



XVI CONFERENCE ON RESEARCH & DEVELOPMENT IN POWER ENGINEERING

28 November – 1 December 2023

Conference Programme

Tuesday, 28 November 2023	
09:00	Registration
11:00-11:30	Welcome speech
	Keynote/Invited Speaker Session
11:30-12:00	Prof. Witold Orłowski – Business School, Warsaw University of Technology, Poland - <i>Rapidly Changing Global Economy</i>
12:00-12:40	Michael Mast – Siemens Energy, Germany – <i>Innovative Solutions for Defossilization of Industrial Heat Processes</i>
12:40-13:00	Tidiane Sano - Euros Energy - <i>Heat Plant of the Future and Energy Dock- Milestones in the zero-emission transformation of District Heating</i>
13:00-14:00	Lunch break
14:00-14:20	Prof. Konrad Świrski, Warsaw University of Technology – <i>Challenges of transformation of Polish Energy Sector</i>
14:20-14:40	Dr. Zbigniew Krzemianowski, Institute of Fluid Flow Machinery, Polish Academy of Sciences – <i>High-specific speed Kaplan and Francis hydraulic turbines dedicated to Polish environmental conditions</i>
14:30-15:00	Prof. Tatiana Morousuk, Technische Universität Berlin, Germany – <i>The Path to Climate Neutrality: German Energy Sector</i>
15:00-15:20	Coffee break

	A1 Session	B2 Session
15:20-14:35	Tadeusz Skoczkowski - <i>Participation in DSR (Demand Side Response). Are individual energy users interested in this?</i>	Maria-aAnna Segreto - <i>Identifying the potential for off-site construction in the deep renovation of residential buildings: a focus on HVAC systems RES integrated</i>
15:40-15:55	Ezekiel Atiba - <i>Design of a Positive Energy District: A Nigerian Case Study</i>	Antonella Tundo - <i>School buildings and school communities as drivers for sustainable Renewable Energy Communities</i>
16:00-16:15	Amar Merouani - <i>The problematic of energy resource efficiency in the world</i>	

Wednesday, 29 November 2023	
Keynote/Invited Speaker Session	
9:00-9:30	Alexis Marincic, V-ce president of Framatome, France – <i>The challenges and mastery of RD at Framatome with the projection for the future</i>
9:30-10:00	Per Sieverts Nielsen, Danmarks Tekniske Universitet, Denmark - <i>The resilience of district heating</i>
10:00-10:20	Coffee break
10:20-10:50	Andrzej Kludka, Siemens Gamesa Renewable Energy Sp. z o.o. – <i>SGRE focus on Poland. 14 MW offshore wind turbine and example of other renewable solutions</i>
10:50-11:20	Julie Gorgemans, Westinghouse - <i>AP1000 plant implementation: lessons learned</i>
11:20-11:40	Coffee break
	A2 Session
11:40-11:55	Szymon Suchcicki - <i>Neutronic calculations of the EPR reactor core with the POLARIS and PARCS codes</i>
12:00-12:15	Rafał Laskowski - <i>The influence of moisture separation and parameters behind the separator - superheater on the performance of the PWR nuclear unit</i>
12:20-12:35	Wojciech Kosman - <i>Coal-to-Nuclear Modernization of an Existing Power Plant with a IV-th Generation Nuclear Reactor</i>
12:40-13:00	Mikołaj Oettingen - <i>Monte Carlo modeling of uranium fuel utilization in APR1400 nuclear reactor</i>
	B2 Session
11:40-11:55	George Atkinson - <i>Resorption Heat Pump and Heat Transformation Experiments using Ammonia Halide Salt Adsorption Reactions</i>
12:00-12:15	Aleksandra Dzido - <i>Mathematical model of treated sewage heat pump dedicated for district heating applications</i>
12:20-12:35	Jakub Garbacik - <i>Heat pumps with thermal energy storages and complementary green power sources – a feasible way to decarbonized heating plants</i>
12:40-13:00	Krzysztof Karaškiewicz - <i>Reduction of volumetric loss in centrifugal pumps by innovative balance hole arrangement</i>
13:00-14:00	Lunch break

	A3 Session	B3 Session
14:00-14:15	Piotr Darnowski - <i>Pressurized Thermal Shock Analysis for SB-LOCA in a PWR reactor</i>	Piotr Łapka - <i>Numerical analysis of charging/discharging low-temperature lab-scale thermochemical storage unit</i>
14:20-14:35	Piotr Darnowski - <i>Analysis of the DVI-LOCA in the AP1000-like reactor with MELCOR2.1 code</i>	Natalia Mikos-Nuszkiewicz - <i>Low-temperature thermochemical energy storage using salt hydrates – evaluation of reactor performance through numerical modelling</i>
14:40-14:55	Rafał Bryk - <i>Experimental investigation of passive Safety Condenser at the PKL test facility during Station Blackout</i>	Marcin Lutyński - <i>Underground mine workings of abandoned mines for energy storage: critical review of challenges and opportunities</i>
15:00-15:15	Arnaud Caillaux - <i>Digital Nuclear Reactor</i>	Dominik Gryboś - <i>Integrated design of piston expanders for micro compressed air energy storage systems</i>
15:20-15:40	Tomasz Bury - <i>Decarbonization of Polish industry by means of nuclear technologies: selected aspects of localization and air pollution</i>	Seyedkeivan Nateghi - <i>Enhancement methods for latent thermal energy storage with multiple PCM</i>
15:40-16:00	Coffee break	
16:00-16:15	Gerard Obasi - <i>Assessing Urban Carbon Emission reduction in UK through Renewable Energy Integration: A Satellite Monitoring and Advanced comparative analysis</i>	Paweł Trawiński - <i>Analytical-approximation mathematical model of a triple-pressure heat recovery steam generator</i>
16:20-16:35	Adam Dominiak - <i>Technologies and methods to decarbonize Polish industry towards vision net-zero</i>	Mateusz Marcinkowski - <i>Experimental and Numerical Analysis of Nusselt Numbers for Individual Tube Rows in a Plate Fin and Tube Heat Exchanger</i>
16:40-16:55	Karol Sztekler - <i>A potential of reducing CO2 emission from gas turbine using Carbon Capture and Storage technology</i>	Katarzyna Katana - <i>Improvement of the cold storage device efficiency thanks to the usage of magnetocaloric materials</i>
17:00-17:15	Paweł Ziółkowski - <i>Analysis of methanol production from carbon dioxide acquired from negative emission power plants using CFD approach for catalytic reactor</i>	Andrzej Grzebielec - <i>Optimal Selection of a Novel Steam Trap Type as an Energy-Saving Solution</i>
17:20-17:35	Anna Sobotka - <i>Integration of renewable energy sources: impact on the operation of pumped storage power plants in Poland</i>	Alberto Tofani - <i>An optimization-simulation integrated system for the Repair Sequence problem</i>
19:30-23:30	Gala dinner	

Thursday, 30 November 2023	
Keynote/Invited Speaker Session	
9:00-9:30	Prof. Umberto Desideri, University of Pisa, Italy - <i>Power to Fuel Technologies: can we make it without ?</i>
9:30-10:00	Prof. Henrik Lund, Aalborg University, Denmark – <i>Resilient and Fully Decarbonized Smart Renewable Energy Systems</i>
10:00-10:20	Coffee break
10:20-10:50	Prof. Soteris Kalogirou, Cyprus University of Technology, Cyprus – <i>Renewable Energy Systems: Current status in the world and prospects</i>
10:50-11:20	Prof. Jan Taler – Cracow University of Technology, Poland – <i>Numerical modelling of steam superheaters with complex flow systems installed in large power boilers</i>
11:20-11:40	Coffee break
	A4 Session
11:40-11:55	Wojciech Jerzak - <i>Application of tire ash as catalyst for pyrolysis of grass</i>
12:00-12:15	Robert Zarzycki - <i>Erosion Assessment and Protection at the Inlets to Solids Separators with High Aspect Ratio</i>
12:20-12:35	Rafał Kobyłecki - <i>Erosion of Membrane Wall Tubes in a Biomass-Fired Cfb Combustor – Investigation of the Effect of Solids Type</i>
12:35-13:30	Lunch break

	A5 Session	B5 Session
14:00-14:15	Piotr Krawczyk - <i>CFD modelling of the biomass burner aimed at geometry optimisation</i>	Małgorzata Sikora - <i>Two-Phase Flow Maps</i>
14:20-14:35	Paweł Ziółkowski - <i>High-Speed Multi-Stage Gas-Steam Turbine Models for Decarbonizing Power Generation</i>	Eugene Gatete - <i>Improving PIV Measurement of Levitated Droplets Through Calibration-Based Optical Distortion Correction</i>
14:40-14:55	Hamed Ghiasirad - <i>Synergizing compressed air energy storage (CAES) and LNG regasification to produce biomethanol: A techno-economic study</i>	Krzysztof Mik - <i>Photovoltaic thermal collectors in application with a ground heat exchanger – experiment and simulation in TRNSYS</i>
15:00-15:20	Shayan Sharafi Laleh - <i>Energy and exergy analyses of an advanced combined cycle fired by natural gas and biomass</i>	Hamza Mumtaz - <i>Sustainable Recycling of Wind Turbine Blades for Revitalizing Renewable Energy in the Power Engineering Sector</i>
15:20-15:40	Coffee break	
15:40-16:00	Romuald Rzadzowski - <i>Dynamic ff 1MW Steam Turbine Rotor</i>	Piotr Błach - <i>Analysis of the cooperation of electricity storage with renewable energy sources</i>
16:00-16:15	Jan Taler - <i>Monitoring transient thermal stresses in thick-walled pressure parts</i>	Juan I. Manassaldi - <i>Optimal design of a double-flash geothermal plant coupled to a reverse osmosis desalination system</i>
16:20-16:35	Krzysztof Jesionek - <i>Pewne krytyczne uwagi o modernizacjach kotłów parowych</i>	Ming Jun Huang - <i>Explore of using biomimetic methods for thermal regulation and heat storage in the buildings</i>
16:40-16:55		Fabian Dietrich - <i>Experimental investigations of the potential of highly concentrated NaCl solutions for application in pressure-retarded osmosis process</i>
17:00-18:30	Buffet Dinner	
19.00	Social event (<i>Wariatkowo Sp. z o.o.</i> , Teatr Kamienica, Al. Solidarności 93, Warszawa) – for Polish speaking participants; visit to the Apple museum, Żelazna 51/53 Str., Warsaw – in English	

Friday, 1 December 2023															
EERA Joint Programme Smart Cities															
9:00-10:00	<p>Welcome speech - Dorota Chwieduk, Professor DSc PhD, Institute of Heat Engineering, Faculty of Power and Aeronautical Engineering, Warsaw University of Technology</p> <p>EERA Joint Program Smart Cities: What is EERA JPSC and how to get involved? - Annemie Wyckmans, Norwegian University of Science and Technology (NTNU)</p> <p>European Energy Research Alliance: Catalyzing European energy research for a climate-neutral society by 2050 - Maria Luisa Fernandez Vanoni, EERA Secretariat,</p> <p>Towards the climate neutrality in Warsaw - Leszek Drogosz, Deputy Director of the Infrastructure Department City of Warsaw</p>														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">A6 Sesion</th> <th style="width: 50%; text-align: center;">EERA</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>10:00-10:15 Jaroslaw Milewski - <i>Feasibility Study of A Molten Carbonate Fuel Cell as a Co2 Separator for Various Industrial Exhaust Emissions</i></p> </td> <td rowspan="3" style="vertical-align: top;"> <p style="text-align: center;">10:00 - 11:00</p> <p>EERA JPSC Working Group: Sustainable Buildings - Giovanni Semprini, University of Bologna</p> <p>EERA JPSC Working Group: Smart and Liveable Neighbourhoods and Communities - Michal Kuzmic, Czech Technical University in Prague</p> <p>EERA JPSC Working Group: Smart Cities - Sonia Giovinazzi, Sapienza University of Rome</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>10:20-10:35 Maciej Bakała - <i>Experimental and numerical analysis of steam electrolysis and co-electrolysis of H2O/CO2 in solid oxide electrochemical cells for highly efficient production of synthetic fuels</i></p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>10:40-10:55 Łukasz Szabłowski - <i>Review of steam methane reforming as a method of hydrogen production</i></p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>11:00-11:30</p> </td> <td style="text-align: center;"> <p>Coffee break</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>11:30-11:45</p> </td> <td rowspan="3" style="vertical-align: top;"> <p style="text-align: center;">11:30 - 12:30</p> <p>Thematic seminar 1: Towards the Smart Energy Sector and Smart Energy Services</p> <p style="text-align: center;">Scaling from PEB to PED</p> <p>Mapping the PEDs: lessons learned with the PED-EU-NET Database</p> <p>The role of Building automation and control systems (BACS) in buildings according to the new Energy Performance of Buildings Directive (EPBD)</p> <p>Smart Resilient and Sustainable Energy Distribution and Transmission Systems</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>11:50 - 12:05</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>12:10 - 12:25</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>12:30-13:30</p> </td> <td style="text-align: center;"> <p>Lunch break</p> </td> </tr> </tbody> </table>	A6 Sesion	EERA	<p>10:00-10:15 Jaroslaw Milewski - <i>Feasibility Study of A Molten Carbonate Fuel Cell as a Co2 Separator for Various Industrial Exhaust Emissions</i></p>	<p style="text-align: center;">10:00 - 11:00</p> <p>EERA JPSC Working Group: Sustainable Buildings - Giovanni Semprini, University of Bologna</p> <p>EERA JPSC Working Group: Smart and Liveable Neighbourhoods and Communities - Michal Kuzmic, Czech Technical University in Prague</p> <p>EERA JPSC Working Group: Smart Cities - Sonia Giovinazzi, Sapienza University of Rome</p>	<p>10:20-10:35 Maciej Bakała - <i>Experimental and numerical analysis of steam electrolysis and co-electrolysis of H2O/CO2 in solid oxide electrochemical cells for highly efficient production of synthetic fuels</i></p>	<p>10:40-10:55 Łukasz Szabłowski - <i>Review of steam methane reforming as a method of hydrogen production</i></p>	<p>11:00-11:30</p>	<p>Coffee break</p>	<p>11:30-11:45</p>	<p style="text-align: center;">11:30 - 12:30</p> <p>Thematic seminar 1: Towards the Smart Energy Sector and Smart Energy Services</p> <p style="text-align: center;">Scaling from PEB to PED</p> <p>Mapping the PEDs: lessons learned with the PED-EU-NET Database</p> <p>The role of Building automation and control systems (BACS) in buildings according to the new Energy Performance of Buildings Directive (EPBD)</p> <p>Smart Resilient and Sustainable Energy Distribution and Transmission Systems</p>	<p>11:50 - 12:05</p>	<p>12:10 - 12:25</p>	<p>12:30-13:30</p>	<p>Lunch break</p>
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14:00-16:00	A7 Sesion	Wrap-up of morning and afternoon sessions	
14:00-14:15	A. Harutyunyan - <i>Analyzing of different repowering methods on the example of 300 MW existing steam cycle power plant using GateCycletm software</i>		Thematic seminar 2: Smart technologies as a driver of Smart Cities with a focus on the energy sector and energy services
14:20-14:35	Piotr Lis - <i>Supercritical CO2 Waste Heat Recovery System.</i>	14:00-15:00	Facilitating positive energy buildings and neighbourhoods – Digital Building Logbooks (DEMOBlog) and Affordable Neighbourhood Renovations (SHAPE-EU) - Henk Visscher, Prof. dr. ir. Professor Housing Quality and Process Innovation, Director TU Delft Urban Energy institute, Delft University of Technology
14:40-15:00	Aliaksandr Martsinchyk - <i>Pressurized Molten Carbonate co-Electrolysis: A novel approach for carbon dioxide utilization and synthetic fuels production</i>		Digital Twins for the City Design - Agattino Rizzo, Professor of Architecture, Luleå University of Technology (TBC) What are the advantages of creating a digital twin as a basis for optimising district energy systems? - Gerhard Stryi-Hipp, Head of Smart Cities Group, Fraunhofer ISE
		15:00-16:00	Wrap-up of morning and afternoon sessions

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