



4DH Technical Tour Monday 12 November 2018 at 13:00-16:00

District Heating in Aalborg City

- On the way to becoming 100% fossil free

Aalborg is the fourth largest city in Denmark with more than 140,000 citizens and an increasing population. The district heating system consists of approximately 1,500 km pipes that supply more than 85,000 households giving a connection rate of 99% through approximately 35,000 individual meters.

This tour will introduce you to district heating in Aalborg, which is in a transition phase with the aim of becoming 100% fossil free. Aalborg Heating provides heat from three major manufacturers consisting of Nordjyllandsværket, which is a coal-fired plant, and excess heat from Aalborg Portland, a cement factory, and Reno Nord, a waste to energy plant. A pilot project is currently running in which Aalborg Heating is testing the conditions and possibilities for district cooling.

Time and venue

Pick-up and drop-off at First Hotel, Rendsburggade 5, 9000 Aalborg.
Meeting time is 12:50.

Price

35 EUR + VAT. (Refreshments included)

Registration

Please register at <http://www.4dh.eu/conferences/conference-2018/registration>

Deadline for registration is 10 October.

Registration is binding. Limited number of seats.

Interactive Workshop on Heat Planning and Mapping in Europe Monday 12 November 2018 at 13:00-16:00

H2020 programme projects Hotmaps, PLANHEAT, THERMOS and Heat Roadmap Europe offer innovative approaches for the integration of sustainable heating and cooling infrastructure at European, national, regional and local levels, thereby assisting EU Member States in the practical aspects of the implementation of Article 14 of the Energy Efficiency Directive on efficiency in heating and cooling.

Join fellow academics and researchers, industry and public sector representatives at a pre-event of the 4th Generation District Heating Conference to assess four ground-breaking tools for energy planning. In its own way, each project works to optimise thermal mapping / modelling tools to enable faster upgrade, refurbishment and expansion of existing systems, as well as tap into renewable sources and the potential of waste/excess heat.

Test each tool yourself, to discover key features of each and to see which serve the purpose of your organisation and your work. Collect and discuss details about: Geographical scope, spatial resolution, code and data requirements, mapping and other functionalities, economic and technical criteria, simulation and scenario building, IT requirements, training and implementation.

Venue

Aalborg University, Rendsburggade 14, 9000 Aalborg, Level 3, room 3.329

Registration

Please register at <https://goo.gl/Zb25nG>

Deadline for registration is 8 November.



@4dhresearch



@HeatRoadmapEU

Heat Roadmap Europe

A low-carbon heating and cooling strategy

2050



@ReInvestEU



Tuesday 13 November 2018 · Overall programme

#SES4DH2018

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|--|---|--|--|---|--|---|
| 08:00-09:00 Registration and breakfast | | | | | | "KEDELHALLEN" GROUND FLOOR, LEVEL 1 |
| 09:00-10:30 <i>1st plenary session chaired by Professor Brian Vad Mathiesen</i> | | | | | | |
| 09:00 Opening speech by Professor Brian Vad Mathiesen | | | | | | PLENARY ROOM 6.1-6.3, LEVEL 6 |
| 09:15 Plenary keynote by Professor Henrik Lund: The Status of 4 th Generation District Heating: Research and Results | | | | | | |
| 09:45 Plenary keynote by Celia Martinez, advisor UNEP: District Energy in Cities: Global Perspective on Unlocking the Potential for District Heating and Cooling | | | | | | |
| 10:15 Questions and discussion | | | | | | |
| 10:30-11:00 Coffee break | | | | | | PLENARY ROOM 6.1-6.3, LEVEL 6 |
| Parallel sessions 1-6 | 11:00-12:30 ROOM 6.3 LVL 6 | 11:00-12:30 ROOM 6.2, LVL 6 | 11:00-12:30 ROOM 6.1, LVL 6 | 11:00-12:30 ROOM 6.8, LVL 6 | 11:00-12:30 ROOM 4.3.02, LVL 4 | 11:00-12:30 ROOM 3.3.17, LVL 3 |
| | Session 1: Smart Energy Systems Chair: Poul Alberg Østergaard Session keynote: Benedetto Nastasi Hanmin Cai Andrei David Sara Bellocchi Timo Kannengiesser | Session 2: Future district heating production and systems Chair: Neven Duic Session keynote: Richard P. van Leeuwen Hanne Kauko Alexandre Canet Johannes Pelda Marcello Aprile | Session 3: Energy planning and planning tools Chair: Urban Persson Session keynote: Bernd Möller Kamal Kuriyan Joseph Maria Jebamalai Jakob Zinck Thellufsen | Session 4: Low-temperature district heating grids Chair: Peter Jorsal Session keynote: Carsten Bojesen Dirk Vanhoudt Igor Krupenski Tobias Sommer Marco Pellegrini | Session 5: Low-temperature DH and buildings Chair: Nina Detlefsen Session keynote: Jan Eric Thorsen Christian Holmstedt Hansen Kevin Michael Smith Pierre Vogler-Finck Jens Møller Andersen | Session 6: Organisation, Ownership and Institutions Chair: Frede Hvelplund Session keynote: Gijsbert Korevaar Søren Djørup Niels M. Westera Daniel Møller Sneum David G. Barns |
| 12:30-13:30 Lunch | | | | | | "KEDELHALLEN" GROUND FLOOR, LEVEL 1 |
| 12:30-13:00 <i>Steering Committee Meeting (4DH SC members only)</i> | | | | | | ROOM 6.8, LEVEL 6 |
| Parallel sessions 7-12 | 13:30-15:00 ROOM 6.3 LVL 6 | 13:30-15:00 ROOM 6.2, LVL 6 | 13:30-15:00 ROOM 6.1, LVL 6 | 13:30-15:00 ROOM 6.8, LVL 6 | 13:30-15:00 ROOM 4.3.02, LVL 4 | 13:30-15:00 ROOM 3.3.17, LVL 3 |
| | Session 7: Smart Energy Systems Chair: Atli Benonysson Session keynote: Daniel Trier Jay Hennessy Shalika Walker Tommy Rosén Nicolas Lamaison | Session 8: Future district heating production and systems Chair: Gorm Bruun Andresen Session keynote: François Maréchal Henrik Pieper Gaétan Chardon Matteo Caramaschi Diego Hangartner | Session 9: Energy planning and planning tools Chair: Younes Noorollahi Session keynote: Steen Schelle Jensen Matteo Giacomo Prina Mostafa Fallahnejad Richard Büchele Julian Wruk | Session 10: Smart Energy Systems Chair: Alfred Heller Session keynote: Morten Hofmeister Roman Geyer Olatz Terreros Sylvain Quoilin Wiebke Meesenburg | Session 11: Low-temperature DH and buildings Chair: Svend Svendsen Session keynote: Leif Gustavsson Dorte Skaarup Østergaard Øystein Rønneseth Kerstin Sernhed Anna Kallert | Session 12: Smart Energy Systems Chair: Bernd Möller Session keynote: Anna Volkova Nadine Aoun Kaisa Kontu Sonja Salo Morten Karstoft Rasmussen |

15:00-15:30 Coffee break ROOMS 6.1 and 6.3, LVL 6, 3.3.17, LVL 3 and 4.3.02, LVL 4

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|--------------------------------|---|--|--|--|--|---|--|
| Parallel sessions 13-18 | 15:30-16:45 ROOM 6.3, LVL 6 | 15:30-16:45 ROOM 6.2, LVL 6 | 15:30-16:45 ROOM 6.1, LVL 6 | 15:30-16:45 ROOM 3.3.17, LVL 3 | 15:30-16:45 ROOM 4.3.02, LVL 4 | 15:30-16:45 ROOM 6.8, LVL 6 | |
| | Session 13: Smart Energy Systems Chair: Karl Sperling Session keynote: Ralf-Roman Schmidt Salem Alsaleh Gabriele Cassetti Hironao Matsubara | Session 14: Future district heating production and systems Chair: Xiliang Zhang Session keynote: Dagnija Blumberga Jes Donneborg Borna Doračić: Marcin Bugaj | Session 15: Low-temperature district heating grids Chair: John Bøggild Hansen Session keynote: Peter Jorsal Luis Sánchez-García Aleksandr Hlebnikov Johannes Kühle | Session 16: Smart Energy Systems Chair: Anders N. Andersen Session keynote: Elisa Guelpa Esmir Maslesa Jonas Hinker Romain Lambert | Session 17: Low-temperature district heating grids Chair: Carsten Bojesen Session keynote: David Pearson Dietrich Schmidt Federico Bava Gašper Stegnar | Session 18: Smart Energy Systems Chair: Sven Werner Session keynote: Bente Johnsen Rygg Roberta Roberto Gunnar Lennermo Susana Paardekooper | |

16:45-17:00 Short break

17:00-17:30 Heat Roadmap Europe results: Roadmaps and the Pan-European Thermal Atlas 4 **PLENARY ROOM 6.1-6.3, LVL 6**

17:00 Heat Roadmaps by Professor Brian Vad Mathiesen
 17:15 PETA 4.3 Overview of updated information by Assistant Professor Urban Persson
 17:20 PETA 4.3 Short introduction to new layers by Professor Bernd Möller

Heat Roadmap Europe 4 (HRE4) aims to develop low-carbon heating and cooling strategies, called Heat Roadmaps, by quantifying and implementing changes at the national level for 14 EU Member States. The recently finished roadmaps are presented which are in line with the long-term objective to decarbonize the energy system. They are, however, able to decarbonise heating and cooling while reducing costs. The free interactive online map, the Pan-European Thermal Atlas (Peta), gives visual and technical data on the location, and the scale of heating and cooling datasets has been updated. The latest update (Peta 4.3) is presented which incorporates innovative new features focusing on networks, costs and heat sources with new layers.

17:30-19:30 Break

19:30 Conference dinner
MUSIKKENS HUS, Musikkens Plads 1, 9000 Aalborg



Wednesday 14 November 2018 · Overall programme

#SES4DH2018

08:00-09:00 Coffee

ROOMS 6.1 and 6.3, LVL 6 and 4.3.02, LVL 4

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|-------------------------|---|--|--|--|--|
| Parallel sessions 19-22 | 9:00-10:30 ROOM 6.3, LVL 6 | 9:00-10:30 ROOM 6.2, LVL 6 | 9:00-10:30 ROOM 4.3.02, LVL 4 | 9:00-10:30 ROOM 6.8, LVL 6 | 9:00-10:30 ROOM 6.1, LVL 6 |
| | Session 19: Smart Energy Systems Chair: Anders M. Odgaard Session keynote: Anders N. Andersen Daniela Guericke Lennart Merkert Sara Månsson | Session 20: Future district heating production and systems Chair: Louise Ödlund Session keynote: Carsten Østergaard Pedersen Oliver Martin-Du Pan Jan van Deventer Alfred Heller Souman Rudra | Session 21: Energy planning and planning tools Chair: Steen Schelle Jensen Session keynote: Casey Cole Asad Ashfaq Russell McKenna Lisa Brange | Session 22: Low-temperature district heating and buildings Chair: Jan Eric Thorsen Session keynote: Andra Blumberga Giorgio Cucca Saleh Mohammadi Martin Crane Ahmad Said Galadanci | ReUseHeat Session: Urban waste heat recovery - potentials and business challenges Chair: Alessandro Provaggi Urban Persson Kenneth Hansen Kristina Lygnerud Chris Garside |

10:30-11:00 Coffee break

ROOMS 6.1 and 6.3, LVL 6, 3.3.17, LVL 3 and 4.3.02, LVL 4

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|-------------------------|---|--|--|--|--|--|
| Parallel sessions 23-27 | 11:00-12:30 ROOM 6.2, LVL 6 | 11:00-12:30 ROOM 4.3.02, LVL 4 | 11:00-12:30 ROOM 6.1, LVL 6 | 11:00-12:30 ROOM 3.3.17, LVL 3 | 11:00-12:30 ROOM 6.3, LVL 6 | 11:00-12:30 ROOM 6.8, LVL 6 |
| | Session 23: Smart Energy Systems Chair: Leif Gustavsson Session keynote: Anders Dyrelund Mario Potente Prieto Patryk Chaja Benedikt Pesendorfer P. Leoni and A. Capretti | Session 24: Future district heating production and systems Chair: Peter Badstue Jensen Session keynote: Gorm Bruun Andresen Wen Liu Maciej Widziński Muhannad Delwati Kun Zhu | Session 25: Energy planning and planning tools Chair: Ralf-Roman Schmidt Session keynote: Urban Persson Tomislav Novosel Michiel Fremouw Miguel Chang Nis Bertelsen | Session 26: Future district heating production and systems Chair: Rasmus Aaen Session keynote: Louise Ödlund Britta Kleinertz Toshihiko Nakata Cord Kaldemeyer Hrvoje Dorotić | Session 27: Smart Energy Systems Chair: Benedetto Nastasi Session keynote: Vittorio Verda Peter Lorenzen Marta Victoria Danica Maljkovic Shobhana Singh | THERMOS National Inspire Event: User-friendly open-source software to make heat network planning easier Steffen Nielsen Alis Daniela Torres Kamal Kuriyan Joshua Thumim |

12:30-13:30 Lunch

"KEDELHALLEN" GROUND FLOOR, LVL 1

13:30-16:15 *2nd plenary session chaired by Professor Henrik Lund and Professor Poul Alberg Østergaard*

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|-------------|--|
| 13:30 | Plenary keynote by Professor Mark Z. Jacobson: Transitioning towns, cities, and countries to 100% clean, renewable energy for all purposes |
| 14:00 | Plenary keynote by Professor Xiliang Zhang: District Heating in China: status quo, challenges and perspective |
| 14:30 | Plenary keynote by Professor Neven Duic: District heating and 4th generation district heating in Eastern Europe |
| 15:00-15:45 | Panel Debate: The future role of district heating and 100% renewable energy systems - introduced by Professor Sven Werner |
| 15:45-16:15 | Closing session and Award Ceremony |

Coffee will be served in the room

PLENARY ROOM 6.1-6.3, LVL 6



Thursday 15 November 2018 · Programme

#SES4DH2018

4DH Technical Tour

15 November 2018, 8:30-12:00

District Heating of the Future - Brønderslev Smart Energy Concept

More than 60 % of all households in North Denmark are supplied with sustainable, flexible, decentralized district heating, thanks to an intelligent district heating system. The district heating infrastructure in the region is designed to be future-proof, and deliver a competitive and green energy solution. On this tour, you have the opportunity to experience one of the world's most efficient solar thermal plants. Brønderslev is located 30 km north of Aalborg and 30 minutes by taxi to the airport. The tour will visit Brønderslev CHP plant, which is the first CHP plant in the world to combine Concentrated Solar Power (CSP) and wood chips, while using an ORC (Organic Ranking Cycle) system to turn the energy into both electric and district heating. The plant supplies 4,600 households with heat and power, produced by 26,929 m² CSP and a biomass plant. CSP heats a thermic oil inside a vacuum tube to 330 °C, and feeds it into an ORC-engine. Oil vapour then drives the turbine and produces heat or heat/power, depending on the demand. The facility is also equipped with heat pumps, collecting the excess heat from smaller sources in the plant and feeds it into the system to further reduce loss.

Time and venue

Pick-up and drop-off at First Hotel, Rendsburggade 5, 9000 Aalborg.

Meeting time is 8:20.

Price

35 EUR + VAT. (Refreshments included)

Registration

Please register at <http://www.4dh.eu/conferences/conference-2018/registration>

Deadline for registration is 10 October.

Registration is binding. Limited number of seats.

Tuesday 13 November 2018 · Contents of Sessions 1-6

Session 1: Smart Energy Systems

Benedetto Nastasi: Synthetic fuels potential by Power-To-Gas integration at National level for enhancing energy independency

Hanmin Cai: Fuel shift for improving urban integrated energy system operation and efficiency

Andrei David: Techno-economic analysis of electrofuel production in a Danish Smart Energy System

Sara Bellocchi: On integrating electric vehicles into Smart Energy Systems: Italy and Germany in comparison

Timo Kannengiesser: Optimization of Urban Energy Supply Systems Considering Various Sector-Coupling Options for Different Penetration Rates of Battery Electric Vehicles

Session 2: Future district heating production and systems

Richard P. van Leeuwen: Integration of waste heat and renewables into district heating systems in East-Netherlands

Hanne Kauko: Thermal storage and optimal control for improved utilization of industrial waste heat in district heating

Alexandre Canet: Feasibility of Transporting Industrial Waste Heat Over Long Distances: A Case Study in South Wales (UK)

Johannes Pelda: Methodology to evaluate and map the potential of waste heat from sewage water by using internationally available open data

Marcello Aprile: District power-to-heat/cool complemented by sewage heat recovery

Session 3: Energy planning and planning tools

Bernd Möller: A Global Spatial Model to Identify Opportunities for Local Smart Energy Systems

Kamal Kuriyan: A combined spatial and technological model for the planning of district energy systems

Joseph Maria Jebamalai: An automated GIS-based planning and design tool for district heating: Scenarios for a Dutch city

Jakob Zinck Thellufsen: Geographical distribution of heat savings in a smart energy system

Session 4: Low-temperature district heating grids

Carsten Bojesen: Friction Reducing Additives in the Future District Heating and Cooling Systems

Dirk Vanhoudt: Technological Solutions to Reduce District Heating Network Temperatures - the TEMPO Project

Igor Krupenski: Development prospects for small low-temperature district heating networks

Tobias Sommer: Lowering the pressure in district heating and cooling networks by alternating the connection of the expansion vessel

Marco Pellegrini: Technological and non-technological barriers in the revamping of traditional district heating networks into low temperature district heating: an Italian case study

Session 5: Low-temperature district heating and buildings

Jan Eric Thorsen: Load shift experience with ULTDH booster substation for multifamily building

Christian Holmstedt Hansen: Cost efficiency of district heating for low energy buildings of the future

Kevin Michael Smith: Model predictive control of a heat-booster substation in ultra-low temperature district heating networks

Pierre Vogler-Finck: Reducing supply temperature in existing buildings with an innovative advanced heating curve control technology

Jens Møller Andersen: Lowering of return temperature in district heating systems by Integration between heating and ventilation systems in households

Session 6: Organisation, ownership and institutions

Gijstbert Korevaar: Agent-based modelling for the thermal energy transition of natural gas dependent neighborhoods

Søren Djørup: The Technical Rate of Substitution between Wind Power and Photovoltaics in a Smart Energy System

Niels M. Westera: Exploring community acceptance of ownership models for district heating as an alternative to natural gas-based residential heating in a city in the Netherlands

Daniel Møller Sneum: State of the art in the States: Applying an analytic framework for flexibility in US district energy systems

David G. Barns: The value(s) of thermal storage

Tuesday 13 November 2018 · Contents of Sessions 7-12

Session 7: Smart Energy Systems

Daniel Trier: Sector coupling and distributed energy storages for the integration of renewable energy sources

Jay Hennessy: Thermal grid flexibility: a review of district heating thermal storage to facilitate flexibility

Shalika Walker: Gas-free alternatives for existing buildings with the use of heat pumps and thermal storage – a case study

Tommy Rosén: System perspective on biogas use for transport and electricity production

Nicolas Lamaison: Storage Influence in a Combined Biomass/Power-to-Heat Production Plant

Session 8: Future district heating production and systems

François Maréchal: Towards the 5th generation of district heating/cooling systems

Henrik Pieper: Large-scale heat pump integration model: A case study of Tallinn district heating

Gaétan Chardon: Absorption heat pumps in district heating networks: 4 operating modes

Matteo Caramaschi: Novel Domestic Hot Water Microbooster Heat Pump in Ultra-Low Temperature District Heating

Diego Hangartner: Heat pumps in district heating and cooling systems – Case studies for Switzerland

Session 9: Energy planning and planning tools

Steen Schelle Jensen: Introducing SCADA for district heating distribution

Matteo G. Prina: Creating optimal transition pathways from 2015 to 2050 towards low carbon energy systems using the EnergyPLAN software: methodology and application to South Tyrol

Mostafa Fallahnejad: Impact of heating planning on the economic viability of District heating in Brasov-Romania

Richard Büchele: Integrated strategic heating and cooling planning on regional level for the case of Brasov

Julian Wruk: An optimisation model for smart distribution network planning

Session 10: Smart Energy Systems

Morten Hofmeister: Solar Thermal – innovative technology and essential energy source in smart energy systems

Roman Geyer: Barriers and Opportunities for Large-Scale Heat Pumps in Austrian District Heating and Cooling Networks

Olatz Terreros: Investigating heat pump pooling concepts in rural district heating networks in Austria

Sylvain Quoilin: Aggregation of flexible domestic heat pumps for the provision of reserve in power systems

Wiebke Meesenburg: Dynamic behaviour of large scale heat pumps and the implications for the potential to supply ancillary services – Experiences from EnergyLab Nordhavn

Session 11: Low-temperature district heating and buildings

Leif Gustavsson: Primary energy and cost implications of supplying district heat of different temperature levels to new residential areas

Dorte Skaarup Østergaard: Heating of existing buildings by low-temperature district heating

Øystein Rønneseth: Is it possible to supply Norwegian apartment blocks with 4th generation district heating?

Kerstin Sernhed: Solutions and regulations to deal with legionella problems in district heating systems

Anna Kallert: Effects of decreasing domestic hot water supply temperatures for the efficient energy supply of buildings using low-temperature supply concepts - Extrapolation to Germany

Session 12: Smart Energy Systems

Anna Volkova: Development of a user-friendly mobile app for the 4th generation district heating promotion at the national level

Nadine Aoun: Load shifting of space-heating demand in district heating systems based on a reduced-order building model identifiable at substation level

Kaisa Kontu: From partial optimization to overall system management – Analysis of district heating consumption data after consumers implementing demand response actions

Sonja Salo: The Effect of Demand Response on Perceived Thermal Comfort in a District Heated Office Building

Morten Karstoft Rasmussen: Customer classification based on heat load pattern recognition

Tuesday 13 November 2018 · Contents of Sessions 13-18

Session 13: Smart Energy Systems

Ralf-Roman Schmidt: District heating and cooling networks in an integrated energy system context – approaches within the IEA DHC Annex TS3

Salem Alsaleh: Comparative Analysis of District Cooling and Multiplicity Air-Conditioning Units – Case Study for Dubai

Gabriele Cassetti: A methodology for tertiary buildings cooling energy need estimation: a case study in Marrakech

Hironao Matsubara: Comparative analysis of building and area heat demand and renewable energy supply in Japan

Session 14: Future district heating production and systems

Dagnija Blumberga: Solar DH system sustainability and flexibility increase forecast via power-to-heat technology integration. System dynamic approach

Jes Donneberg: Energy Hybrid Solution based on the Integration of Concentrated Solar Power

Borna Doračić: Determining the feasibility of excess heat utilization in district heating system consisting of natural gas cogeneration and solar thermal

Marcin Bugaj: Experimental study on the operating characteristics of a carbon dioxide transcritical heat pump combined with a single stage two-bed adsorption chiller and a PV installation in a low thermal district heating system: A case study

Session 15: Low-temperature district heating grids

Peter Jorsal: Are Pre-insulated Pipe Systems according to the European Standards Over-engineered for Low Temperature Systems?

Luis Sánchez-García: Reducing peak flow by use of plate heat exchangers for hot water preparation

Aleksandr Hlebnikov: Lowering supply temperatures and its impact on the district heating system component parameters. Case study: town of Maardu, Estonia

Johannes Kuchle: Thermo-hydraulic implications of different design guidelines for 4th Generation District Heating Networks

Session 16: Smart Energy Systems

Elisa Guelpa: Software for the optimal management of large district heating networks: a real application

Esmir Maslesa: The role of Energy Management System for heating consumption in office buildings – a case study of the Danish building and property agency

Jonas Hinker: A technology agnostic system platform for real options based management of integrated energy systems: Long-term availability of new degrees of freedom for energy transition and optimal retrofits

Romain Lambert: Scaling up digital technology for district heating – experience from large scale implementations of peak power optimisation

Session 17: Low-temperature district heating grids

David Pearson: Network Characteristics to Optimise the Efficient Application of Ammonia in District Heating systems

Dietrich Schmidt: District Lab - Experimental facility for innovative district heating systems on a community level

Federico Bava: Recommendations for Combined District Heating and Cooling Networks

Gašper Stegnar: Pathway for shallow geothermal energy potential in district heating systems development in Slovenia

Session 18: Smart Energy Systems

Bente Johnsen Rygg: The role of 4th generation district heating in a future energy system based on hydropower

Roberta Roberto: Towards the integration of prosumers in district heating networks

Gunnar Lennermo: Requirements for a prosumer facility

Susana Paardekooper: The interplay between heat savings and district heating on a national level: an iterative approach

Wednesday 14 November 2018 · Contents of Sessions 19-22 and REUSEHEAT Session

Session 19: Smart Energy Systems

Anders N. Andersen: The Danish triple tariff and the radically changing role of CHPs through the transition to a renewable energy system

Daniela Guericke: A novel bidding method for combined heat and power units in district heating systems

Lennart Merkert: Optimal scheduling of combined heat and power generation units using the thermal inertia of the connected district heating grid as energy storage

Sara Månsson: Faults in district heating substations

Session 20: Future district heating production and systems

Carsten Østergaard Pedersen: Reduce heat losses with low temperature zoning

Oliver Martin-Du Pan: A methodology is proposed to reduce heat losses in UK district heating networks and challenging the fourth generation of district heating definition

Jan van Deventer: Interoperability of Smart Energy Systems

Alfred Heller: HEATman – Next generation District Heating concept

Souman Rudra: Future district heating plant integrated with sustainable hydrogen production

Session 21: Energy planning and planning tools

Casey Cole: Using machine learning algorithms to radically improve heat network performance

Asad Ashfaq: Optimisation of Low Temperature District Heating Networks using Machine Learning Methods

Russell McKenna: Extending a building-scale optimisation model to low-temperature district heating systems

Lisa Brange: Method for addressing bottleneck problems in district heating networks

Session 22: Low-temperature district heating and buildings

Andra Blumberga: Optimisation of energy efficiency measures in historic buildings

Giorgio Cucca: Energy models for deep retrofitted homes using Energiesprong approach

Saleh Mohammadi: Performance analysis of photovoltaic thermal collectors (PV/T) integration with local heat grid configurations, A case study of Dutch renovated house

Martin Crane: Low cost domestic retrofit district heating optimisation

Ahmad Said Galadanci: Building Energy Investigation: Understanding our buildings from an energy perspective

REUSEHEAT Session: Urban waste heat recovery - potentials and business challenges

Chair: Alessandro Provaggi

Urban Persson: Urban waste heat recovery potential in EU28 - Mapping and geographical visualization

Kenneth Hansen: Excess heat potential – Urban data in energy system scenarios analysis

Kristina Lygnerud: Business models and contract arrangements of excess heat

Chris Garside: Financing for excess heat

www.reuseheat.eu

Wednesday 14 November 2018 · Contents of Sessions 23-27

Session 23: Smart Energy Systems

Anders Dyrelund: Cost effective development of a low carbon energy system in cities

Mario Potente Prieto: Multi-scenario simulation and energy - EXERGY analysis of a district heating network for a case study in the city of Vienna

Patryk Chaja: Simulation of an alternative energy system for district heating company in the light of changes in regulations of the emission of harmful substances into the atmosphere

Benedikt Pesendorfer: Coupled local district heating and electrical distribution grids: An Austrian case study

Paolo Leoni and Alessandro Capretti: The TEMPO project: Challenges and Opportunities for Implementing Innovative Solutions for lowering the Temperatures in the District Heating Network of Brescia (Italy)

Session 24: Future district heating production and systems

Gorm Bruun Andresen: Cost sensitivity of optimal sector-coupled district heating production systems

Wen Liu: The marginal pricing mechanism for a competitive wholesale district heating market-a case study in the Netherlands

Maciej Widziński: Comparison in an energy and economic aspects of a real district heating enterprise with a simulation model based on functioning heat and power plant

Muhannad Delwati: Hasselt case study, preliminary economic aspect and simulation

Kun Zhu: Impact of CO2 prices in the decarbonization of coupled electricity and heating sectors

Session 25: Energy planning and planning tools

Urban Persson: Heat Roadmap Europe: Heat distribution costs

Tomislav Novosel: Heating demand and supply analysis – Development of an energy atlas

Michiel Fremouw: PLANHEAT: mapping LowEx HC sources using public geodata

Miguel Chang: Heat Roadmap Chile: District heating and cooling in the future Chilean energy system

Nis Bertelsen: Review of historical and current European heat planning frameworks: heat market arrangements

Session 26: Future district heating production and systems

Louise Ödlund: District heating measures – Driving forces and implementation

Britta Kleinertz: Heat Dispatch Centre – Symbiosis of different heat generation units to reach cost efficient low emission heat supply

Toshihiko Nakata: Design and analysis of district heating system utilizing excess heat in Japan

Cord Kaldemeyer: Integration of varying flow temperatures in unit commitment models of future district heating systems

Hrvoje Dorotić: Impact of a waste heat integration on district heating systems' multi-objective optimization results

Session 27: Smart Energy Systems

Vittorio Verda: Compact model for the simulation of thermal networks

Peter Lorenzen: Flexibility in district heating systems - A suitable definition and model to describe the temperature and energy flexibility

Marta Victoria: Modeling the future contribution of photovoltaics to low-carbon energy systems

Danica Maljkovic: Modelling influential factors of consumption in district heating systems

Shobhana Singh: Physical modelling of heat pump for simultaneous space heating and hot water demand

THERMOS National Inspire Event

User-friendly open-source software to make heat network planning easier

Steffen Nielsen: Introduction to THERMOS

Alis Daniela Torres: Transformation from SEAP to SECAP. Overview of THERMOS activities and the sustainable adoption roadmap of the tool

Kamal Kuriyan: Energy system modelling concepts for district heating

Joshua Thumim: Introduction and demonstration of the THERMOS tool