

10th International Conference on

Smart Energy Systems

4th Generation District Heating,
Electrification, Electrofuels and
Energy Efficiency

PROGRAMME AALBORG

TUESDAY 10 SEPTEMBER 2024

08:00-09:00	Registration and breakfast	Main entrance
		Europahallen
09:00-11:00	Plenary opening session	
09:00-09:10	Professor Poul Alberg Østergaard and CEO Glenda Napier: Opening speech	
	Plenary keynotes: Smart Energy Systems and Heat Pumps - chaired by Professor Poul Alberg Østergaard	
09:10-09:30	Professor Henrik Lund, Aalborg University, 10th anniversary keynote: New insights into Smart Energy Systems: Theory, Concepts and Applications	
09:30-09:45	Raymond Decorvet, Senior Account Executive MAN Energy Solutions: 21st Century - The age of the mega heat pumps	
09:45-10:00	Questions and debate	
	Plenary keynotes: Energy security in Europe - chaired by Professor Brian Vad Mathiesen	
10:00-10:20	Assistant Professor Vera van Zoest, Swedish Defence University: Energy security in Europe: Are we at risk?	
10:20-10:40	Research Fellow Francesco Sassi, Observatory of International Politics of the Italian Parliament and Ministry of Foreign Affairs and Cooperation: The looming tensions between energy security and transition in the post EU-Russia energy order	
10:40-11:00	Questions and debate	
11:00-11:15	Short break	

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11:15-13:00 Parallel sessions 1-7

11:15-13:00 Room 1.10	11:15-13:00 Room 1.09	11:15-13:00 Room 1.08	11:15-13:00 Room 1.07	11:15-13:00 Room 1.03	11:15-13:00 Room 1.02	11:15-13:00 Room 1.01
<p>Session 1: Smart energy systems analyses, tools and methodologies</p> <p>Chaired by David Kodz</p> <p>Session keynote Vittorio Verda: Integration of large-scale heat pumps in high temperature district heating systems</p> <p>Maarten Blommaert: Balancing Centralized and Decentralized Heat Pump Solutions for Heating Networks Using Design Optimization</p> <p>Martin Sollich: Integrating short-term storage in optimal heating network design to reduce back-up capacity and increase renewable heat supply</p> <p>Umberto Tesio: Operation optimization of a Multi Energy System with a District Heating Network</p> <p>Jinze Li: Optimization and techno-economic analysis of a hybrid renewable energy system for covering energy and water needs in remote island</p> <p>Laura Kuper: Heating network topology design by price-collecting Steiner trees</p>	<p>Session 2: Smart energy infrastructure and storage options</p> <p>Chaired by Thomas Helmer Pedersen</p> <p>Session keynote Richard van Leeuwen: Development and implementation of a Smart Energy System for local energy communities to improve sustainability and decrease electricity grid loads</p> <p>Martin Hartvig: Pathway 2.0: Sector coupling is a driver for offshore shore hubs and spokes</p> <p>Jes Donneborg: Energy on Demand - A Renewable Sector-Coupling Energy Park</p> <p>Fabian Borst: Managing Complexity in Industrial Heating and Cooling Systems: A Local Energy Market Framework for Transactive Control with Technical Constraints</p> <p>Hamza Abid: Techno-economic analysis of offshore energy hubs: Enabling Europe's energy transition</p> <p>Kristina Haaskjold: Value of energy storages in ancillary and energy markets in the Norwegian low-carbon energy transition towards 2050</p>	<p>Session 3: Integrated energy systems and smart grids</p> <p>Chaired by Paula Ferreira</p> <p>Session keynote Tijs Van Oevelen: Peak load reduction in a district heating network by means of demand response and supply temperature control: Evaluation of test results</p> <p>Dabrel Prits: Demand side management (DSM) key performance indicators as a value driver for large scale DSM implementation in district heating networks</p> <p>Faran Ahmed Qureshi: Comparing and evaluating different predictive control configurations in a district heating network – Simulation study</p> <p>Costanza Saletti: Coordination of multi-energy prosumers with demand side management</p> <p>Abdul Azzam: Development and Evaluation of a model predictive control strategy for an operational analysis in district energy systems</p>	<p>Session 4: Institutional and organisational change for smart energy systems and radical technological change</p> <p>Chaired by Gareth Jones</p> <p>Session keynote Kristina Lygnerud: Increased district energy competitiveness through social sustainability</p> <p>Bernhard Mayr: Introducing the concept of an integrated decision-making framework for sustainable heating (and cooling) technologies</p> <p>Lucy Sherburn: Establishing Key Performance Indicators for heat networks for use within the UK's Heat Network Technical Assurance Scheme</p> <p>Daniel Møller Sneum: Making district heating bankable: District heating as an asset class</p> <p>Søren Djørup: A Framework for Heating Technology Characterisation and its Relevance to Energy Policy Design</p> <p>Lisa Hjerrild: Experiences with economic compensation to neighbors of large-scale renewable energy farms</p>	<p>Session 5: Energy savings in the electricity sector, buildings, transport and industry</p> <p>Chaired by Lieve Helsen</p> <p>Session keynote Cameron Downing: Comparison of the Thermal Experience & Controllability of Gas Boilers and Air Source Heat Pumps</p> <p>Naomi Adam: Co-design of Thermal Systems in a Collective Low-Carbon District</p> <p>Mazarine Roquet: Decarbonation of an Existing Building Asset Energy Supply: A Case Study on Low Temperature Thermal Network</p> <p>Philipp Althaus: Intelligent control using flexible controller architecture for improved energy efficiency of room heating: Design and evaluation in a living lab</p> <p>Wen Liu: The impacts of behavioral variables on heat demand in the built environment and on the economic consequences of energy efficiency measures investment</p> <p>Vassilis Stavrakas: Advancing integrated and smart renovation packages for efficient, sustainable, and inclusive energy use: Modelling of real-life residential buildings</p>	<p>Session 6: 4th generation district heating concepts, future district heating production and systems</p> <p>Chaired by Tobias Schrag</p> <p>Session keynote Lars Skytte Jørgensen: Advancing Sustainable Energy Solutions: Aalborg Forsyning's Strategic Green Transition Initiatives</p> <p>Simon Müller: Modern benchmark of adaptive thermal source network at industrial site – The Incampus</p> <p>Ulrich Trabert: Optimised Operation of Industrial Prosumers in District Heating Systems</p> <p>Afraz Mehmood Chaudhry: A framework for optimizing prosumer-based thermal networks in urban communities: robust design approach with uncertain energy markets</p> <p>Giulia Manco: Design optimization for solar thermal prosumers in district heating networks</p>	<p>DHC+ Platform Special Session: Experiences and outlooks on digitalisation of district heating & cooling</p> <p>Session keynote Matteo Pozzi: Fostering Digitalisation to enhance DHC Systems: progresses and perspectives by the DHC+ platform</p> <p>Steen Schelle Jensen: Leveraging End-User Engagement for Enhanced District Heating Systems</p> <p>Ard de Reus: Real-time dynamic pressure and temperature control of a District Cooling system</p> <p>Luca Scapino: A Real-Case Study on Dynamic Operational Optimization of Thermal Energy Storage with an end-to-end Live Digital Twin</p> <p>Open discussion with the audience and members of the DHC+ Digitalisation Working Group</p>

13:00-14:15 Lunch and networking

Restaurant ground floor and 1st floor

14:15-15:45 Parallel sessions 8-14

14:15-15:45 Room 1.10	14:15-15:45 Room 1.09	14:15-15:45 Room 1.08	14:15-15:45 Room 1.07	14:15-15:45 Room 1.03	14:15-15:45 Room 1.02	14:15-15:45 Room 1.01
<p>Session 8: 4th generation district heating concepts, future district heating production and systems</p> <p>Chaired by Jan Eric Thorsen</p> <p>Session keynote Anders Nielsen: Intelligent heat management and distribution are crucial in a district heating network</p> <p>Orestis Angelidis: A Scottish Case Study: Can 5th Generation District Heating and Cooling Facilitate Holistic Decarbonisation in Clyde Gateway?</p> <p>Tom Burton: Heat Network Optimisation Guidance: Standardising the approach to improving the performance of legacy systems</p> <p>Aya Heggy: Decarbonising the UK's Heat Networks: A Framework for Archetype-Based Strategies and Case Study Analysis</p> <p>Jelena Ziemele: Synergies between heat production, distribution, and consumption for decarbonizing strategy of urban district heating system</p>	<p>Session 9: 4th generation district heating concepts, future district heating production and systems</p> <p>Chaired by Richard van Leeuwen</p> <p>Session keynote Brian Vad Mathiesen: Heat Roadmap Europe: Electrification versus low temperature district heating for heating buildings</p> <p>Enric Gonzalez Gonzalo: Heat Roadmap Europe: Key findings across five EU countries comparing district heating options compared to EU27</p> <p>David Kodz: Grid Stabilization with Mega Heat Pumps</p> <p>Martina Capone: Enhancing District Heating Transition through the Integration of Groundwater Heat Pumps</p> <p>Jake Adamson: Optimising thermal storage volume to reduce the electric peaking plant capacity</p>	<p>Session 10: 4th generation district heating concepts, future district heating production and systems</p> <p>Chaired by Anna Volkova</p> <p>Session keynote Dagnija Blumberga: Multi-energy Hub Forwards to Decarbonisation</p> <p>Nirav Patel: Optimizing District Heating Supply for Positive Energy Districts</p> <p>Johan Dalgren: Circulation flows in District Heating Systems – A comparison between necessary, demanded and real flows</p> <p>Carolin Ayasse: Heating System Optimization considering Technology, Temperature, and Retrofit Flexibility Model-endogenously</p> <p>Mieczysław Dzierzowski: Sustainable district heating in Łomża - on the road to decarbonisation</p>	<p>Session 11: Integrated energy systems and smart grids</p> <p>Chaired by Hans Jørgen Brodersen</p> <p>Session keynote Nicholas Long: Ambient loop network and capacity expansion modeling case study in the USA and Austria</p> <p>Nils Namockel: Wholesale electricity market modeling with distribution grid constraints</p> <p>Nicolas Vasset: Optimal control for gas distribution networks with flexibility and biomethane injection targets</p> <p>Christian Møller Jensen: Delay compensated peak shaving in district heating zones by automatic setpoint scheduling</p>	<p>Session 12: Renewable energy sources and waste heat sources including PtX for district heating</p> <p>Chaired by Ralf-Roman Schmidt</p> <p>Session keynote Hanne Kauko: Electrolysis waste heat utilization towards district heating – a case study for Norway</p> <p>Sina Dibos: Impact Analysis of Electrolyzer Waste Heat on Low Temperature District Heating and Cooling Networks</p> <p>Leander Kimmer: Decarbonising district heating with hydrogen: A comparison of business and economic optimums</p> <p>Anna Billerbeck: Increasing the spatial resolution of climate-neutral district heating supply in European energy system models</p> <p>Dan Staunton: How large-scale ASHP deployed on DH networks can decarbonise challenging urban environments</p>	<p>Session 13: Smart energy system analyses, tools and methodologies</p> <p>Chaired by Steen Schelle</p> <p>Session keynote Stefan Holler: Building Supply Temperature Cadastre (BSTC) for analysing low-temperature feasibility of residential buildings</p> <p>Julia Eicke: Simplified representation of buildings in district heating network models – a data driven approach</p> <p>Samanta Alena Weber: Feature Engineering for Machine Learning to predict heat networks on the end-user level</p> <p>Amin Darbandi: Machine Learning for Prediction of Heat Demand and Applying Reinforcement Learning to Schedule Energy Hubs</p> <p>Dominik Stecher: Data Set & Fault Signature Generation for District Heating with Generative and Transformative Neural Networks</p>	<p>Session 14: Electrification of transport, heating and industry</p> <p>Chaired by Iva Ridjan Skov</p> <p>Session keynote Mirko Morini: Trends in smart energy in airports</p> <p>Peiyao Guo: Equilibrium Analysis of Coupled Energy Sharing Community and Transportation Network: A Game-theoretic Approach</p> <p>Lucas Verleyen: The battery – A blessing or a curse for Positive Energy Districts?</p> <p>Wellington Alves: A Data-Driven Exploration of End-of-Life Scenarios for Lithium-ion Batteries in Electric Vehicles</p> <p>Noémie Jeannin: Using electric vehicle as flexibility asset for photovoltaic electricity production: A geographical approach</p>

15:45-16:15 Coffee break

1st floor

16:15-17:45 Parallel sessions 15-21

16:15-17:45 Room 1.10	16:15-17:45 Room 1.09	16:15-17:45 Room 1.08	16:15-17:45 Room 1.07	16:15-17:45 Room 1.03	16:15-17:45 Room 1.02	16:15-17:45 Room 1.01
<p>Session 15: 4th generation district heating concepts, future district heating production and systems</p> <p>Chaired by Stefan Holler</p> <p>Session keynote Jan Eric Thorsen : Aftercooling concept for 4th generation district heating substations Carles Ribas Tugores: Enabling Return Temperature Reduction in Austrian District Heating System: Absorption Heat Exchanger Integration and Impact Analysis Jens Møller Andersen: Comparison of direct and indirect district heating systems in Denmark Michele Tunzi: Enhancing Temperature Optimization and Economy in a Danish District Heating Network through Domestic Hot Water Substation Renovation Ana Catarina Marques: A district heating network with heat recovery from waste water treatment plant</p>	<p>Session 16: Electrification of transport, heating and industry</p> <p>Chaired by Vittorio Verda</p> <p>Session keynote Oddgeir Gudmundsson: Economic comparison of hydronic based heating and multi-split A2A heat pumps – using a case study Julian Hermann: A surrogate model for residential heat pump COP estimation in the context of energy system optimisations Christopher Graf : Domestic Hot Water Systems in existing residential buildings: A Comparative Simulation Study on Efficiency and Hygiene Challenges Antoine Laterre: Comparing Carnot batteries and chemical batteries for residential heat and electricity management: a prospective life-cycle assessment</p>	<p>Session 17: Smart energy systems analyses, tools and methodologies</p> <p>Chaired by Hironao Matsubara</p> <p>Session keynote Paula Ferreira: Energy Demand Forecasting for Developing Economies in Sub-Saharan Africa Andrew Lyden: Exploring sector-coupled flexibility in energy markets with locational pricing Tuomas Vanhanen: Energy System Modeling of Sector Coupling in a Sustainable City: A Policy Scenarios Approach Miguel Chang: Assessing operationally robust long-term capacity expansion plans – A model coupling approach August Brækken: Integrated port energy systems for decarbonized maritime industry</p>	<p>Session 18: GIS for energy systems, heat planning and district heating</p> <p>Chaired by Steffen Nielsen</p> <p>Session keynote Urban Persson: Data categories and selection criteria for an evaluation of the potential for solar district heating with pit thermal energy storage in Sweden Stanislav Chicherin: Improving design of the 5th generation district heating and cooling systems (5GDHC) systems: a robust GIS-driven approach Johannes Pelda: MEMHIS 2.0 - Spatial identification and evaluation of the temporal availability and economic assessment of waste heat sources Abdulraheem Salaymeh: Assessing the Thermal Potential and Sustainable Water Withdrawal Rates from German Waterbodies for District Heating Britta Kleinertz: Spatial prioritization of heat supply systems – experience from literature and practise combined in a practical guideline</p>	<p>Session 19: Smart energy systems analyses, tools and methodologies</p> <p>Chaired by Dirk Vanhoudt</p> <p>Session keynote Gideon Mbiydznyuy: Practical Considerations for Bi-directional Long Short-Term Memory Anomaly Detection in District Heating Networks Dennis Lottis: Benchmarking optimization problem formulations for Model Predictive Control of District Heating systems with a Software-in-the-Loop approach Chris Hermans: Gaussian Process Based Fault Detection in District Heating Substations Edison Guevara Bastidas: Prioritisation of faults in district heating substations: towards predictive maintenance and optimised operation Jonne van Dreven: Optimizing Fault Detection and Diagnosis in District Heating: The Impact of Data Source and Sampling Frequency</p>	<p>Session 20: Smart energy systems analyses, tools and methodologies</p> <p>Chaired by Ingo Leusbrock</p> <p>Session keynote Ralf-Roman Schmidt: A techno-economic and investment risk analysis of ambient and waste heat supply technologies considering future uncertainty for a case study in Poland Gerhard Totschnig: Optimal supply portfolio in a decarbonised district heating system - results of a model-based investigation for two case studies Jonathan Riofrio: Towards Sustainable Energy Transition: Guidelines for Wind Energy Expansion and Power-to-X Integration in Small Island States Ali Kök: Modelling Uncertainties in District Heating Supply Modelling Mohammad Kiani Moghaddam: A double-layer many-objective stochastic optimization model to handle many uncertainties in the operation of smart energy systems</p>	<p>Special session: IEA Annex 84</p> <p>Chaired by Peter Sorknæs</p> <p>Session keynote Anna Cadenbach: Novel Concepts and Technologies for Demand Side Management in Thermal Networks – A review of selected Case Studies Anna Marszal-Pomianowska: Demand Response application – A survey with district heating professionals Yangzhe Chen: Flexibility potential analysis with quantifiable KPI assessment for energy sector coupling leveraging advanced thermal storage solutions Zeng Peng: Critical Review of Digital Infrastructures on the Interoperability between Buildings and 4th Generation District Heating System</p>

17:45-18:45 Break

18:45 Joint walk to conference dinner venue. If you wish to join, we meet outside the main entrance to AKKC

19:30 Conference dinner at Skydepavillonen, Søndre Skovvej 30, 9000 Aalborg

09:00-10:45 Parallel sessions 22-28

09:00-10:45 Room 1.10	09:00-10:45 Room 1.09	09:00-10:45 Room 1.08	09:00-10:45 Room 1.07	09:00-10:45 Room 1.03	09:00-10:45 Room 1.02	09:00-10:45 Room 1.01
<p>Session 22: CCUS and PtX technologies and the production and use of electrofuels in future energy systems</p>	<p>Session 23: Components and systems for district heating, energy efficiency, electrification and electrofuels</p>	<p>Session 24: Smart energy infrastructure and storage options</p>	<p>Session 25: 4th generation district heating concepts, future district heating production and systems</p>	<p>Session 26: Planning and organisational challenges for smart energy systems and district heating</p>	<p>Session 27: GIS for energy systems, heat planning and district heating</p>	<p>Sino-Danish Special session: Harvesting waste heat sources and better understanding heat demands patterns for 4th generation district heating in China and in Denmark</p>
<p>Chaired by Marie Münster</p>	<p>Chaired by Peter Jorsal</p>	<p>Chaired by Dietrich Schmidt</p>	<p>Chaired by Kristina Lygnerud</p>	<p>Chaired by Poul Thøis Madsen</p>	<p>Chaired by Urban Persson</p>	<p>Chaired by Allan Bertelsen</p>
<p>Session keynote Thomas Helmer Pedersen: Direct Air capture cost reduction and market development via process intensification. Establishing the DAC insetting concept</p> <p>Lars Schwarzer: Carbon management in a volatile energy system – DTI’s research in flexible carbon capture, utilization, and storage</p> <p>Alexandros Flamou: Bidirectional soft-linking of open-source energy models to evaluate the feasibility of transition pathways to carbon neutrality in the power sector</p> <p>Jens Weibezahn: Fueling the Future: Optimizing Power-to-X Production in Renewable Energy Hubs through Flexible Operating Units</p> <p>Lissy Langer: Conditions on electricity purchasing: More (emission reduction) bang for your buck?</p> <p>Christine Brandstätt: Incentives for pipeline decommissioning and repurposing in regulated grids</p>	<p>Session keynote Anna Volkova: Decarbonisation options of district heating peak loads</p> <p>Poul Alberg Østergaard: District heating in Denmark – Dynamically reshaping the composition of heat supply</p> <p>Maya Neyhousser: Adaptive Control for Decentralized Feed-in of Solar Heat into District Heating Networks Based on Reinforcement Learning</p> <p>Johannes Nicolás Wildfeuer: Continuous commissioning of hot water installations using a digital twin</p> <p>Sadia Ferdous Snigdha: AI based heat pump controller for power grid resilience enhancement</p> <p>Simran Chaggar: Assessing the suitability of existing buildings to operate at lower temperatures via in field temperature lowering testing</p>	<p>Session keynote Geoffroy Gauthier: Large Thermal Energy Storages (LTES) are a key element of the future energy system</p> <p>Julio Vaillant Rebolgar: Operational assessment of Large-Scale Ground Source Heat Pump and Borehole Thermal Energy Storage System</p> <p>Ali Pour Ahmadiyan: Simulation and optimization of high temperature waste heat storage and recovery through a city scale borehole storage field</p> <p>Dmitry Romanov: Techno-economic analysis of utilization of waste heat from a data center combined with a borehole thermal energy storage</p> <p>Daniel Friedrich: Short Borehole Thermal Energy Storage cycles charged with otherwise curtailed wind energy</p> <p>Henning Rahlf: Analysis of bidirectional EV charging infrastructures within industrial DC grids</p>	<p>Session keynote Ieva Pakere: District heating resilience under high energy price shocks</p> <p>Aadit Malla: Assessing the Economic Viability of Thermal Source Networks: The Role of Temperature Sensitivities</p> <p>Nicolas Oliver Marx: Techno-Economic Feasibility of District and Individual Heating & Cooling Solutions – A Preliminary Assessment of Selected Case Studies</p> <p>Denis Divkovic: Optimising heat planning: Cost effective refurbishment for enabling low carbon district heating</p> <p>Luca Casamassima: Comparative study of LTDH distribution systems in urban heating: a cost-effectiveness and sustainability analysis</p> <p>Nina Dungworth: Impact of technical assurance on reducing heat network capital cost by addressing oversizing in design</p>	<p>Session keynote Andra Blumberga: Overcoming sociotechnical challenges: How to model the probability of investing in climate-friendly energy technologies</p> <p>Bent Ole Gram Mortensen: Framework for Energy Data Spaces - Let’s share energy data for a greener future</p> <p>Alwina Kaiser: Bridging the Implementation Gaps: A Multi-Criteria Decision Support Approach for Enhancing Municipal Heat Supply and Social Acceptance</p> <p>Adithya Ramachandran: Unveiling Consumer Behavior in District Heating Network: A Contrastive Learning Approach to Clustering</p> <p>Nermina Abdurahmanovic: Enhancing Energy Efficiency through User Engagement and Behaviour Change: A review on gamification approaches and serious games in energy systems</p> <p>Nina Kicherer: Three heat marketplaces for the cost-efficient integration of renewable heating plants into district heating systems</p>	<p>Franz Mauthner: Agent-based simulation of energy transition pathways in urban environments</p> <p>Ruihong Chen: GIS-based landscape scenicness estimation using machine learning for visual impact assessment of wind projects deployment in Europe</p> <p>Alexander Rehbogen: Spatial Energy Planning for Heat Transition - Steering Transition by Information</p> <p>Eva Wiechers: German and Danish Case Studies undertaken on the Citiwatts platform replacing the Hotmaps platform</p> <p>Annette Steingrube: The potential role of island heating networks in decarbonizing heating supply of districts. A case study for the district of Freiburg Waldsee</p>	<p>Siyue Guo: Waste heat recovery for urban heating in northern China</p> <p>Zanyu Yang: Intermittent and Fluctuating Waste Heat Characteristics in Steel Plants: Recovery Optimization Study</p> <p>John Tang Jensen: Heat source pricing - District Heating Networks</p> <p>Lipeng Zhang: Insights from Danish Heating Metering and Billing: Implications for China’s Clean Heating Development</p> <p>Zhaoyang Liu: Aligning Heat Demand with Sources Based on Heat Intensity: A Heat Roadmap for China</p> <p>Panel discussion and Q&A</p>

11:15-13:00 Parallel sessions 29-35

11:15-13:00 Room 1.10	11:15-13:00 Room 1.09	11:15-13:00 Room 1.08	11:15-13:00 Room 1.07	11:15-13:00 Room 1.03	11:15-13:00 Room 1.02	11:15-13:00 Room 1.01
<p>Session 29: Smart energy system analyses, tools and methodologies</p>	<p>Session 30: CCUS and PtX technologies and the production and use of electrofuels in future energy systems</p>	<p>Session 31: Smart energy systems analyses, tools and methodologies</p>	<p>Session 32: Planning and organisational challenges for smart energy systems and district heating</p>	<p>Session 33: Smart energy infrastructure and storage options</p>	<p>Session 34: 4th generation district heating concepts, future district heating production and systems</p>	<p>Special session: IEA DHC Annex TS5 - Integration of Renewable Energy Sources into Existing District Heating and Cooling Systems</p>
<p>Chaired by Ard de Reus</p>	<p>Chaired by Alexandros Flamos</p>	<p>Chaired by Graeme Maidment</p>	<p>Chaired by Bent Ole Gram Mortensen</p>	<p>Chaired by Matteo Pozzi</p>	<p>Chaired by Dagnija Blumberga</p>	<p>Chaired by Thomas Pauschinger</p>
<p>Session keynote Daniel Rohde: Dynamic Energy System Optimization: A unique methodology for simultaneous sizing and optimal operation</p> <p>Michael Frank: Algorithm-Supported Operation and Investment Planning of Decentralized Energy Infrastructure at Production Sites</p> <p>Saltanat Kuntuarova: Operational Flexibility of Integrated Power and District Heating Systems: Modeling of Heat Flow Directions</p> <p>Anas Algareï: Evaluating Tools for Integrating District Cooling into Wider Energy Models</p> <p>Alena Lohrmann: Go with the flow: a new approach to leveled cost estimation to account for water use in power generation</p>	<p>Session keynote Anders Borup: Depending on your neighbor - Sector coupling challenges of the future</p> <p>Marie Münster: Why do we see differences in results when modeling hydrogen in integrated energy systems?</p> <p>Hossein Nami: Optimizing Regional Electrolysis Capacity</p> <p>Henrik Wenzel: Local Energy Parks in Northern Fun</p> <p>Meng Yuan: Beyond Borders: Alternative Renewable Energy Export Strategies</p> <p>Leon Schumm: Offtaker regulation: Impacts on New Zealand hydrogen export ambitions</p>	<p>Nora Yusma Mohamed Yusop: Optimal Decarbonisation Pathways for Malaysia's Energy System: Mapping a Long-Term Transition to Net Zero Emissions by 2050</p> <p>Jan Stock: Construction of large district heating networks based on open-source data and demonstration of possible transformation measures</p> <p>Lukas Richter: Synergizing Investment and Cooperation: An Agent-Based Modelling Framework for Optimized Energy Distribution in Cellular-Structured Systems</p> <p>Ryoga Ono: The analysis of a woody biomass-to-X model based on high-resolution dataset by 1,741 municipalities in Japan</p> <p>Henrique Lagoeiro: FAST DHC project: initial findings on the development of a decision support tool for the techno-economic evaluation of low-temperature DHC networks</p>	<p>Session keynote Hironao Matsubara: Challenges in Planning and Implementing Decarbonized Advanced Areas in Japan</p> <p>Gianmarco Preso: Scenario analysis for efficient transition of a district heating network – Case study in Göttingen</p> <p>Max Guddat: The Municipal Heat Planning Toolbox - Conceptual Approaches to Heat Planning, Based on Danish Practical Experience</p> <p>Stine Bülow: Decision Making under Uncertainty in Coupled Multi-Energy Systems</p> <p>Gareth Jones: Upcoming changes to heat network regulation in the UK – overview of the Heat Network Technical Assurance Scheme</p>	<p>Session keynote Martin Stroleny: Innovations in District Heating and Cooling: ground-breaking projects reshaping the DHC landscape</p> <p>Dietrich Schmidt: Digitalization of district heating systems – Transforming heat networks for a sustainable future</p> <p>William Delgado-Diaz: Hybrid seasonal heat storage systems using phase change materials: Economic and Environmental Optimization</p> <p>Jonathan Hachez: Building load profile synthesis: a stochastic approach to model building energy consumption timeseries</p> <p>Michael Bayer: Methodological Development of a Reduced-Order Data-Driven Model from Detailed Numerical Simulations for Seasonal Thermal Energy Storage (STES)</p> <p>Sreenath Sukumaran: Enhancing the Sustainability of District Cooling Networks Through Integration of Snow Storage Systems: A Case Study of Tallinn, Estonia</p>	<p>Session keynote Femke Janssen: Integrated Design and Operational Optimisation for District Heating Networks: Seasonal Subsurface Storage and Heat pumps</p> <p>Kobus van Rooyen: Integral Heating and Cooling Optimization; Design and Operation</p> <p>Gerrid Brockmann: Economic and ecological investigation of a heating network in the suburban area Leeste in Germany</p> <p>Michela Romagnosi: A modelling tool for dynamic simulations of a 5th generation district heating and cooling system applied to Italian case studies</p> <p>Daniel Muschick: Implementation results from an optimization-based, predictive supervisory controller for a district heating network in Austria</p> <p>Els van der Roest: Collective or individual heating solutions - the case of Utrecht (NL)</p>	<p>Session keynote Ingo Leusbrock: Transformation of large district heating and cooling systems to higher shares of renewable energy sources</p> <p>Alice Dénarié: Decentral integration of renewables in existing district heating networks - results and lessons learned from IEA DHC Annex TS5</p> <p>Mohammad Saeid Atabaki: A systematic approach to analyze methodologies for renewables-based district heating potential assessments – A categorization and literature review</p> <p>Giulia Spirito: A GIS-based tool to optimally plan and operate renewables-based DH systems</p> <p>Frederik Feike: Modeling heat loads and return temperatures of buildings connected to a district heating network using a neural network</p> <p>Poul Thøis Madsen: The involvement of stakeholders when decarbonizing larger existing DHC plants. A guide for politicians, planners, and operators of DHC plants</p>

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WEDNESDAY 11 SEPTEMBER 2024

13:00-14:00 Lunch and networking

Restaurant ground floor and 1st floor

Europahallen

14:00-15:45 Plenary closing session

Plenary keynotes: The role of hydrogen in the green transition - chaired by Professor Henrik Lund

14:00-14:20 **Professor Jyoti Parikh, Executive Director IRADe:** The Relevance of Hydrogen for India

14:20-14:40 **Professor Xiliang Zhang, Tsinghua University:** The role of hydrogen energy in achieving China's carbon neutral goal

14:40-15:00 **Professor Michael Sterner, OTH Regensburg:** The hydrogen and Power-to-X economy in Germany: Insights on generation, imports, backbones, storage and demands

15:00-15:20 Questions and debate

15:20-15:35 Best Presentation Award Ceremony by Professor Poul Alberg Østergaard

15:35-15:45 Closing by Professor Brian Vad Mathiesen and Hans Jørgen Brodersen, Senior Project Manager

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Technical Tour: Power-to-X - Navigating the practical challenges in hydrogen and methanol production

Monday 9 September 2024

14:30 - 17:30

Facing climate change and the urgent demand for sustainable energy solutions, we stand on the brink of a green energy revolution. Power-to-X offers a path forward, yet with this new horizon come practical challenges that we cannot overlook. Among the most prominent are the production of hydrogen and methanol – key components in this transition. How do we navigate these challenges to unlock the potential of Power-to-X? Port of Aalborg and Aalborg University have set up a CCUS-Hub demonstration testsite for the whole PtX value chain. The demonstration site includes various necessary technical units from grid or RE production of high-voltage power supply, storage solutions, electrolyser production of H₂, CO₂ connections and supply, methanol production and more. The tour includes a presentation at the Port of Aalborg and a visit to the CCUS Hub.

More information at [conference website](#)

Technical Tour: Aalborg Portland cement factory goes for Carbon Capture solutions

Thursday 12 September 2024

8:30 - 11:30

Aalborg Portland is committed to reducing CO₂ emissions per ton of cement by 30% by 2030. At the factory, more visions and missions have resulted in an ambitious action plan with an innovative approach, and the target is to reach up to 73% in CO₂ reduction in total in 2030. One innovative approach to the reduction target is to set up a large demonstration and pilot carbon capture plant facility to the production emissions. The tour includes a presentation on how the factory will capture 400,000 t of CO₂/year and a visit to the latest Carbon Capture installed unit at the factory.

More information at [conference website](#)