#SES4DH2017

3rd International Conference on

Smart Energy Systems and 4th Generation District Heating

12-13 September 2017 · National Museum · Copenhagen

AALBORG UNIVERSITY
DENMARK

Monday 11 September 2017 · Programme

4DH

Heat Roadmap Europe 2050
A low-carbon heating and cooling strategy

reINVEST

4DH Technical Tour at EnergyLab Nordhavn

Demonstrating integrated and flexible energy systems

From 2015-2019 the EnergyLab Nordhavn project will develop and demonstrate future energy solutions. The project utilizes Copenhagen's Nordhavn as a full-scale smart city energy lab and demonstrates how electricity and heating, energy-efficient buildings and electric transport can be integrated into an intelligent, flexible and optimized energy system. During the presentation you will meet both HOFOR and Danfoss who are partners in EnergyLab Nordhavn. They will discuss low-temperature district heating, district heating flexibility as well as smart components and heat boosters.
The project is supported by EUDP (Energy Technology Development and Demonstration Programme).

The tour will start outside Vesterbrogade 1E, 1620 Copenhagen

Deadline for registration is September 1st. Registration is binding (Limited to 40 people).

Please register here:
https://http://www.4dh.eu/conferences/conference-2017/technical-tours

Heat Road Map Europe Workshop

13:00 Arrival with coffee and tea
13:30 Introduction to the worshop (Tobias Fleiter)
13.40 The Heat Roadmap Europe project (Brian Vad Mathiesen)
13:50 Discussion of tools and method
13:50 Panel: Tools and methods applied in H/C projects and teaser for group discussion
Hot Maps: **What are the user needs?** (Jørgen Lindgaard Olesen)
PLANHEAT: **Mapping waste heat at urban level (**Stefano Barberis)
PLANHEAT: **How can we map heating and cooling?** (Erwin Cornelis)
progRESsHEAT: **Integrated modelling of heat savings and heat supply** (Stefan Petrovic)
Heat Roadmap Europe: **H&C in energy systems modeling** (Brian vad Matthiesen)
14:20 Break out groups: Discussion on 5 individual topics
15:00 Panel: Summary of conclusions and suggestions for ways forward to improve tools and methods
15:30 End of workshop and networking coffee

Venue: BLOX HUB, Building C, Frederiksholms Kanal 30, 1220 Copenhagen
Please register by sending an e-mail to: HRE4@isi.fraunhofer.de
A progRESsHEAT workshop follows the HRE4 workshop: Navigating the transition to renewable heating and cooling in Europe. The workshop is in the same venue as the HRE4 workshop from 16.00 until 17.45. Registration necessary at http://www.progressheat.eu/

High Temperature Heat Pump Workshop

The workshop will focus on the development and applications of heat pumps for supply of heat at high temperature with a special focus on:

Market for high temperature heat pumps in industrial applications and district heating: Potential, mapping, policies and legislation, barriers for applications
R&D-Projects from academia and industry: Cycle layouts, working fluids and compression technologies
Market ready solutions
Industrial cases

Venue: The National Museeum - Prinsens Palæ, Ny Vestergade 10 , Copenhagen, from 9.00 to 16.00 .

Go to: http://www.conferencemanager.dk/HighTemperatureHeatPumps/ for more information and registration. We encourage you to sign up for the workshop until 31 August.

Participants of the 4DH conference on district heating may join the workshop for free.

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Tuesday 12 September 2017 · Overall programme

08:00-09:00 Registration and breakfast — **OUTSIDE THE EGMONT HALL, 1ST FLOOR**

09:00-10:30 ***1st plenary session chaired by Brian Vad Mathiesen:*** **4GDH Perspectives and results**

09:00 Opening speech by Henrik Lund

09:15 Plenary keynote by Professor Sven Werner: **World DH status and Transformation Roadmap for 4GDH**

09:45 Plenary keynote by Morten Abildgaard; CEO Viborg District Heating: **Data Centers and 4GDH in practice - the case of Viborg**

10:15 Questions and discussion

THE EGMONT HALL, 1ST FLOOR

10:30-11:00 Coffee break — **THE EGMONT HALL, 1ST FLOOR**

Parallel sessions 1-6

11:00-12:30 EGMONT HALL 1ST FLOOR
Session 1: Smart Energy Systems
Chair: Morten Abildgaard
Session keynote and co-chair: Rasmus Aaen
Pierre Vogler-Finck
Borna Doračić
Philipp Geyer
Jay Hennessy

11:00-12:30 ASSEMBLY HALL , 1ST FLOOR
Session 2: Future district heating production and systems
Chair: Anders Dyrelund
Session keynote and co-chair: Erik O. Ahlgren
Bernd Windholz
Renaldi Renaldi
Hrvoje Dorotić
Kristina Lygnerud

11:00-12:30 U1, 1ST FLOOR
Session 3: Energy planning and planning tools
Chair: Neven Duic
Session keynote and co-chair: Peter Jorsal
Jigeeshu Joshi
Jürgen Knies
Johan Dalgren
Bram van der Heijde

11:00-12:30 U3, 1ST FLOOR
Session 4: Low-temp district heating grids
Chair: Helge Averfalk
Session keynote and co-chair: Oddgeir Gudmundsson
Kim Rolin
Christian Engel
Ashreeta Prasanna
Markus Rabensteiner

11:00-12:30 U2, 1ST FLOOR
Session 5: Low-temperature DH and buildings.
Chair: Svend Svendsen
Session keynote and co-chair: Anna Volkova
Danhong Wang
Andra Blumberga
Asad Ashfaq
Xiaochen Yang

11:00-12.30 CINEMA GF
Session 6: Future district heating production and systems
Chair: Anders N. Andersen
Session keynote and co-chair: Linn Laurberg Jensen
Nadège Vetterli
Henrik Pieper
Anna-Elisabeth Lehmkuhl
Benjamin Zühlsdorf

12:30-13:30 Lunch — **THE EGMONT HALL, 1ST FLOOR**

12:30-13:00 Steering Committee Meeting (4DH SC members only) U2, 1st floor

Parallel sessions 7-12

13:30-15:00 EGMONT HALL, 1ST FLOOR
Session 7: Smart Energy Systems
Chair: Jesper Møller Larsen
Session keynote and co-chair: Tobias Fleiter
Hanmin Cai
Sylvain Quoilin
Foteini Rafaela Tsaousi

13:30-15:00 ASSEMBLY HALL, 1ST FLOOR
Session 8: Future district heating production and systems.
Chair: Dagnija Blumberga
Session keynote and co-chair: Louise Ödlund
Jelena Ziemele
Gunnar Lennermo
Johannes Pelda
Ivan Andrić

13:30-15:00 U1, 1ST FLOOR
Session 9: Energy planning and planning tools
Chair: Nina Detlefsen
Session keynote and co-chair: : Niels Frank
Daniel Møller Sneum
Matteo Giacomo Prina
David Drysdale
Hanne Kauko

13:30-15:00 U3, 1ST FLOOR
Session 10: Low-temp district heating grids
Chair: Jan Erik Thorsen
Session keynote and co-chair: Steen Schelle Jensen
Dietrich Schmidt
Paolo Leoni
Stefan Blomqvist
Max Bachmann

13:30-15:00 U2, 1ST FLOOR
Session 11: Low-temperature DH and buildings.
Chair: Sven Werner
Session keynote and co-chair: Svend Svendsen
Knut Bernotat
Soma Mohammadi
Natasa Nord
Ivo Pothof

13:30-15:00 CINEMA, GF
Session 12: Smart Energy Systems.
Chair: Frede Hvelplund
Session keynote and co-chair: Bent Ole Gram Mortensen
Juan P. Jiménez
Ambrose Dodoo
Lennart Rogenhofer
Wiebke Meesenburg

Tuesday 12 September 2017 · Overall programme (continued)

15:00-15:30 Coffee break — **THE EGMONT HALL, 1ST FLOOR**

Parallel sessions 13-18

15:30-17:00 EGMONT HALL, 1ST FLOOR
Session 13: Smart Energy Systems
Chair: Marie Münster
Session keynote and co-chair: Carsten Bojesen
Benedetto Nastasi
Annelies Vandermeulen
Mei Gong
Miaomiao He

15:30-17:00 ASSEMBLY HALL,, 1ST FLOOR
Session 14: Future district heating production and systems
Chair: Erik O. Ahlgren
Session keynote and co-chair: Dagnija Blumberga
M. Leurent
Danica Djuric Ilic
Goran Krajacic
Zikun Wang

15:30-17:00 U1, 1ST FLOOR
Session 15: Energy planning and planning tools
Chair: Bent Ole G. Mortensen
Session keynote and co-chair: Frede Hvelplund
Stefan Petrovic
Patryk Chaja
Eva Wiechers

15:30-17:00 U3, 1ST FLOOR
Session 16: Low-temp district heating grids
Chair: Steen Schelle Jensen
Session keynote and co-chair: Helge Averfalk
Andrew F. Lyden
Alexei Sednin
Nicole Pini

15:30-17:00 U2, 1ST FLOOR
Session 17: Low-temperature DH and buildings.
Chair: Leif Gustavsson
Session keynote and co-chair: Carsten Østergård Pedersen
Johnny Iversen
Maria Justo Alonso
Roar Nysted
Hironao Matsubara

15:30-17:00 CINEMA, GF
Session 18: Future district heating production and systems
Chair: Rasmus Aaen
Session keynote and co-chair: Anders N. Andersen
Alfonso Gordaliza Pastor
Thibaut Richert

17:00-17:20 Launch of Heat Roadmap Europe – Pan-European Thermal Atlas 4 version 2.0 (Peta4) — **THE EGMONT HALL, 1ST FLOOR**

17:20-19:30 Break - possible to visit Tivoli Garden before the Conference dinner in GROEFTEN, TIVOLI

19:30- Conference dinner GROEFTEN, TIVOLI

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Wednesday 13 September 2017 · Overall programme

08:00-09:00 Coffee — **EGMONT HAAL, 1ST FLOOR**

Parallel sessions 19-24

9:00-10:30 EGMONT HALL, 1ST FLOOR
Session 19: Smart Energy Systems
Chair: Tobias Fleiter
Session keynote and co-chair: Kerstin Sernhed
Andrei David
Nadine Aoun
Søren Møller Thomsen
Alexander Tureczek

9:00-10:30 ASSEMBLY HALL 1ST FLOOR
Session 20: Future district heating production and systems
Chair: Georg K. Schuhardt
Session keynote and co-chair: Torben Ommen
Magnus Dahl
Oliver Martin-Du Pan
Patrick Reiter
William R H Orchard

9:00-10:30 U1, 1ST FLOOR
Session 21: Energy planning and planning tools
Chair: Urban Persson
Session keynote and co-chair: Ralf-Roman Schmidt
Pablo Puerto
Eftim Popovski
Kanau Takahashi
Rasmus Lund

9:00-10:30 U3, 1ST FLOOR
Session 22: Energy planning and planning tools
Chair: Poul Østergaard
Session keynote and co-chair: Markus Köfinger
Gorm Bruun Andresen
Olatz Terreros
Maarten Blommaert
Lars Grundahl

9:00-10:30 U2, 1ST FLOOR
Session 23: Low-temperature district heating and buildings
Chair: Carsten Bojesen
Session keynote and co-chair: Matthew Gentry
Yasameen Al-Ameen
Michele Tunzi
Dorte Skaarup Østergaard
Isabelle Best

9:00-10.30 CINEMA GF
Session 24: Future district heating production and systems
Chair: Louise Ödlund
Session keynote and co-chair: Luc Girardin
Julian Formhals
Somil Miglani
Jukka Aho

10:30-11:00 Coffee break — **THE EGMONT HALL, 1ST FLOOR**

Parallel sessions 25-30

11:00-12:30 EGMONT HALL, 1ST FLOOR
Session 25: Smart Energy Systems
Chair: Gorm B. Andersen
Session keynote and co-chair: Leif Gustavsson
Peter Sorknæs
Hannes Poier
Sarah Bourgarel
Mathieu Vallée

11:00-12:30 ASSEMBLY HALL, 1ST FLOOR
Session 26: Future district heating production and systems
Chair: Torben Ommen
Session keynote and co-chair: Georg K. Schuchardt
Joseph Maria Jebamalai
Marcin Bugaj
Fabian Bühler
Ingo Leusbrock

11:00-12:30 U1, 1ST FLOOR
Session 27: Energy planning and planning tools
Chair: Ralf-Roman Schmidt
Session keynote and co-chair: Urban Persson
Steffen Nielsen
Ivan Dochev
Haichao Wang

11:00-12:30 U3, 1ST FLOOR
Session 28: Organisation, ownership and institutions
Chair: Ingo Wiedlich
Session keynote and co-chair: Marie Münster
Søren Djørup/Jakob Zink
Daníel E. Vilhjálmsson
Richard Büchele
Thomas Pauschinger

11:00-12:30 U2, 1ST FLOOR
Session 29: Energy planning and planning tools
Chair: Knut Bernotat
Session keynote and co-chair: Davy Geysen
Charlotte Marguerite
Franz Mauthner
Ina De Jaeger
Samuel Letellier-Duchesne

11:00-12.30 CINEMA GF
Session 30: Future district heating production and systems
Chair: Poul Østergaard
Session keynote and co-chair: Veit Bürger
Daniele Basciotti
Maksym Kotenko
Miki Muraki
Mikel Monclus

12:30-13:30 Lunch — **THE EGMONT HALL, 1ST FLOOR**

13:30-16:00 ***2nd plenary session chaired by Henrik Lund:*** **Towards smart energy systems in Europe and Drivers to expand District Heating** — **THE EGMONT HALL, 1ST FLOOR**

13:30 Plenary keynote by Professor Brian Vad Mathiesen: Towards a smart energy system approach in Europe
14:00 Plenary keynote by Eva Hoos, Policy Officer in DG Energy: High-performance, smart district heating and cooling
14:30 Coffee break in Egmont Hall
14:45 Panel Debate: Drivers and ownership models—how to spread district heating in Europe. Panel Participants: Eva Hoos, Katrina Folland, Ingo Weidlich, Søren Djørup and Brian Vad Mathiesen
15:45-16:00 Closing session and Award Ceremony

Thursday 14 September 2017 · Programme

4 DH Technical Tour

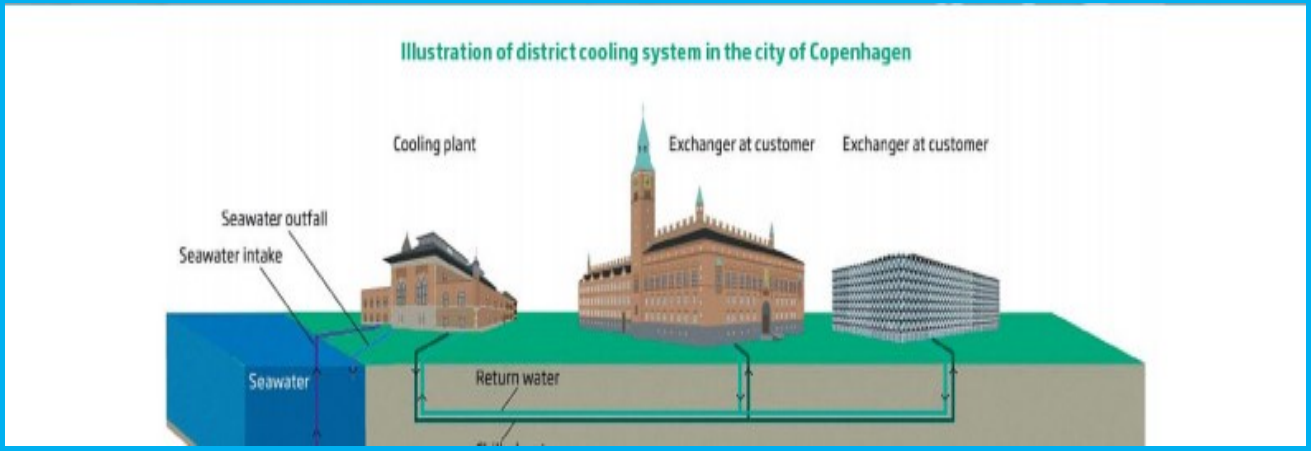
District Cooling Reduces CO2 in Central Copenhagen

In the capital of Denmark, district cooling results in close to 70% reduction in CO2 emissions and 40% reduction in total costs to conventional cooling.

There is an increasing demand for air conditioning and cooling in Copenhagen as in many other cities around the world. The Copenhagen utility company HOFOR, has built a district cooling system, which consists of a distribution net and two cooling plants. The district cooking system users seawater to chill down the water supplied to the customers. The system suppliers commercial buildings such as bank, department stores, and offices as well as cooling for servers and other processers all year round.
Therefore HOFOR can supply the increased demand for cooling in Copenhagen and help reduce CO" emissions by up to 30,000 tonners each year. The cooling system now supplies the centre of Copenhagen with cold water, and the pipe system is expanded in order to supply more customers in the future, and thereby contribute further to Copenhagen's target to become CO2-neutral in 2025.

Date and time: September 14th at 9.30—11.00
The tour will start outside Tietgensgade 33,
1740 Copenhagen
(500 meters from the 4DH Conference)
Deadline for registration is September 1st. Registration is binding.
Please register here:
http://www.4dh.eu/conferences/conference-2017/technical-tours

Note: Limited to 30 people.



Tuesday 12 September 2017 · Content of Sessions

Session 1: Smart Energy Systems

Rasmus Aaen: "Balancing District Heating to increase uptake of low temperature surplus heat sources"
Pierre Vogler-Finck: Online short-term heat load forecast – An experimental investigation on greenhouses
Borna Doračić: Scenario analysis of the renewable district heating system in Ozalj, a small city in Croatia
Philipp Geyer: Technology patterns and business cases for thermo-chemical networks
Jay Hennessy: Techno-economic assessment of heat-to-power use in district heating networks

Session 2: Future district heating production and systems

Erik O. Ahlgren: A system view on carbon impacts of future heating
Bernd Windholz: Application of heat pumps in the district heating network of Vienna
Renaldi Renaldi: Borehole Thermal Energy Storage Modelling in Energy Systems Optimisation
Hrvoje Dorotić: An hourly based optimization model of district heating system with building retrofit with the time horizon of one year, case study of Velika Gorica
Kristina Lygnerud: Risk assessment for industrial heat recovery in district heating systems

Session 3: Energy planning and planning tools

Peter Jorsal: The right pre-insulated pipe system for solar district heating networks
Jigeeshu Joshi: Applying Geographical Information Systems (GIS) to analyse the potential and design of district heating networks
Jürgen Knies: A spatial approach for a future-oriented heat planning in urban areas
Johan Dalgren: The time dependent impact of supply and return temperatures on CHP, HP and FGC production when utilizing a thermal network as energy storage.
Bram van der Heijde: Optimizing thermal energy storage in fourth generation thermal networks

Session 4: Low-temperature district heating grids

Oddgeir Gudmundsson: Cost analysis for Cold District Heating versus Low Temperature District Heating
Kim Rolin: Cost effective 4th generation district heating pipe concepts
Christian Engel: End consumer engagement as a key to successful implementation of 4th Gen DH
Ashreeta Prasanna: Efficiency of centralised and decentralised low temperature district networks compared with individual heating and cooling systems
Markus Rabensteiner: Simulation of bidirectional heat transfer stations in district heating grids

Session 5: Low-temperature district heating and buildings

Anna Volkova: Barriers for transition to 4th generation district heating in existing large networks
Danhong Wang: A methodology on modelling district heating networks with decentralized renewable energy feed-in
Andra Blumberga: Future Buildings as Prosumers Integrated into DH Systems
Asad Ashfaq: Hydraulic control model for the implementation of LTDH in existing boiler based buildings
Xiaochen Yang: Methods of reducing the district heating return temperature from the local substations

Session 6: Future district heating production and systems

Linn Laurberg Jensen: Cold Water District Heating and Cooling Systems as Flexible Energy Exchange Systems – a Promising Concept for the Future?
Nadège Vetterli: Five-year energy monitoring of a low temperature heating and cooling network
Henrik Pieper: Performance analysis of heat pumps utilizing different low temperature heat sources to supply district heating
Anna-Elisabeth Lehmkuhl: Integration of seasonal heat storage systems in existing building structures
Benjamin Zühlsdorf: Potential for performance improvement of booster heat pumps by utilization of mixtures

Session 7: Smart Energy Systems

Tobias Fleiter: Using industrial excess heat in district heating networks - A simulation assessment of potentials and cost-effectiveness for a refinery in Portugal
Hanmin Cai:An Experimental Setup for Investigating Flexibility of District Heating with Fuel Shift
Sylvain Quoilin: Coupling a power system model to a building model to evaluated the flexibility potential of DSM at country level
Foteini Rafaela Tsaousi: The influence of participation in ancillary services markets on optimal energy hub operation<

Session 8: Future district heating production and systems

Louise Ödlund: Cooperation and system perspective for increased sustainability
Jelena Ziemele: Bioeconomy approach in district heating development
Gunnar Lennermo: The value of heat supplied to the return or supply pipe - a comparison of different designs for local heat supply
Johannes Pelda : Quasi-dynamic simulation of district heating systems using hydraulic load factor as key indicator for optimised transition towards 4th generation district heating
Ivan Andrić: The impact of global warming and building renovation measures on district heating networks techno-economic parameters

Session 9: Energy planning and planning tools

Niels Frank: Albertslund – Municipality in transition to low temperature district heating
Daniel Møller Sneum: Socio-economic evaluation of regulatory framework conditions in the heat-electricity interface
Matteo Giacomo Prina: Multi-objective optimization algorithm coupled to EnergyPLAN software: the EPLANopt model
David Drysdale: Low carbon energy system planning in Small and Medium sized Municipalities in Europe
Hanne Kauko: Dynamic modelling of local district heating grids with multiple heat sources and thermal storage

Session 10: Low-temp district heating grids

Steen Schelle Jensen: Smart metering provides the transparency required for efficiency
Dietrich Schmidt: Low temperature district heating for future energy systems
Paolo Leoni: Decreasing district heating network heat losses in the summer months using decentralized systems: A simulation case study
Stefan Blomqvist: Improved energy performance for local ground surface heating in a CHP system
Max Bachmann: Transfer of a 4th generation district heating network from concept study to district level simulation

Session 11: Smart Energy Systems

Svend Svendsen: Solutions for low temperature heating of rooms and domestic hot water in existing buildings
Knut Bernotat: Uncertain Future - How Do Different Ways to Estimate Heat Demand in Retrofitted Buildings Affect District Heating owners?
Soma Mohammadi: Techno-economic analysis of low-temperature district heating network implementation in the city of Nottingham, UK
Natasa Nord: Challenges and potentials for low-temperature district heating implementation in Norway
Ivo Pothof: Maximizing geothermal output by using optimization model for the model-predictive control for a district heating system

Session 12: Smart Energy Systems

Bent Ole Gram Mortensen: Smart Energy Systems and the EU data protection regulation
Juan P. Jiménez :The joint effect of centralized CHP plants and thermal storage on the flexibility of the power system
Ambrose Dodoo: Primary energy benefits of cost-effective energy renovation of a district heated multi-family building under different energy supply systems
Lennart Rogenhofer: Evaluation of innovative heat pump concepts for multi-family houses
Wiebke Meesenburg: Evaluation of the flexibility provided by integrating energy systems using advanced exergoeconomic analysis

Session 13: Smart Energy Systems
Carsten Bojesen: Local Village Heating in a Smart Energy Context
Benedetto Nastasi: Smart Heat sharing for high, medium and low temperature Power-To-Heat solutions
Annelies Vandermeulen: Improving agent-based control performance of thermal networks by inclusion of time delays: a simulation case
Mei Gong: Exergy and cost analysis of heating systems considering energy storage
Miaomiao He: Domestic heat demand prediction and the implications for designing community heat networks

Session 14: Future district heating production and systems
Dagnija Blumberga: Solar collectors versus solar panels in DH
M. Leurent: Socioeconomic potential for deploying large district heating networks using heat from nuclear plants in Europe
Danica Djuric Ilic: Searching for new roles for district heating in a sustainable society
Goran Krajacic: Status and perspectives of district heating systems in Eastern Europe
Zikun Wang: Heat pumps in the UK's district heating: individual, district level, both or neither?

Session 15: Energy planning and planning tools
Frede Hvelplund: Heat conservation incentives and policies for 4th generation district heating systems
Stefan Petrovic: Comparing different district heating supply scenarios with energy savings and individual supply options in six European municipalities
Patryk Chaja: Modelling participation in the Polish Day-Ahead Market (DAM) using a district heating company as a case
Eva Wiechers: Matching district heat demand and excess heat supply using network allocation analysis

Session 16: Low-temperature district heating grids
Helge Averfalk: Pressure situation in low temperature network with a third distribution pipe
Andrew F. Lyden: Unleashing the potential of existing biomass systems via 4th generation district heating and thermal storage: A Scottish perspective
Alexei Sednin: Possibilities of lowering district heating temperatures in Belarus
Nicole Pini: Guidelines for an optimal integration of water-to-water heat pumps in low-temperature district heating networks: lessons learnt from the analysis of three networks in France

Session 17: Low-temperature district heating and buildings
Carsten Østergård Pedersen: Intelligent utilization of pumps in LTDH
Johnny Iversen: Ultra-Low Temperature District Heating Supply in New Build Areas and in Apartment Buildings
Maria Justo Alonso: How low can the heating supply temperature be in different building types in Norway?
Roar Nysted: 4th Generation heating system using geothermal energy as the main source
Hironao Matsubara: The 1st application of 4th Generation District Heating in Japan, its outcomes and lessens

Session 18: Future district heating production and systems
Anders N. Andersen: Distributed CHP units in Denmark are too quickly loosing electricity production
Alfonso Gordaliza Pastor: Renovation towards a smart district heating in Valladolid
Thibaut Richert: Integrating electrical and thermal domains – A case study of the Danish Technical University campus

Wednesday 13 September 2017 · Content of Sessions

Session 19: Smart Energy Systems

Kerstin Sernhed: Synthesis of Swedish District Heating Research between 2013 to 2017
Andrei David: Quantifying the impact of district heating, heat pumps, and electric vehicles in Italy, Romania, and the United Kingdom
Nadine Aoun: A sensitivity analysis to support the modelling of space heating demand in view of developing a load shedding algorithm
Søren Møller Thomsen: The Smart Electricity Storage – District Heating and Cooling with Thermal Storages
Alexander Tureczek: District heat household consumption classification using smart meter data

Session 20: Future district heating production and systems

Torben Ommen: Design considerations for integration of two 5 MW vapour compression heat pumps in the Greater Copenhagen district heating system
Magnus Dahl: Long-term production planning in large district heating systems
Oliver Martin-Du Pan: District Heating Network Pipe Sizing
Patrick Reiter: Focus of IEA SHC Task 55: „Towards the Integration of Large SHC Systems into DHC Networks“
William R H Orchard: Retrofitting the UK domestic sector with Energy Hubs, Exergenius™, and “Keep Hot Flow Pipes

Session 21: Energy planning and planning tools

Ralf-Roman Schmidt: Sustainable heat supply strategies for district heating networks – tools and methodologies
Pablo Puerto: Implementation of distributed co-simulation for urban energy systems
Eftim Popovski: Cost-effectiveness of large scale heat pumps in district heating networks - a simulation model for a case study in Germany
Kanau Takahashi: District heating in Japan – current situation, challenges and possibilities
Rasmus Lund: Heat Roadmap Europe: A Method for linking EU-TIMES and EnergyPLAN energy system models

Session 22: Energy planning and planning tools

Markus Köfinger: Simulation based evaluation of large scale waste heat utilization in the district heating network of Linz (Austria) by optimized integration of a seasonal storage
Gorm Bruun Andresen: User incentives for low-energy renovations in district heating systems of different scales
Olatz Terreros: Comparison of methods for thermal storage sizing in district heating networks
Maarten Blommaert: Towards Adjoint-based Topology Optimization of Thermal Networks
Lars Grundahl: Heat demand mapping implications on energy planning

Session 23: Low-temperature district heating and buildings

Matthew Gentry:L ocal heat, Local Food: utilising district heating systems for urban farming
Yasameen Al-Ameen: Utilizing waste materials from construction and industrial processes as potential ground storage mediums in HGHEs
Michele Tunzi: Design and operation of a low-temperature heat networks in the UK
Dorte Skaarup Østergaard: How to lower the district heating return temperature from historical apartment buildings
Isabelle Best: Low-temperature versus ultra-low temperature solar district heating for low heat density housing developments in Germany

Session 24: Future district heating production and systems

Luc Girardin: Wide scope categorization of DHC systems for the identification of emerging or disruptive technologies
Julian Formhals: Effects of the District Heating Supply Temperature Level on the Efficiency of Borehole Thermal Energy Storage Systems
Somil Miglani: Optimization of solar and ground source district heating system using bottom-up technology models
Jukka Aho: Radically new ways to affect heating energy demand – Case Peak Power Optimization

Session 25: Smart Energy Systems

Leif Gustavsson: Synthesis of Swedish District Energy efficient building blocks and low temperature district heating

Peter Sorknæs: Operational analysis of future renewable energy systems

Hannes Poier: BIG SOLAR GRAZ – Results of a techno-economic feasibility for solar district heating

Sarah Bourgarel: Innovative heat energy supply concepts for multi-family houses: real case evaluation through synergies between simulation and optimization modelling

Mathieu Vallée: Using power-to-heat for flexibility at district level: an overview of use cases

Session 26: Future district heating production and systems

Georg K. Schuchardt: Development of an empirical calculation procedure for determining the thermal conductivity and heat losses of pre-insulated twin pipe systems

Joseph Maria Jebamalai: 4DHC technology guidance and transition strategies for Northwest Europe

Marcin Bugaj: Assessment of primary energy savings through implementation of solar and heat pump hybrid in Warsaw district heating system

Fabian Bühler: Spatiotemporal analysis of industrial excess heat as a resource for district heating in Denmark

Ingo Leusbrock: Tools and methods for modelling district heating systems: A comprehensive comparison

Session 27: Energy planning and planning tools

Urban Persson: Heat Roadmap Europe: Heat distribution costs

Steffen Nielsen: Geographic Placement of Power to Gas Plants in Denmark

Ivan Dochev: Hypothetical heating grid modelling with graph theory. A decision support tool for planning

Haichao Wang: Planning and optimizing the heat production for a district heating system with Chinese demand profiles

Session 28: Organisation, ownership and institutions

Marie Münster : The Danish district heating regulation model in a comparative perspective - and possible impacts of changing it

Søren Djørup/Jakob Zink: Market Structures and Smart Energy Systems

Daníel E. Vilhjálmsson: Identification of potentials and barriers for developing district cooling in Lima, Peru

Richard Büchele: Favourable policy frameworks for renewable heating and district heating – results from local case studies within the progRESsHEAT project

Thomas Pauschinger: Regional Policy and Market Support Initiatives for Solar and Renewable District Heating

Session 29: Energy planning and planning tools

Davy Geysen : Forecasting of heat demand in district heating systems and their integration into smart grid controllers - Fractals, ensembles and expert advisers

Charlotte Marguerite: Simulation based assessment of retrofitting measures, storage integration and alternative heat sources in the district heating network of Aarhus

Franz Mauthner: Holistic urban energy planning: The benefits and drawbacks of using GIS-based methods

Ina De Jaeger: Impact of building geometry description within district energy simulations

Samuel Letellier-Duchesne: Balancing Demand and Supply: Linking Neighborhood-level Building Load Calculations with Detailed District Energy Network Analysis Models

Session 30: Future district heating production and systems

Veit Bürger: Third party access to district heating systems - Challenges for the practical implementation

Daniele Basciotti: Simulation based analysis of demand side management as enabler for heat pumps in district heating networks

Maksym Kotenko: Drag reducing additives in low temperature district heating

Miki Muraki:1G/2G to 4G? Challenges in the Existing District Energy Infrastructure in Japan

Mikel Monclus: Combined HEat SyStem by using Solar Energy and heaT pUmPs