



Technical Tour: Broenderslev utilities tour

Monday 12 September 2022

14:00-17:00

We go on a bus trip to Broenderslev, where you can see how the power of the sun even so far north can add to the green transition. Broenderslev municipality north of Aalborg has among other initiatives the aim to become fossil free for their district heating. Here you can visit a state-of-the-art energy plant that uses local wood chips and concentrated solar power to supply district heating and electricity to the town of Brønderslev with a population of 12,000 people. The energy plant has been expanded with 5 km of CSP solar collectors and together with two chip boilers supply the energy to an ORC turbine. Furthermore, the plant's electricity needs are partly covered by introducing concentrated solar power in their heat production.

More information and registration at [conference website](#)



8th International Conference on Smart Energy Systems

08:00-09:00 Registration and breakfast

09:00-11:00 Sector integration in urban areas - 1st plenary session chaired by Associate Professor Iva Ridjan Skov

09:00-09:15 **Professor Henrik Lund:** Opening speech

Plenary keynotes:

09:15-09:30 **Jesper Møller Larsen, Manager of District Energy Systems:** Using the right energy, right in Aalborg – taking the common energy solutions to the next (green) level

09:30-09:45 **David Dupont-Mouritzen, Project Director:** Power-to-X as a key for the green transition

09:45-10:00 **Samir Abboud, CEO:** Industrializing geothermal energy for urban district heating

10:00-10:30 Questions and debate

10:30-11:00 **Professor Sven Werner:** The four generations of district cooling - a categorization of the development in district cooling from origin to future prospect

11:00-11:15 Short break

Parallel sessions 1-5

11:15-12:45

Session 1: 4th Generation District Heating concepts, future district heating production and systems

Chair: To be confirmed

Session keynote Oddgeir Gudmundsson: Cooling as an integrated part of 4th generation district heating

Luis Sánchez-García: Viability of district heating networks in temperate climates: Benefits and barriers of ultra-low cold and warm temperature networks

Luca Casamassima: Comparing transition strategies towards lower temperature values in district heating

Kristian Gjoka: Fifth generation district heating and cooling: opportunities and implementation challenges in a mild climate

Ali Moallemi: Xplorion: An Innovative Sustainable Building Supplied by Low and Ultra-Low Temperature District Heating System

11:15-12:45

Session 2: Integrated Energy Systems and Smart Grids

Chair: To be confirmed

Session keynote Øyvind Vessia: Unlocking grid savings through PtX when integrating offshore wind energy

Benedetto Nastasi: Power To Hydrogen for Energy Flexible Communities

Iva Ridjan Skov: Fast forward for power-to-x in Denmark: the role of advocacy coalitions in shaping policy

Tansu Galimova: Impact of international transportation options on cost of green e-hydrogen supply: Global cost of hydrogen and consequences for Germany and Finland

Els van der Roest: Heat utilization from hydrogen production – an example of local energy system integration

11:15-12:45

Session 3: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote Hermann Edtmayer: Analysing the thermal energy demand of development scenarios of a city district

Emil Gustavsson: Model predictive control for heating systems when using demand tariffs

Peter Nageler: IDA Districts: a QGIS plugin for automated thermal model generation and dynamic district simulation

Salman Javed: Demand Response in Distributed Energy Systems of Systems Using Local-Cloud: An Approach towards Net-Zero Emissions

Maximilian Roth: Optimal component dimensioning and operational optimization of a mobile-hybrid energy supply system with defined system topology using MILP

11:15-12:45

Session 4: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote Casey Cole: Digitalising heat network commissioning - using apps to bridge the skills gap

Matteo Giacomo Prina: Evaluating near-optimal scenarios with EnergyPLAN to support policy makers

Jakob Zinck Thellufsen: From energy modelling to energy planning – the consequence of different types of system analysis

Jan Stock: Modelling of an Existing District Heating Network at Different Supply Temperatures with a New Integrated Waste Heat Source

Michael Reisenbichler: Novel modeling toolkit for optimized design and integration of large-scale underground hot-water thermal energy storages in future energy systems

11:15-12:45

Special session: Heat 4.0

Chair: To be confirmed

Session keynote Alfred Heller: Cross System Optimisation – A HEAT 4.0 Tool

Per Sieverts Nielsen: Experiences from the Danish Innovation project – HEAT 4.0

Alex Arash Sand Alsing Kalaae: Field experience of data-driven operation of building heating to unlock energy efficiency

Jan Eric Thorsen: Adaptive control strategy for domestic hot water storage tank supplied by district heating

Kevin Michael Smith: A novel controller using minimal district heating flows to charge domestic hot water tanks

PRELIMINARY PROGRAMME AALBORG

TUESDAY 13 SEPTEMBER 2022



AALBORG
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8th International Conference on Smart Energy Systems

12:45-14:00 Lunch and networking

Parallel sessions 6-10

14:00-15:45

Session 6: Geographical Information Systems (GIS) for energy systems, heat planning and district heating

Chair: To be confirmed

Session keynote Bernd Möller: Synergies between geographically distributed energy efficiency potentials

Mostafa Fallahnejad: Overview of district heating potentials in EU-27 countries under evolving DH market shares and ambitious heat demand reduction scenario

Patxi Hernandez: City zoning for heating and cooling : Methodology for prioritization of solutions at building or district scale

Somadutta Sahoo: Detailed energy system modeling of a district heating network on a provincial level – a study of Groningen Province in the northern Netherlands

Martijn Clarijs: WarmingUP Design Toolkit for Future-proof Heat Networks

Ivan Munoz: Determination of the technical-economic potential for the development of district heating projects in each commune of Chile

14:00-15:45

Session 7: Renewable energy sources and waste heat sources for district heating

Chair: To be confirmed

Session keynote Ingo Leusbrock: How to combine district heating and waste water treatment plants? A demonstration example from Gleisdorf, Austria

Johannes Pelda: Identifying locations for optimal heat extraction from city waste water

Kertu Lepiksaar: Utilisation of Sewage Water Heat in District Heating and the Impact on the Water Treatment Process

Nicolas Marx: Decarbonizing the heating supply via regional district heating networks – Best Practice Analysis and Status-Quo for a case study in Tyrol (Austria)

Stefan Reuter: Methodology for identifying and evaluating (future) waste heat potentials and techno-economic feasibility of their utilisation

Dmitry Romanov: Analysis of Enhanced Geothermal System Development Scenarios for District Heating and Cooling of the Göttingen University Campus

14:00-15:45

Session 8: Smart energy infrastructure and storage options

Chair: To be confirmed

Session keynote Richard van Leeuwen: Business case scenario analysis for hydrogen conversion, storage and consumption within energy hubs

Thomas Riegler: Structural challenges and innovative concepts for large-scale underground thermal energy storage

Thomas Schmidt: Technical and economical optimisation of district heating networks with decentralised buffer storage tanks

Kamil Kwiatkowski: Heat pumps with triple heat storage levels for district heating system with 90 % of energy from renewable sources – a feasibility study with TRNSYS

Mattia Pasqui: Renewable Energy Communities: techno-economic assessment focusing on heat pump load shifting

Vittorio Verda: Efficient Heat Pump integration in existing large district heating networks

14:00-15:45

Session 9: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote Peter Sorknæs: The benefits of 4th generation district heating and energy efficient datacentres

Gideon Mbiydzennyuy: Toward the application of Data Analytics for Fault Detection in District Heating Substations

Robbe Salenbien: Showcasing the potential of non-linear topology optimization of District Heating Networks – District level and upwards

Yannick Wack: Approaches to non-linear topology optimization of District Heating Networks – A benchmark

Anna Vannahme: Central and decentral operation strategies to optimize existing district heating networks

Martin Neumayer: Fault and anomaly detection in district heating substations: A survey focused on methodology and data sets

14:00-15:45

Session 10: Integrated energy systems and smart grids

Chair: To be confirmed

Session keynote Costanza Saletti: Implementation and testing of a multi-level smart control strategy for the integrated energy system of a hospital

Hironao Matsubara: Control and utilization of surplus electricity for the high share of variable renewable energy in Japan

Christian Schützenhofer: IEA DHC Annex TS7: Industry-DHC Symbiosis: A systemic approach for highly integrated industrial and thermal energy systems

Marie-Alix Dupré la Tour: Aggregation of heat networks for their integration in European scale sector-coupling studies

Matteo Pozzi: Integrated Planning of Multi-Energy Systems (PlaMES): the Decision Support System and exploitation opportunities

Rasmus Lund: Is storage needed in sector coupling?

15:45-16:15 Coffee break

PRELIMINARY PROGRAMME AALBORG

TUESDAY 13 SEPTEMBER 2022



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8th International Conference on Smart Energy Systems

Parallel sessions 11-15

16:15-17:30

Session 11: Components and systems for district heating, energy efficiency, electrification and electrofuels

Chair: To be confirmed

Session keynote: To be confirmed

Antoine Fabre: Cost benefit analysis of retrofit actions on the building secondary hydronic systems on the district heating

Nicola Cesare Di Nunzio: Reducing temperature of existing building heating systems: a simplified modeling approach

Thibaut Wissocq: Generation of simulated faulty datasets to ease Heating Network fault detection using machine learning

Thomas Lickleder: A field-level control approach for bidirectional heat transfer stations in prosumer-based thermal networks: simulation and experimental evaluation

16:15-17:30

Session 12: Renewable energy sources and waste heat sources for district heating

Chair: To be confirmed

Session keynote Dagnija Blumberga: Harmonisation of waste heat in district heating

Ali Kök: The distance between industrial sites and district heating grids as a driver of the economic viability of waste heat integration

Henrique Lagoeiro: Heat Recovery Opportunities from Electrical Substations

Kristina Lygnerud: Metro waste heat recovery - lessons from London and Berlin

16:15-17:30

Session 13: Planning and organisational challenges for smart energy systems and district heating

Chair: To be confirmed

Session keynote Richard Büchele: Economic and ecological feasibility of district heating in a deeply renovated housing estate

Ari Laitala: Calculating existing buildings carbon footprint based on open data – role of the energy

Daniel Heidenthaler: Automated urban building energy modelling approach for predicting heat load profiles of districts

Yannis Merlet: Retrofitting second-generation district heating networks towards lower temperatures with optimal design tools

16:15-17:30

Session 14: 4th Generation District Heating concepts, future district heating production and systems

Chair: To be confirmed

Session keynote Uffe Schleiss: How to effectively convert gas area into district heating

Daniel Møller Sneum: Switching from natural gas to district heating: Measured impacts on household energy use

Bernhard Mayr: Evaluation of Gas Demand in Space Heating and Hot Water Preparation at NUTS 3 Level regarding the Dependence on Russian Natural Gas

Jelena Ziemele: Impacts of global warming and building renovation on the heating energy demand and district heating capacity: Case of the city of Riga

16:15-17:30

RewardHeat Special Session: Technologies and management strategies of low- and neutral-temperature district heating and cooling grids

Chair: To be confirmed

Session keynote to be confirmed

Marco Cozzini: Analysis of low-temperature waste heat recovery scenarios for a case study in a conventional district heating network

Felix Reinhardt: Developing District-Level Energy Concepts In Aalborg (Denmark) And Wittenberge (Germany) Discussion of Heat Planning vs. District-Level Energy Concept

17:30-19:30 Break

19:30 Conference dinner at Hotel Hvide Hus

PRELIMINARY PROGRAMME AALBORG

WEDNESDAY 14 SEPTEMBER 2022



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8th International Conference on Smart Energy Systems

Parallel sessions 16-20

09:00-10:30

Session 16: Energy savings in the electricity sector, buildings, transport and industry

Chair: To be confirmed

Session keynote Marek Brand:

Decentralized district heating stations in newly built multi-apartment buildings - documenting the performance and low return temperature

Kevin Naik: Zero energy rating of residential homes leveraging wind and solar energy

Marcus Hummel: Costs and potentials for heat savings in existing buildings in Europe

Simon Thorsteinsson: Experimental energy flexibility study of space heating of a BR2020 one-family house with heat pump, floor heating and photovoltaics

Thomas Haupt: Analyzing the impact of Smart Energy Management Systems on the economy of various PV and battery systems for individual households

09:00-10:30

Session 17: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote Andra Blumberga: The Profile of a "Hard-to-Reach" Energy Consumers of the Baltic and Nordic States in the Process of Energy Transition

David Maya-Drysdale: Scenarios for a decarbonised Europe: What is the role of energy efficiency?

Daniel Zinsmeister: A prosumer-based sector-coupled district heating and cooling laboratory architecture

Henrik Stærmoose: Flexibility Heat Grid Bornholm

Aadit Malla: Validation approaches under GDPR constraints for bottom-up building stock energy data: Case Vienna

09:00-10:30

Session 18: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote Elisa Guelpa: Reducing supply temperature in existing large scale district heating

Akos Revesz: Heat decarbonisation opportunities in urban neighborhoods – Building retrofit and low carbon energy supply assessment

Joseph Jebamalai: Design of district heating networks using a ring network and storage configuration – A case study using Comsof Heat

Philipp Mascherbauer: Validation of modeling smart energy management systems in reduced order models with building simulation models

Rasmus Magni Johannsen: Municipal energy system modelling – a practical comparison of optimisation and simulation approaches

09:00-10:30

Session 19: Planning and organisation challenges for smart energy systems and district heating

Chair: To be confirmed

Session keynote Anna Volkova: Estonian Energy Roadmap to Carbon Neutrality

Poul Thøis Madsen: The employment impact of smart energy systems in EU as a whole - a review of previous studies

Igor Krupenski: Converting the heating system of the historic center of Tallinn (Old Town) to a district heating system

Sebastian Schultze: District Energy in 2050 – Business models and sustainable finance solutions

Graeme Maidment: The generation gap! Are we using the correct terminologies in the sector?

09:00-10:30

IEA DHC Annex TS4 Special Session

Chair: To be confirmed

Session keynote Dietrich Schmidt: Digitalisation in district heating supply – with data to optimised systems and new business opportunities

Michele Tunzi: Digitalization of Demand side as the enabler for the transition towards 4th Generation district heating (4GDH)

Pakdad Pourbozorgi Langroudi: A Combi-Model for Failure Prediction of the Pre-Insulated Pipes in District Heating/ Cooling Networks

Jakob Fester: Algorithms for assessing the condition of district heating service pipes exploiting GIS data, data from smart meters and soil temperature measurements

Ralf-Roman Schmidt: The AIT DigitalEnergyTestbed: An open test environment for digitalization solutions for integrated district heating networks

10:30-11:00

Coffee break

PRELIMINARY PROGRAMME AALBORG

WEDNESDAY 14 SEPTEMBER 2022



AALBORG
UNIVERSITY



8th International Conference on Smart Energy Systems

Parallel sessions 21-24

11:00-12:30

Session 21: 4th Generation District Heating concepts, future district heating production and systems

Chair: To be confirmed

Session keynote Ieva Pakere: Multi-source district heating system optimisation through technical, economic and life-cycle analyses

Flemming Bligaard Pedersen: Cost-effective Solar Powerplant delivering flexible electricity and district heating on demand

Hannes Poier: Demonstration of large scale solar district heating integration with storages and biomass - synergies and challenges

ASM Mominul Hasan: Virtual net-metering and citizen investment for boosting energy transition in the cities of emerging economies: A case study on Bangladesh

Martin Crane: Scope for hybrid PV to improve GSHP CoPs and reduce ground loop size

11:00-12:30

Session 22: Smart energy systems analyses, tools and methodologies

Chair: To be confirmed

Session keynote to be confirmed

Alessandro Mati: Assessment of paper industry decarbonization potential via hydrogen based technologies in a multi energy system scenario : a case study

Malte Schäfer: Life cycle oriented decision support for companies to reduce electricity-related greenhouse emissions

Shivangi Sachar: Wind energy potential assessment for the city of Nottingham using Weibull distribution estimation

Shubham Shubham: Feasibility study of different vertical axis wind turbines for wind conditions in the city of Nottingham

11:00-12:30

Session 23: Integrated energy systems and smart grids

Chair: To be confirmed

Session keynote Leif Gustavsson: A sustainable replacement for diesel trucking: Comparing battery electric and biofuel trucks

Ana Catarina Marques: Driving success towards zero carbon energy targets for UK's Local Authorities

Emanuela Marzi: Assessment of Power-to-Gas integration for energy system flexibility accounting for forecast uncertainties

Hiroaki Onodera: Renewable Energy Systems Considering Profitability of PtG and PtL - a Case Study of Japan

Yudha Irmansyah Siregar: Assessment of transport electrification and district cooling towards smart energy systems in hot climate countries

11:00-12:30

IEA EBC Annex 84 Special Session

Chair: To be confirmed

Session keynote Anna Marszal-Pomianowska: IEA EBC Annex 84: Demand Management of Buildings in Thermal Networks

Anna Kallert: IEA EBC Annex 84: Demand Management of Buildings in Thermal Networks – Case Studies including DH and DC Systems

Tijs Van Oevelen: Testing a smart controller for district heating systems : Results from an Italian case study in the TEMPO project

Konstantin Filonenko: Evaluation of district heating operation using flexibility function and Functional Mockup Interface

12:30-13:30 Lunch and networking

13:30-15:30 European energy security and the war in Ukraine - 2nd plenary session chaired by Professor Poul Alberg Østergaard

Plenary Keynotes:

13:30-13:45 **Professor Brian Vad Mathiesen:** Energy Efficiency First - REPower EU 2030 and 100% renewable energy in 2050 for Europe

13:45-14:00 **Connie Hedegaard, former EU Commissioner and Minister for Environment, Climate and Energy:** Energy targets in the EU's Fit for 55: Are our systems fit for implementation?

14:00-14:15 **Professor, Dr. Andreas Löschel:** *Title of presentation to be confirmed*

14:15-15:00 Questions and debate

15:00-15:20 Best Presentation Award Ceremony by Professor Poul Alberg Østergaard

15:20-15:30 Closing by Professor Henrik Lund and CEO Glenda Napier



Technical Tour: Visit to Nordjyllandsværket – North Jutland Heat and Power Station

Thursday 15 September 2022

8:15 - 11:30

The mega size coalfired CHP plant provides heat and power to the city of Aalborg. It is under a tremendous transition to become a renewable energy living test centre – Norbis Park – and a fossil free heat and power producer in 2025 introducing mega size heatpumps, large storage dams, PtX facilities, cooling and other technologies avoiding biomass burners.

More information and registration at [conference website](#)