
16:15-16:45 | Coffee Break			
16:45-18:30	**Sustainable Energy for Buildings & Industrial Processes II (ENEA)** **Chair: Francesco Baldi**	**SYMPOSIUM: Maritime Sector Decarbonization**	**SYMPOSIUM: StreamSTEP (cont.)**
16:45	[SEEP-1056] Implementing advanced automation systems to improve the energy performance of residential buildings: assessment of monitored case studies *Riccardo Cardelli / Politecnico di Milano, Italy*	PANEL DISCUSSION Moderators: Giovanni Di Ilio, Università di Napoli Parthenope Lorenzo Bartolucci, Università degli Studi di Roma Tor Vergata Speakers: Massimo Rivarolo – Università degli Studi di Genova Arianna Irace, Innovation Analyst – FINCANTIERI S.p.A. Katerina Cufar, Innovation Analyst – FINCANTIERI S.p.A. Alessandro Maccari, Asset Vessel Director – RINA Services S.p.A. Stefano Cantarut, Business Development Manager – Wärtsilä Italia	Market Areas and New EU Calls for the Sustainable Energy Transition *M. L. Potenza/ SINTEF* Process and Energy System Automation Research *Y. Majanne, M. Vilkko, and H. Badihi/ Tampere University* Building capability at scale: from static training to intelligent adaptive systems *L. Bagna, F. Gervasio / INREBUS* [SEEP-1107] Time-explicit dynamic life cycle assessment framework for waste heat recovery systems *K. Halat, E. Mousania / Imperial College London, UK (online)* [SEEP-1039] Challenges in Centrifugal Compressor's Design for Industrial High Temperature Heat Pumps *Ahmed M. Amer / Brunel University of London, UK*
17:00	[SEEP-1165] Future Challenges and Opportunities of Energy Management Systems in Italy Under the New Energy Efficiency Directive *Enrico Biele / ENEA, Italy*		
17:15	[SEEP-1204] Physics-Based and Data-Driven Modeling of a Ceramic Dryer: From numerical simulations to Neural Network Prediction *Matteo Venturelli / University of Modena and Reggio Emilia, Italy*		
17:30	[SEEP-1177] The role of CO2 Heat Pumps in electrifying high temperature end users in the Italian National Energy System *Benedetto Nastasi / Tor Vergata University of Rome, Italy*		
17:45	[SEEP-1189] Indoor Environmental Quality in educational buildings: Field Monitoring and Assessment of Thermal Comfort and Air Quality in a Public School in Southern Sardinia *Francesca Poggi / Sotacarbo S.p.A. (Sustainable Energy Research Centre), Italy (online)*		

18:00	[SEEP-1139] Energy-Aware Production Scheduling as a Low-Capex Decarbonisation Lever for Steel Heat Treatment *Joaquín Ordieres-Meré / Universidad Politécnica de Madrid, Spain*		
18:15			
18:30 | End of Technical Sessions — Day 2			
20:00 | Gala Dinner — Villa Grazioli, Frascati			

DAY 3 | Wednesday, 22 July 2026

09:00-10:00 | Keynote Lectures: Prof. Ana Inés Fernández · Prof. Antonio García Martínez

Time	Room B1	Room B2	Room B3
10:00-11:00	**SYMPOSIUM: Geothermal Energy**	**Next-Gen Thermochemical Conversion II** **Chair: Andrea Di Carlo**	**Geothermal Energy & Heat Recovery** **Chair:**
10:00	[SEEP-1190] Geothermal Energy in Lithuania: Resources, Applications and Future Prospects *Rytis Skominas / Vytautas Magnus University, Lithuania*	[SEEP-1110] Catalytic fast hydropyrolysis in a dual-stage fluidized bed reactor: evaluation of hydrogen consumption and partial pressure impact on biomass vapors deoxygenation *Claudio Del Vecchio / Tor Vergata University of Rome, Italy*	[SEEP-1104] Absorption and Adsorption Cooling Driven by Geothermal Gravity Heat Pipes: A Long-Term Feasibility Assessment *Sven Gruber / University of Maribor, Slovenia*
10:15	[SEEP-1191] Accelerated Silica Scaling Control and Heat Recovery from Geothermal Brine: Design and Field Validation of the GEOFLEXheat System *Paolo Taddei Pardelli / Spike Renewables S.r.l., Italy*	[SEEP-1040] Techno-economic analysis of acetic acid production via an integrated waste gasification – gas fermentation process *Miruna Prodan / Babes-Bolyai University, Romania*	[SEEP-1140] Solar-boosted supercritical CO2 closed-loop geothermal system for multigeneration and green hydrogen production *Mohammad Ali Sabbaghi / Dokuz Eylül University, Turkey (online)*
10:30	[SEEP-1182] Consolidating supply chains and economic development through geothermal energy innovation *Loredana Torsello / Co.Svi.G. - Consorzio per lo Sviluppo delle Aree Geotermiche, Italy*	[SEEP-1037] Sustainable Carbon Monoxide Production via Chemical Looping-Based Coke Oven Gas Reforming and CO2 Splitting *Hana Kim / Korea Institute of Energy Research, South Korea*	[SEEP-1071] Performance Trade-off of Permeability and Capillary Rise for Optimized Multi-mesh Composite Wick Structures *Lin Qiu / University of Science and Technology Beijing (USTB), China*
10:45	GeoFlexHeat – Geothermal Extraction and Upgrade with Flexible Usage for Industrial Heat Applications *Hussam Jouhara / Brunel University London*	[SEEP-1142] Development of an OpenFOAM CFD Solver for the Simulation of Reactive Flows in Fluidized Bed Reactors *Francesco Duronio / University of L'Aquila, Italy*	
11:00-11:30 | Coffee Break			
11:30-13:00	**SYMPOSIUM: Geothermal Energy**	**Hydrogen & Energy Storage III** **Chair: Vesselin K. Krastev**	***Reversible Fuel Cells: PEM and Solid Oxide Systems for Energy Storage —*** **A CREA-SUD Project Special Session** **Chair: Domenico Borello**
11:30	Harvesting more power from a geothermal resource: the impact of acid treated brine recovery projects on silica scale management *Matteo Quaia / Steam Srl*	[SEEP-1207] Effect of Ni Incorporation Strategy on the Electrocatalytic Performance of Fe-Based MOFs for Methanol Oxidation *Halima Ali Alnaqbi / University of Sharjah, UAE*	[SEEP-1051] Fabrication and characterization of RF sputtered Mixed Ionic and Electronic Conductor thin films *Maurizio Paone / University of Salerno, Italy*

11:45	AI-Driven Geothermal Brine Fingerprinting Using Printed Electrochemical Sensor Arrays and Physics-Informed Learning *Oliver Buchan & Tateos Tvapanyan / Oliveris Tech Incubator Ltd*	[SEEP-1124] Production of Alternative Fuels From Renewable Sources: Techno-Economic Implications of Green Hydrogen And Synthetic Methane *Stefano Mazzoni / Tor Vergata University of Rome, Italy*	[SEEP-1054] Dynamic Modelling and Experimental Validation of Reversible Solid Oxide Cell Systems for Hydrogen-Based Energy Storage within the CREA-SUD Project *Michele Martorelli / University of Calabria, Italy*
12:00	SimuPort: An Open Platform for AI-Assisted Multi-Physics Simulations and Optimizations in Geothermal Energy Development *Per Kjellgren / Flowphys AS*	[SEEP-1053] Hydrogen Production via Sorption-Enhanced Water-Gas Shift: Experimental Investigation and Process Insight *Barbara Malsegna / University of L'Aquila, Italy (online)*	[SEEP-1181] Experimental characterization and short stack scale-up of Reversible Proton Exchange Membrane Fuel Cells integrating novel materials *Carlotta Cosentini / Sapienza University of Rome, Italy*
12:15	Flowphys AS: SimuLingua: An AI Foundation Model for Materials Science with applications in geothermal energy *Per Kjellgren / Flowphys AS*	[SEEP-1203] Aluminum as an energy carrier for green hydrogen production: Design and Optimization of Lab-Scale Prototypes *Matteo Venturelli / University of Modena and Reggio Emilia, Italy*	[SEEP-1183] Numerical Modeling of Reversible Proton Exchange Membrane Cells in Fuel Cell and Electrolyzer Modes: Development, Validation and Parametric Analysis *Emanuele D'Alessio / Sapienza University of Rome, Italy*
12:30	From awareness to adoption: evidence-based tools and methodologies to support geothermal H&C deployment in industry *Dario Bonciani / Co.Svi.G. - Consorzio per lo Sviluppo delle Aree Geotermiche, Italy*		[SEEP-1212] Bifunctional ORR/OER Electrocatalysts for Unitized Regenerative Fuel Cell Systems *Jorge Montero / Sapienza University of Rome, Italy*
12:45-13:15 | Keynote Lectures: Prof. Ibrahim Dincer			
13:15-14:00 | Lunch Break			
From 14:00 | Social & Cultural Program — Forma Urbis Museum & Circo Massimo Experience · Sunset Aperitivo, Casina dei Salvi			

DAY 4 | Thursday, 23 July 2026

09:30-10:00 | Keynote Lectures: Prof. Abdul Ghani Olabi

Time	Room B1	Room B2	Room B3
10:00-11:00	**PANEL on Industrial Heat Pump**	**Sustainable Mobility & Powertrains II** **Chair: Edoardo Cennamo**	**Sustainable Energy for Buildings & Industrial Processes III (ENEA)** **Chair: Miriam Benedetti**
10:00	Organizers: Francesca Tamburrini – European Heat Pump Association Leopoldo Micò – European Heat Pump Association Topics: - Policy, with a focus on Industrial Accelerator Act and on the most relevant recently published dossiers -Market overview, with a focus on statistics related to Industrial Heat Pumps -Research and Innovation, with a paramount on the main Active European Projects and the processes standardization activities	[SEEP-1069] Integrated assessment of SAF pathways under realistic resource constraints in the Republic of Korea *Nahyeon Kim / Gyeongsang National University, South Korea*	[SEEP-1120] Simulation of a Swirling Flow Machine for Micro–Scale Reversible Heat Pump – Organic Rankine Cycle System Recovering Low–Temperature Waste Heat *Greta Lombardi / Università telematica eCampus, Italy*
10:15		[SEEP-1067] Development of an altitude-resolved LCA framework for launch vehicles: A case study of NURI (KSLV-II) *Jiwon Lee / Gyeongsang National University, South Korea*	[SEEP-1163] A Gis-Based Multi-Criteria Framework For Planning Renewable Energy Communities: Integrating Energy, Lifecycle And Landscape Assessment *Damiana Chinese / University of Udine, Italy*
10:30		[SEEP-1055] Retrofitting an Existing Air Turbocharger for a Closed-Loop Hydrogen-Argon Power Cycle Engine *Jérémy Archier / University of Oulu, Finland*	[SEEP-1164] Applying A Gis-Based Multi-Criteria Framework To Industrial–Residential Renewable Energy Community Planning: A Case Study In North-Eastern Italy *Gaia Faggiani / University of Udine, Italy*
10:45		[SEEP-1176] A Hybrid PV–Battery–Hydrogen System for Seasonal Power-to-X in Agri-Industrial Applications *Simone Lombardi / University of Rome Niccolò Cusano, Italy*	[SEEP-1126] Modelling of the roasting process for iron ore in an indirect fired rotary kiln *Alina Żabnieńska-Góra / Brunel University of London, UK (online)*
11:00-11:30 | Coffee Break			
11:30-13:00	**Sustainable Energy for Buildings & Industrial Processes IV** **Chair: Miriam Benedetti**	**Battery Thermal Management for EV** **Chair: Meisam Babaie**	**Master Planning of Energy Systems IV** **Chair: Stefano Mazzoni**
11:30	[SEEP-1153] Sustainable winemaking: energy efficiency of thermal and non-thermal extraction processes *Giovanni Landi / ENEA, Italy (online)*	[SEEP-1166] Experimental Electro-Thermal Modeling and CFD Analysis of Immersion Cooling for Fast-Charging Lithium-Ion Batteries *Jalal Jahanpanah / University of Oulu, Finland*	[SEEP-1075] From Methodology to Monitoring: Evolution of Primary Energy Factors, Efficiency and CO_2 Indicators of Slovenian District Heating Systems between 2020 and 2024 *Marko Đorić / Jožef Stefan Institute, Slovenia*

11:45	[SEEP-1154] Numerical modeling of magnetite nanoparticle aggregation and sedimentation in paraffin-based phase change materials *Francesco Rovense / ENEA, Italy*	[SEEP-1087] Electrochemical–Thermal–Degradation Parameter Identification Framework Incorporating Low-Temperature Ageing Dynamics *Sadegh Mehranfar / University of Oulu, Finland*	[SEEP-1050] A novel green solvent to enhance BECCS sustainability: the ENHANCEMENT project *Matteo Gilardi / SINTEF Industry, Norway*
12:00	[SEEP-1128] Dynamic modelling of a power-to-heat concept for decarbonising the petrochemical sector *Luca Del Zotto / Universita telematica eCampus, Italy*	[SEEP-1088] Comparative assessment and continuum evaluation of Li-ion battery parametrization performance in Purely Mathematical and Mixed (Physico-Chemical Assisted) Parameter obtention Strategies *Sadegh Mehranfar / University of Oulu, Finland*	[SEEP-1208] The External Reality: Mapping Renewable Hydrogen Cooperation between the Maghreb and Europe: Price-Responsive Export Potentials *Yasmine Ayed / University Lisbon, Portugal (online)*
12:15	[SEEP-1130] Different approaches for modeling heat removal from large containers *Robertas Poškas / Lithuanian Energy Institute, Lithuania*	[SEEP-1098] Systems Engineering for Battery Pack Cross-Domain Simulation Preparation *Isa Banagar / University of Oulu, Finland*	[SEEP-1211] SEA-MEC — a Tool for the Calculation of Emissions and Energy Consumption of Ships in Port Areas following a Well-to-Wake Approach *Giorgio Zamboni / Università degli Studi di Genova, Italy*
12:30	Does Alignment with EU Sustainability Regulation Promote or Stifle Innovation in Thermal Energy–Intensive Industries? Evidence from StreamSTEP Technology in the Ceramic Sector *Julija Kiršienė, Vytautas Magnus University (online)*	[SEEP-1169] Electro-Thermal and Performance Modelling of a Dual Swappable Battery EV for Sustainable Urban Mobility *Meisam Babaie / University of Leeds, UK*	[SEEP-1085] From BIM-Based Energy Modelling to Open-Source Urban Energy Simulation: A Comparative Analysis for Integrated Energy Workflows *Lorenzo Villani / Sapienza University of Rome, Italy*
12:45		[SEEP-1027] Study on the Inhibition efficiency and Fire-extinguishing Mechanism of Aerogel Extinguishing Agents on Thermal Runaway of Lithium-ion Batteries *Lei Yuan / Sichuan Vocational and Technical College, China*	[SEEP-1086] Reconstruction and policy optimization of hourly non-residential prosumer loads in renewable energy communities *Lorenzo Villani / Sapienza University of Rome, Italy*
13:00-14:00 | Lunch Break			
14:00-15:15	**Next-Gen Thermochemical Conversion III** **Chair: Vincenzo Mulone**	**Sustainable Mobility & Powertrains III** **Chair: Lorenzo Bartolucci**	**Wind and Solar Energy** **Chair: Cristina Cornaro**
14:00	[SEEP-1112] The Pyrolysis of Municipal Sewage Sludge: Process Parameters Optimization to Enhance Biochar Industrial Applications *Giulia Nardella / University of Naples Federico II, Italy*	[SEEP-1101] Techno economic and environmental assessment of sustainable aviation fuel production via green ammonia decomposition and captured CO2 based on process simulation *Eonjun Choi / Gyeongsang National University, South Korea*	[SEEP-1102] Decoding Wind Turbine Noise: A Rotation-Aware Modal Decomposition Approach for Efficient Aeroacoustic Predictions *Giacomo Luca Mongelli / Politecnico di Bari, Italy*
14:15	[SEEP-1122] Performance evaluation of an innovative 100 kWth dual bubbling fluidized bed biomass gasifier coupled with hot gas cleaning and conditioning *Alessandro Antonio Papa / University of L'Aquila, Italy*	[SEEP-1127] Alcohol blending effect on renewable diesel ignition delay time and reaction kinetic analysis *Huaying Wang-Alho / University of Vaasa, Finland*	[SEEP-1103] The Effect of Wind Shear and Turbulent Fluctuations on an Ultra-Large 22-MW Wind Turbine *Carmine Petrarota / Politecnico di Bari, Italy*

14:30	[SEEP-1052] Life Cycle Assessment of Bio syngas Production: Comparative Analysis of Non-Optimized and Optimized Chemical Process Routes *Fahad Javaid / University of L'Aquila, Italy*	[SEEP-1082] Sustainable aviation fuel production from industrial off-gases: Techno-economic analysis and life cycle assessment *Jaerak Ko / Gyeongsang National University, South Korea*	[SEEP-1201] A Blade-Element/Momentum approach for ducted wind turbines *Rodolfo Bontempo / University of Naples Federico II, Italy*
14:45	[SEEP-1149] Influence of particle size on the torrefaction and fuel properties of dried orange residues *Sven Gruber / University of Maribor, Slovenia*	[SEEP-1058] A Hardware-in-the-Loop Experimental Validation Framework for DRL-Based EV Regulation Control *Haotian Wang / North China Electric Power University (NCEPU), China*	[SEEP-1188] Design, Modelling and Characterization of a Miniature Darrieus-Type Vertical Axis Wind Turbine for Academic Application *Khadidja Rahmani / University of Blida 1, Algeria*
15:00		[SEEP-1202] Supply-Chain Resilience and Sustainable Aviation Fuel Deployment in the Middle East: Challenges and Strategic Pathways *Haifa Rauf Mahsood / University of Doha for Science and Technology, Qatar (online)*	[SEEP-1096] Exploiting LES computations and machine learning to improve wind turbine wake reproduction in URANS *Andrea Carloni / Sapienza University of Rome, Italy*
15:15-15:45 | Coffee Break			
15:45-17:30	**Hydrogen & Energy Storage IV Chair: Vesselin K. Krastev**	**Thermochemical Conversion & Circular Materials Chair: Matteo Baldelli**	**Wind Energy & Forecasting Chair:**
15:45	[SEEP-1043] Bismuth Ferrite/Ti3C2Tx MXene Supercapacitor with Solar Thermal-enhanced and Piezoelectric-driven Self-charging Performances *Dong-Hwang Chen / National Cheng Kung University, Taiwan*	[SEEP-1174] Biomass-to-Hydrogen Conversion via Sorption-Enhanced Gasification: Experimental Results from the GICO, PTR22-24, and PORH2 Projects *Umberto Pasqual Laverdura / ENEA, Italy*	[SEEP-1018] Evaluation of the Energy Harvesting Potential by means of CFD Simulations *Luca Patruno / University of Bologna, Italy*
16:00	[SEEP-1063] Budget-Constrained Sizing Optimization for Battery-Hydrogen Hybrid Systems in Multi-Sector Applications *Tram Tran / VAMK University of Applied Sciences, Finland*	[SEEP-1121] Pyrolysis in a Fluidized Bed of Torrefied Solid Fraction of Digestate *Andrea Di Giuliano / University of L'Aquila, Italy (online)*	[SEEP-1033] Dynamic Weighting of Analog Ensembles in Model Prediction Space for Wind Power Forecasting *Eunchae Song / Ewha Womans University, South Korea*
16:15	[SEEP-1167] Flexible rGO-Reinforced Solid-State Hydrogel Electrolytes for High-Performance Supercapacitors *Imran Zada / CIIAE - Centro Iberico Internacional de Investigacion en Almacenamiento Energetico, Spain*	[SEEP-1196] Benchmarking Gradient-Boosted Trees, Tabular Foundation Models, and Deep Ensembles for CO2 Solubility Prediction in Ionic Liquids *Muhammad Tawalbeh / University of Sharjah, UAE (online)*	[SEEP-1034] Probabilistic Wind Power Forecasting with Kriging-Based Spatial Correction for Enhancing Transmission Congestion Management *Mijung Lee / Ewha Womans University, South Korea*
16:30	[SEEP-1171] Polymer-Based Materials as Electrodes and Electrolytes for Advanced Supercapacitor Applications *Manab Kundu / CIIAE - Centro Iberico Internacional de Investigacion en Almacenamiento Energetico, Spain*	[SEEP-1194] Pyrolysis of organic residues with CO2 sorption to produce methane rich gas *Cesare Freda / ENEA, Italy*	[SEEP-1035] Joint Fine-Tuning of Spatially Aware Wind Speed Correction for Improving Wind Power Forecasting *Jiyun Choi / Ewha Womans University, South Korea*

16:45		[SEEP-1195] Upgrading of a prototype biomass gasifier to produce H2 rich syngas, heat and power via SOFC *Cesare Freda / ENEA, Italy*	[SEEP-1062] Toward integrable wind data: evaluating statistical methods to correct WRF outputs for future multicriteria wind-farm siting in the Colombian Caribbean *César Nieto-Londoño / Universidad Pontificia Bolivariana, Colombia*
17:00			[SEEP-1076] GIS-Based Wind Turbine Layout Optimization with Wake Loss Assessment for Wind Energy Potential Estimation in Colombia *César Nieto-Londoño / Universidad Pontificia Bolivariana, Colombia*
17:15			
17:30 | Closing Ceremony & Conference Farewell · End of SEEP 2026			

Poster session

ALL DAYS | 20-23 July 2026

[SEEP-1019]	*Hyo-Soo Lee* *Korea Institute of Industrial Technology, South Korea*	Low Energy Magnetic Signage Enabled by Solenoid Pixel Circuits and Intelligent Power Applications
[SEEP-1044]	*Xiuxiu Han* *University of Birmingham, UK*	Electrocatalytic Strategies for Coupling Biomass Conversion with Clean Hydrogen Generation
[SEEP-1197]	*Muhammad Tawalbeh* *University of Sharjah, UAE*	Evaluation of Kolmogorov–Arnold Networks and Tabular Prior-Fitted Networks for Hydrogen Production Rate Prediction in Proton Exchange Membrane Water Electrolysis
[SEEP-1198]	*Muhammad Tawalbeh* *University of Sharjah, UAE*	Machine Learning for Holistic End-of-Life Battery Recycling and Second-Life Applications: Optimizing Processes and Sustainability
[SEEP-1070]	*Hui Luo* *Tsinghua University, China*	In Situ Investigation of Intermediate Species Formation during Coke CO_2 Gasification by Planar Laser-Induced Fluorescence
[SEEP-1111]	*Xuerong Cui* *Tsinghua University, China*	Stable Combustion for Ultra-Low-Load Coal-Fired Boilers Assisted by Coal Gasification