

08:00-09:00 Registration and breakfast

Main entrance

09:00-10:45 Plenary opening session

Ground floor - Europahallen

Plenary opening session: Integrated carbon capture solutions and global greenhouse gas thresholds

Chaired by Poul Alberg Østergaard

09:00-09:15 **Henrik Lund and Glenda Napier:** Opening and Welcome to SESAAU2026

09:20-09:50 **Keynote Michael Lundgaard Thomsen, Director at Aalborg Portland:**
CCS is not a technology fix - it is a real climate solution for Aalborg Portland

09:55-10:25 **Keynote Neven Duić, Professor at the University of Zagreb:**
Process carbon emissions - storing, utilizing or offsetting within global carbon emission constraints

10:25-10:45 Debate

10:45-11:15 Coffee and networking in sponsor area

1st floor

PROGRAMME AALBORG

11:15-13:00

Parallel sessions 1-8

Ground floor
Europahallen

Session 1: 4GDH concepts, future DH production and systems

Chair: Peter Jorsal

Session keynote A. Cadenbach, Fraunhofer:
Advancing 4GDH: Integrated Simulation and Experimental Evaluation of Six Transformation Pathways

C. Ayasse, TU Darmstadt: Open-Source Data Processing Pipeline for Modeling Spatially Resolved Urban Heat Sector Decarbonization Paths

A. Lefebvre, UC Louvain:
Must-haves beyond linear heat density for cost-effective fourth-generation district heating systems

V. Fehst, Preventio:
Zone-Level Leak Detection in District Heating Networks Using Multi-Scale Return-Flow Regime Learning

A. Engelter, TU Darmstadt: Enabling the flexible transition from 3rd to 4th generation district heating using dual pipe transmission lines

H. Averfalk, HH:
Ranagård: Novel low-temperature heat distribution technology evaluation

1st floor
Room 1.01 Banen

Session 2: CCUS and PtX technologies and the production and use of electrofuels in future energy systems

Chair: Henrik Lund Frandsen

Session keynote C. Breyer, LUT University: Power-to-X implementation in energy system modelling: Status and outlook

A. Julio, AAU:
Municipal System-Level Assessment of CO₂ Availability for eSAF production under Smart Energy Constraints

T. Wissocq, CEA Liten: Quantifying the Flexibility Potential of District Heating Networks for France's 2035 Electrical Grid

H. Thougard Jensen, AAU: Integrating CCUS into Municipal-level Energy System Analysis for a Carbon Neutral Society

F. Sala, RSE: Role of Hydrogen and CCUS in the Italian Power System by 2050: Scenario Results and Implications for Flexibility and Security

1st floor
Room 1.02 Havnen

Session 3: Smart energy systems tools and methodologies

Chair: Kristina Lygnerud

Session keynote B. van der Heijde, VITO:
Developing and Testing Supervisory Control for District Heating and Cooling with Virtual Demonstrators

S. Sasidharan, TU Delft:
Control-Oriented Modelling for Flexible Low-Temperature District Heating and Cooling Networks

M. Zuschlag, RWTH:
Analysis of the flexibility potential of mono-energetic and hybrid energy hubs for third- and fourth-generation district heating

F. Lédée, CEA-Liten:
Experimental comparison of smart controllers on a small district heating network

V. Kaisermayer, BEST:
Harnessing Building Energy Flexibility with Model Predictive Control

B. Spoek, RWTH:
Stochastic Consumer-Level MPC for Reliable Operation of District Heating Networks with Transport Delays

1st floor
Room 1.03 Flyveren

Session 4: RES and waste heat sources including PtX for district heating

Chair: Elisa Guelpa

Session keynote B. Nastasi, Tor Vergata University of Rome:
Switching to Renewable Fuels in District Cooling for Buildings and Data Centers

S. Roozbehani, DTU:
Integrated Planning and Control of Eco Industrial Clusters for Frequency Service Provision

A. Ardehali, SDU:
Competing for electrons or molecules? Infrastructure planning in an eco-industrial cluster

J. Bertilsson, Chalmers:
From Power Demand to Heat Supply: Optimizing Data Center Placement in the Nordics

L. Enrique Ruiz Perdomo, ITE: Hybrid Modelling of Data Center Energy Consumption and Waste Heat as a Basis for Integration into Smart Energy Systems

S. Mönch, Fraunhofer:
Waste Heat Integration in Low-Temperature Urban District Heating: An Energy System Modelling Case Study on Heating and Cooling Interactions

1st floor
Room 1.04 Fakultetet

Session 5: 4GDH concepts, future DH production and systems

Chair: Ingo Leusbrock

Session keynote M. Sylvest Eegholm, Green Therna: Deep geothermal energy to efficiently deliver heat to district heating

U. Persson, HH: Integration of deep geothermal heat in the district heating system of Lviv

H. Gailan, Geological Survey of Estonia: Integrating medium-deep geothermal energy system into district heating in Estonia: experience from pilot stations towards to smart systems

S. Roustaei, Politecnico di Milano: A Multi-Criteria Framework for Comparing District Heating Configurations in Shallow Geothermal 5GDHC Systems

N. Kozłowska, University of Liège: Integration of a Geothermal Ground Temperature Response in Thermal Network Optimization

L. Riedl, TU Wien: Spatial Representation of District Heating: Granularity Levels and Aggregation Methods for Energy System Modeling

1st floor
Room 1.07 Fjorden

Session 6: Smart energy systems tools and methodologies

Chair: Ruta Vanaga

Session keynote M. Giacomo Prina, EURAC: How Climate Change Reshapes the Alpine optimal Energy Mix?

J. Rodriguez Santiago, Fraunhofer: Optimal Design and Control of Heat Pump Systems under Dynamic Energy Conditions in European Residential Buildings

J. Fuchsberger, BEST: A Framework for Cooperative, Optimization-based Control of Coupled Energy Systems

M. Mohammadyari, VITO: On the Convergence of ADMM-Based Distributed Optimization for Nonconvex Demand Response in District Heating Systems

J. Müller, TU Darmstadt: Development of Operational Strategies for a Hybrid 4GDH Network using Dynamic Thermo-Hydraulic Simulation

A. Soleimani, MAU: Towards trust in smart hybrid HVAC control systems from stakeholders' perspective

1st floor
Room 1.08 Tunnellen

Session 7: Energy efficiency in the electricity sector, buildings, transport and industry

Chair: Paula Ferreira

Session keynote M. Münster, DTU: Assessing planetary boundaries of a future Danish energy system

S. Müller, THI: Economic feasibility of waste heat integration from high-power charging stations for electric trucks in district heating networks

U. Žvar Baškovič, University of Ljubljana: Prosumer Activation in Sector-Coupled Energy Systems: Heavy-duty EV Charging as a System Flexibility Challenge for a multi-sector prosumer

A. Ajanovic, TU Wien: Energy Efficiency as a Key Enabler of Cost-Effective Transport Electrification

J. Chu, THI: Design and Evaluation of a Sector-Coupled Energy Management System for Supermarkets as Flexible EV Charging Hubs

D. Muschick, BEST: Practical Aspects of Predictive Control of Electric Vehicle Charging Parks as Flexibility Providers

1st floor
Room 1.09 Værket

Session 8: GIS and mapping of demands and resources

Chair: Bernd Möller

Session keynote E. van der Roest, Municipality of Utrecht: Does it fit? The spatial impact of different sustainable heating strategies

F. Mauthner, AEE: CoSpatial Heat: A GIS-based framework for integrated heat planning and gas grid decommissioning

N. Tait, University of Glasgow: Spatial techno-economic modelling of heat decarbonisation solutions for urban energy communities to utilise local heat resources

A. Salaymeh, HAWK: Multidimensional Evaluation of Heat Source–Demand Matching and Techno-Economic Trade-Offs in Heat Transition Pathways

U. Ganslmeier, TU München: Noise-Aware GIS Mapping of Air-to-Air Heat Pumps: Potential for Replacement of Individual Gas Floor Heating in Munich

I. Becker-Grupe, HAWK: Systematic GIS-based analysis for integration of multiple low-temperature waste heat sources into an existing district heating network

PROGRAMME AALBORG

13:00-14:15

Lunch and networking

14:15-15:45

Parallel sessions 9-16

Ground floor
Europahallen

Session 9: Energy efficiency in the electricity sector, buildings, transport and industry

Chair: Anna Volkova

Session keynote O. Gudmundsson, Danfoss:

Case analysis: Energy efficiency of building level versus flat level ventilation-based heat supply systems for low-energy buildings

K. Hoffmann, GEA:

Affordable and Decarbonized District Heating with Heat Pumps

P. Paolo Brancaleoni, University of Parma:

Evaluating the Flexibility Potential of High Temperature Heat Pumps for Defossilized District Heating

R. Parziale, ISFH:

Monitoring Heat Pumps in 4 Residential Climate Districts in Germany

A. Bullock, Fairheat:

Installation to Operation: Quality Assurance of Dwelling Heat Pumps on Ambient Loop Networks

1st floor
Room 1.01 Banen

Session 10: 4GDH concepts, future DH production and systems

Chair: Vittorio Verda

Session keynote

H. Lund Frandsen,

DTU: Robust and cost effective seasonal storage solutions for the energy system

T. Singh Rajput,

Chalmers: TIMES-Based Evaluation of Seasonal Thermal Energy Storage in District Heating System

F. Janssen, TNO:

Efficiently combining a seasonal heat storage, heat pump and electricity dynamics for a more sustainable HT-DHN

H. Dorotić, EIHP:

Techno-economic and environmental assessment of underground seasonal thermal energy storage integration in the Zagreb district heating network

N. Peracha, THI:

Techno-economic assessment of seasonal thermal energy storage in low-exergy district heating networks

1st floor
Room 1.02 Havnen

Session 11: Smart energy systems tools and methodologies

Chair: Robin Wiltshire

Session keynote

D. Schmidt,

Fraunhofer: Realizing autocommissioning and optimizing substation operations through machine learning

P. Bogdanov, RWTH:

Improving substation operation for fifth generation district heating and cooling networks: MPC development and evaluation in dynamic simulation

L. Block, RWTH:

Semi-Automated Fault Detection in District Heating Substations Using Machine Learning

M. Blommaert, KU

Leuven: Hybrid Electric Heater Substations for Cost-Effective, Low-Temperature District Heating Networks: A Physics-Based Optimization Approach

C. Holm Christiansen,

DTI: Semantic modelling of DHC substations: lessons from a multi-ontology exercise within IEA DHC Annex TS9

1st floor
Room 1.03 Flyveren

Session 12: Planning and organisational challenges for smart energy systems and energy efficiency

Chair: Dagnija

Blumberga

Session keynote

K. Lygnerud, LTH:

Characteristics of low temperature district heating business models

D. Møller Sneum,

E-nerd: Customers accepting extended connection times, while keeping inflation and costs down – a district heating customer business model that does it all?

E. Schlahn, HHL:

Financing and cooperation models for utilities in integrated energy systems – a European taxonomy

S. Djørup, NORCE:

Economic impacts of thermal energy storage at the national level

15:45-16:15

Coffee break

1st floor
Room 1.04 Fakultetet

Session 13: Smart energy systems analysis

Chair: Stefan Holler

Session keynote D. Zhuk, NUOS: Resilient Power Systems under Uncertain Conditions: Distributed Generation and Smart Microgrids in Ukraine

A. Mati, AAU: Advancing climate resilience of energy systems through increased spatial resolution

P. Brandt, HAWK: Comparison of the Power Outage Resilience of District Heating and Heat Pumps in a Residential District

A. Mackenzie, Fairheat: Innovative Load Testing Methodologies to ensure Efficient Operation of Energy Centres in Complex Developments

1st floor
Room 1.07 Fjorden

Session 14: 4GDH concepts, future DH production and systems

Chair: Anders N. Andersen

Session keynote U. Schleiss, Grundfos: Hydronic Balancing Revisited: How Decentralised Pumping Unlocks ΔT in Legacy Networks

A. Etemad, University College Dublin: Machine learning surrogate modelling for hydronic balancing in buildings connected to Thermal Source Networks

J. Eric Thorsen, Danfoss: Economic case of building level cascaded substation concepts

R. Mohandasan Karuvungal, RWTH: Simulative Analysis and KPI-Based Selection of Rule-Based Control Strategies in 4th Generation District Heating Substations

M.-Reza Kolahi, University of Geneva: How Decentralization Cuts Emissions in District Thermal Networks

1st floor
Room 1.08 Tunnellen

Session 15: Smart energy components, infrastructures and storage options

Chair: Per Lundqvist

Session keynote J. Leszczyński, AGH University of Krakow: Multiscale CAES technologies – an overview

D. Gryboś, AGH University of Krakow: Real-Time Optimization of the Discharge Process Control Strategy in Micro-CAES Systems for Adaptive Power Flexibility in Micro/Nano-Grids

J. Markowski, AGH University of Krakow: Energy Efficiency Analysis of a Multi-Piston Expander for smart Micro-CAES System

A. Vautrin, Bengt Dahlgren AB: Reduce-Order Model of a Cavern Thermal Energy Storage based on Semi-Analytical Approach

M. Gounesher, KTH: Reduced-Order Modelling of Molten Salt Thermal Energy Storage for Energy System Optimization

1st floor
Room 1.09 Værket

Special session on Nordic Hydrogen Hubs

Chair: Iva Ridjan Skov

Session keynote R. Bo Bramstoft Pedersen, DTU: Simple or too simple: Representing Power-to-X infrastructure in large-scale sector-coupled energy systems models

Y. Pourjamal, LUT University: Subnational Dynamics of the Energy Transition: A NUTS2-Level Assessment of Renewable Energy Systems in Nordic and Baltic Regions

F. Fristed, DTU: Impact of large scale infrastructure commitments under uncertainty in transport and energy systems

F. Dahl Nielsen, AAU: Hydrogen uptake in the Nordic energy transition: national profiles, infrastructure implications, and system level impacts

**1st floor
Room 1.01 Banen**

Session 17: Planning and organisational challenges for smart energy systems and energy efficiency

Chair: Christian Breyer

Session keynote B.V. Mathiesen, AAU:
Designing the EU27 heat market for 2050: 55% district heating enabled by Energy Efficiency 2.0

G. Spirito, Politecnico di Milano: Supporting compliance with the Energy Efficiency Directive: a strategic planning tool for District Heating systems

A. Capretti, A2A:
A district heating decarbonisation plan: behind and beyond the scenes

A. Meisinger, OTH Regensburg: Bridging the green hydrogen gap: From carbon revenues to Power-to-X markets in Europe

O. Kunitomo, Tokyo Gas:
A Study on Technology Generations the District Heating and Cooling in Japan - The Necessity for a Definition of Technology Generations in Japan

**1st floor
Room 1.02 Havnen**

Session 18: Smart energy components, infrastructures and storage options

Chair: Benedetto Nastasi

Session keynote P. Ferreira, University of Minho: Estimating the Temperature Elasticity of Electricity Demand

A. Queitsch, DLR:
Market Behavior of Thermal Energy Storage Power Plants in an Agent-Based Electricity Market Model

C.-Ling Yang, TU Darmstadt: Automatic Frequency Restoration Reserve Provision from District Heating Systems with Large-Scale Heat Pumps: A Feasibility Assessment

J. Dalgren, KTH: The impact on DHS due to temperature losses in decentralized Thermal Energy Storage and how to reduce peak production at discharge

A. Algarei, University of Edinburgh: A TESPpy-Based District Cooling Modeling Tool for Energy Flexibility Characterization in Sector-Coupled Energy Systems

**1st floor
Room 1.03 Flyveren**

Session 19: Smart energy systems tools and methodologies

Chair: Dietrich Schmidt

Session keynote M. Speetjens, TUE:
Capturing 3D unsteady heat transfer in variable-flow variable-temperature district-heating pipeline networks by a compact pipe model

J. Heylen, KU Leuven:
How to Design Heating Networks? A Benchmark of Optimal Pipe Sizing and Design Guidelines, and Exploring the Potential of Peak Temperature Boosting

M. Roquet, University of Liège: Use of digital twins to help the design of thermal networks: a case study application

F. Hallett, Fairheat:
Re-evaluating Cooling Demand Diversity to Optimise Residential CHW Network Design

S. Valencia-Cañola, UNAM: Physical and thermo-economic feasibility of a variable-geometry ejector refrigeration system

**1st floor
Room 1.04 Fakultetet**

Session 20: 4GDH concepts, future DH production and systems

Chair: Jan Eric Thorsen

Session keynote E. Guelpa, Politecnico di Torino: Insights into renewable energy integration in an existing district heating system

W. Liu, UU: A global survey of techno-economic potential of sustainable district heating

M. Asiful Islam, OVGU:
Techno-economic evaluation of power-to-heat integration for a 30% renewable share in an existing fossil-based German district heating system

N. Denter, THI:
Electricity-Driven or Heat-Driven? A Comparative Techno-Economic Analysis of Renewable Sector-Coupled District Heating Systems in Germany

R. Puknat, ISFH: Heat Pumps vs. Direct Electric Heating: Impact of PV Direct Marketing on the Techno-Economics of Low-Energy Homes

1st floor
Room 1.07 Fjorden

Session 21: Institutional and organisational change, energy communities and positive energy districts

Chair: Anna Cadenbach

Session keynote C. Bjerrum Jørgensen, PlanEnergi: Skills Development for the Future of District Heating and Cooling. A Key Enabler for the Green Energy Transition

P. A. Sørensen, PlanEnergi: Skills4DHC. Qualification and recruitment of professionals for the district heating and cooling sector

J. Kapetanakis, HAWK: Aligning skill development in higher education with workforce needs in the district heating and cooling sector: Insights from a European survey

M. Pozzi, Optit: The DHC Academy Alliance: Scaling the Value Chain through a Permanent Education & Training Marketplace

C. Amanda Wörle, Fraunhofer: Towards Standardised Documentation of Experimental Research in District Heating and Cooling

1st floor
Room 1.08 Tunnellen

Session 22: 4GDH concepts, future DH production and systems

Chair: Jacek Leszczyński

Session keynote P. Wojnarowski, AGH University of Krakow: Urban geothermal energy as a component of smart energy systems: multi-use subsurface solutions for local heat decarbonization

K. Droste, RWTH: Simulative Investigation of an Optimized Shallow Geothermal Borehole Layout in a 4th-Generation District Heating Network

N. Patel, TU Wien: Multi-Year Optimization of District Heating Systems with High-Temperature Borehole Thermal Energy Storage

D. Romanov, HAWK: Cost-effectiveness of coaxial medium-deep borehole thermal energy storages for various waste heat sources and district heating temperatures

A. Farnam, VITO: A Hierarchical Control Framework for District Heating Networks with BTES Using Dynamic Programming and MPC

1st floor
Room 1.09 Værket

Special session on Fault Detection and Diagnosis in DH systems – applications from the OptiHeat+ project

Chair: Dirk Vanhoudt

Session keynote J. Al Koussa, VITO: Optiheat+ - A research project on fault detection and diagnosis in district heating

H. Kamali / I. Verhaert, University of Antwerp: Classifying Operational Faults in CHP-Integrated Collective Heating Systems: A Multi-Site Analysis

S. Van Minnebruggen, University of Antwerp: Systematic Fault Characterization in District and Building Heating Systems: Methodology and Challenges

N. Frizziero, DTU: Characterization of air-related fault signatures in water-based radiator systems for low temperature operations

S. Fonken, VITO: Fault detection and prioritization of substations in a residential district heating network - A demonstration case

09:00-10:45

Parallel sessions 24-30

Ground floor
Europahallen

Session 24: 4GDH concepts, future DH production and systems

Chair: Matteo Giacomo Prina

Session keynote V. Verda, Politecnico di Torino:
Integration of heat pumps and short/long term thermal storage units for the transition of district heating networks

J. Pelda, HAWK: Model-based dimensioning of a heat pump and a thermal storage in a CHP-based district heating system and their heat generation pathways towards 2040

F. Mergenhagen, DIW Berlin: Large-Scale Heat Pumps for the Decarbonisation of District Heating: A case study in the German region of Lüneburg

M. Basit Wani, TalTech: Impact of Integrating Local Renewable Heat Sources with District Heating in Non-Residential Sector: A Case Study in Tallinn, Estonia

F. Feuchter, THI: Characteristics and Yield Potential of Vertical Bifacial Agri-Solar Thermal Systems for Dual Land Use and District Heating in Europe

D. Anania, EURAC: Including operational constraints in modelling of district heating decarbonization scenarios

1st floor
Room 1.01 Banen

Session 25: Electrification and sector coupling of transport, heating and industry

Chair: Henrik te Heesen

Session keynote P. Dale, University of Luxembourg: Future assessment of electrical generation and grid constraints in Luxembourg

H. Kirppu, VTT: Electrified District Heating as a System Balancing Resource in Nordic Power Systems: Modelled Outlooks and Observed Realities in Finland

M. Berg Rosendal, DTU: Prioritising Flexibility Options in Future Energy Systems

B. Bukart Hansen, SDU: A Bi-Level Sector Coupling Framework for Multi-Actor Energy Systems: Integrating Techno-Economic Optimisation and Cooperative Game Theory

B. Freischlad, TU Darmstadt: Exploring price-based demand response based on variable emission factors of electricity in sector-coupled energy systems

D. Zinsmeister, Stadtwerke München: Data-Driven City-Scale Archetypes for Munich's Residential and Non-Residential Building Stock

1st floor
Room 1.02 Havnen

Session 26: Smart energy systems tools and methodologies

Chair: Ralf-Roman Schmidt

Session keynote A. Mohammad Nia, AAU: Sustainable Sector Integration and Multi-Objective Optimization of Heat Symbiosis by Real-Time Digital Twin Technology

F. Feurstein, FHV: Assessing Steady-State and Transient Methods for Thermal Simulation of District Heating Networks

N. Tedjosantoso, HAW Hamburg: Towards Scalable District Heating Network Simulation: A Tensor-Based Multilinear Approach

M. Pedrosa, INEGI: Decision-Support Tool for Waste Heat Recovery from Power Transformers for Grid and Heat Decarbonization

H. Monteiro, INEGI: Three Dimensional Periodic CFD Analysis of Transient Heat Transfer in CORE Type Transformer Disc Windings

1st floor
Room 1.04 Fakultetet

Session 27: Smart energy systems tools and methodologies

Chair: Mirko Morini

Session keynote A. Blumberga, RTU: Designing climate neutrality policies for the energy sector: insights from a system dynamics model

N. Grecu, AIT: What is the optimal solution? Methods for considering uncertainty in district heating decarbonization

K. Männasoo, TalTech: Evaluating the Introduction of a Two-Part District Heating Tariff: Evidence from a Small Network in Estonia

I. Krupenski, TalTech: Motivation Tariffs in District Heating: Assessing Efficiency Gains in an Urban Network in Estonia

L. Kranzl, TU Wien: Modeling market adoption of building-side measures for district heating temperature reduction: the role of subsidies and motivational tariffs

F. Till Schattmann, ISFH: Accelerating Building Energy Simulations with Neural Network Surrogate Models

10:45-11:15 Coffee and networking in sponsor area

1st floor
Room 1.07 Fjorden

Session 28: Planning and organisational challenges for smart energy systems and energy efficiency

Chair: Oddgeir Gudmundsson

Session keynote M. Jordt Duedahl, DBDH: The road to 100% renewables: Why practical detours and incremental change can outperform perfect but limited solutions

F. Kuperjans, RWTH: “Planning better when knowing less” - Optimizing Adaptive Transition Pathways for Distributed Multi-Energy Systems Under Deep Uncertainty

F. Labaude, University of Strasbourg: Integrate local energy systems in regional strategies – Exploring the multilevel dimension in the case of the Eurometropolis of Strasbourg, France

B. Köppchen, TU Köln: Comparing Germany’s Pathways to a Decarbonised Heat Supply: A Meta-Analysis of Transition Scenarios for the Heating Sector in the Future Energy System

M.-E. Ingen Housz, City of Rotterdam: A data driven approach to a realistic urban heat transition in Rotterdam

M. Chang, IFE: Looking within and beyond energy system modelling - A survey on perceived model biases, model coupling, and integrating non-energy perspectives

1st floor
Room 1.08 Tunnellen

Session 29: Energy efficiency in the electricity sector, buildings, transport and industry

Chair: Arjuna Nebel

Session keynote H. Kauko, SINTEF: Cross-sector integration of buildings, transport, and industry for peak-load reduction in low-carbon energy systems

M. Frank, TU Darmstadt: From Robust to Antifragile Industrial Energy System Planning: Comparative Assessment of Optimization Approaches under Uncertainty

J. Gölz, TU Darmstadt: An Integrated Modeling Approach for Transformation Measures in Industrial Energy Systems

M. Grasenack, HAW Hamburg: An integrated agent-based modelling framework for increasingly electrified industrial sites

X. Bin, LTH: Energy Optimization of Heat Exchanger Network under Fouling and Cleaning Constraints in Multiproduct Liquid Food Process

J. Leinonen, Aalto University: Economics and CO2 Emission reductions of Electrifying Industrial Steam Production in Volatile Electricity Markets

1st floor
Room 1.09 Værket

Session 30: Smart energy systems analysis

Chair: Marie Münster

Session keynote B. Möller, EUF: Biogas infrastructure network analysis for methanation in Schleswig-Holstein

T. Elliot, AAU: The hidden environmental and systemic trade-offs of Power-to-Gas

D. Almpantis, LTH: Sector-Coupled Green Hydrogen Microgrid Optimization: Deep Reinforcement Learning vs. MILP under Forecast Uncertainty

B. Helbach, RWTH: Component Model Selection to Balance Complexity and Accuracy for Operational Optimization of Multi-Energy Systems

PROGRAMME AALBORG

11:15-13:00

Parallel sessions 31-37

Ground floor Europahallen

Session 31: Smart energy systems tools and methodologies

Chair: Hanne Kauko

Session keynote R.-R. Schmidt, AIT: From Data to Value: Quantifying the Economic Benefits of Digitalisation and the Role of Data Spaces in District Heating Networks

A. Brækken, SINTEF: The role of building heating conversion in regional energy system transitions

P. Oberfeier, Fraunhofer: Time Series Aggregation Methods for Municipal Energy System Modeling: Application to District Heating Systems with Renewable Heat Sources

J. Ziemele, Riga Energy Agency: Wastewater Heat Utilization in Riga: Challenges and Opportunities

H. Ali, TalTech: Using a marine digital twin to identify promising seawater heat pump applications in Baltic Sea district energy systems

N. Oliver Marx, AIT: Flexible Biochar Production at Small-Scale Biomass-Based District Heating Plants: A GIS-Based Techno-Economic Feasibility Assessment

1st floor Room 1.01 Banen

Session 32: Planning and organisational challenges for smart energy systems and energy efficiency

Chair: Morten Jordt Duedahl

Session keynote I. Leusbrock, AEE Intec: Quality management of district heating and cooling DHC systems - A prerequisite for sustainability, affordability and transparency

A. Malla, TU Wien: Planning cooling adoption: From cost-optimal pathways to real-world barriers

D. Blumberga, RTU: Costs of Energy Measures Delays

Y. Su, Aalto University: Modeling the Diffusion of Residential Demand-side Management Technologies with Building Performance and Heterogeneous Consumer Preferences

J. Vogl, KIT: BehaviorGPT: Generating Household Activity and Mobility Schedules for Residential Energy Demand Modeling

N. Abdurahmanovic, Fraunhofer: Modelling and simulation of user behaviour and gamification effects on heat pump flexibility in multifamily buildings

1st floor Room 1.02 Havnen

Session 33: Institutional and organisational change, energy communities and positive energy districts

Chair: Anders M. Odgaard

Session keynote L. Hjerrild, SDU: From Rights to Responsibilities: Citizens in the 2026 EU Energy Package

J. Hachez, VUB: Strategic Uncertainty Modeling for Citizen Energy Communities: A Gaussian KDE Approach to Revenue Planning and Negotiation Support

M. Keber, Free University of Bozen-Bolzano: Strengthening Smart Energy Systems Through Flexibility Mechanisms: Comparative Insights from Southern European Case Studies

M. Morini, University of Parma: Impact of incentive allocation in optimal design of Renewable Energy Communities

A.-K. Rathmann, Osnabrück University of Applied Sciences: Economic Potential of Energy Sharing for SMEs in German Commercial Areas – An oemof Optimization Approach

1st floor Room 1.04 Fakultetet

Session 34: 4GDH concepts, future DH production and systems

Chair: Lukas Kranzl

Session keynote J. Adamson, Fairheat: Retrofitting heating and hot water measures in a 1970s UK operational courts building to enable connection to a low carbon district heating network

C. Dawson, Fairheat: Decarbonising a hot water system in a 19th century City Hall building with UK listed building status to enable a district heating network connection

C. Fielding, Fairheat: Bridging the Performance Gap: Applying Co-Heating Analysis to Retrofit Design

N. Diez, TU Wien: A multi-period optimization approach for renovation pathways in building portfolios under data scarcity and uncertainty

A. Nebel, TH Köln: Analysing Temporal Heat Demand Effects of Building Retrofitting on Energy Systems: Endogenous Modeling of Germany's Building Sector in PyPSA-Eur

R. Vanaga, RTU: Adaptive Thermal Coupling Control Layer in PCM–Aerogel Building Façades for Enhanced Energy Performance

13:00-14:00

Lunch and networking

1st floor
Room 1.07 Fjorden

Session 35: Smart energy systems tools and methodologies

Chair: Igor Krupenski

Session keynote M. Karstoft Rasmussen, Kamstrup: From Smart Meter Data to Action: Software-Defined Alarms for District Heating Optimization

H. Alimohammadi, TalTech: Thermodynamic Optimization of Heat Source Placement in District Heating Networks for Reduced Mixing Losses

J. Plautz, HAWK: Methodology for allocating network losses to consumers, applied at the Göttingen North Campus

T. Kirs, TalTech: Measuring District Heating Network Effect on District Cooling Network Losses in an Urban Environment

E. Ghidoni, DTU: Techno-economic and hydraulic feasibility evaluation of energy saving strategies for reduced circulation heat losses in domestic hot water systems

J. Westphal, TUHH: A control strategy for reducing heat losses in summer operation of a district heating network

1st floor
Room 1.08 Tunnellen

Session 36: Smart energy components, infrastructures and storage options

Chair: Johannes Pelda

Session keynote R. Haas, TU Wien: On future market prospects of electricity storage

I. Skorniakov, Aalto University: Industrial behind-the-meter battery storage profitability under future price volatility: 2030 Nordic-Baltic analysis

J. Roth, AEE: An exergetic comparison of distinct Carnot Battery concepts for industrial applications

S. Bordihn, ISFH: Interpretable neural network prediction of electricity demand in a single-family home system with heat pump, photovoltaic and battery storage

E. Monique Kasper, HS Offenburg: Measurement-Based Load Disaggregation for State Reconstruction in Medium-Voltage Grids with Limited Observability

S. Wüst, HS Offenburg: Assessing the Impact of Dynamic Operating Envelopes on Future Low-Voltage Grids

1st floor
Room 1.09 Værket

Session 37: Electrification and sector coupling of transport, heating and industry

Chair: Urban Persson

Session keynote A.N. Andersen, EMD: Adding hydrogen storage radically changes design of e-Methanol plants

M. Hossein Fouladfar, LTH: Valuing Hydrogen Waste Heat in District Heating

A. Achhammer, OTH Regensburg: Integrating Geothermal Potential and Hydrogen Imports in PyPSA-Earth: A Case Study of Japan's Energy Transition

T. Alexis Sazon, IFE: Energy system implications of planned hydrogen production in Norway

I. Malmipuro, Aalto University: Electricity market impacts of renewable hydrogen production and implications on the profitability of flexible generation in Finland in 2030

N. Markovska, MANU: From Demonstration to Replication: Scaling Heat Pump Deployment in Existing Buildings through Install.res

Plenary closing session: Geopolitics, autonomy and Europe's energy future

Chaired by Brian Vad Mathiesen

- 14:00-14:30** **Keynote Jan Rosenow Professor at the University of Oxford:**
Electroefficiency: Conversion Efficiency, the Primary Energy Fallacy, and the Demand-Side Case for Electrification
- 14:35-15:05** **Keynote Ditte Brasso Sørensen Deputy Director at Think Tank Europa:** What's holding back the Energy Union?
- 15:05-15:25** Debate
- 15:30-15:45** DHC+ Student Award Ceremony
- 15:50-16:05** Best Presentation Award ceremony by Poul Alberg Østergaard
- 16:05-16:15** **Henrik Lund and Hans Jørgen Brodersen:** Closing

Technical Tour 21 September: Experience the world's largest naturally cooled seawater heat pump in Norbis Park

Monday 21 September 2026 at 14:00-17:30

The seawater heat pump in Norbis Park is the cornerstone of Aalborg Forsyning's strategy for phasing out coal-based heat from the CHP plant, Nordjyllandsværket.

Aalborg Forsyning is establishing a seawater heat pump with a capacity of 177 MW of heat, which will make it the world's largest seawater heat pump using a natural refrigerant. The facility will consist of four heat pump units, each with a heating capacity of 44 MW, and it will account for almost one-third of the total heat production. You will also hear about the building that houses the seawater heat pump, which has been designed and constructed with a strong emphasis on sustainability.

The tour includes presentation and guided tour to the seawater heat pump and building.

Technical Tour 24 September: Aalborg Portland cement factory: ACCSION – A groundbreaking project towards CO₂-neutral cement

Thursday 24 September 2026 at 8:30-11:30

In collaboration with Air Liquide, Aalborg Portland is implementing a significant step with the establishment of a fully integrated onshore CO₂ capture value chain. ACCSION stands for Aalborg Portland Carbon Capture & Storage using Infrastructure Onshore in North Jutland and will be one of the first projects in the EU to cover the entire CO₂ value chain – from capture and transport to safe underground storage. The project is awarded DKK 1.6 billion in funding from the EU Innovation Fund. The project will develop, construct, and operate the CO₂ capture plant, which is expected to reduce CO₂ emissions by up to 1.5 million tons annually from 2030. This will enable Aalborg Portland's cement production to become net zero on Scope 1 emissions.

The tour includes presentation and bus roundtrip at the factory with stops.

See www.smartenergysystems.eu for more information on tours:

