

International Conference on Smart Energy Systems and 4th Generation District Heating

25-26 August 2015 · Copenhagen



AALBORG UNIVERSITY
DENMARK

Tuesday 25 August 2015 · Overall programme

Page 1

08:30-09:00 Registration and breakfast

PLENARY ROOM 1.001 (floor 1)

09:00-11:10 1st plenary session - Chaired by Brian Vad Mathiesen

09:00 Welcome and introduction to Smart Energy Systems and 4th Generation District Heating by Henrik Lund

09:15 Keynote: Xiliang Zhang: *The Role of District Heating in China's Energy Revolution and Related Applications in Northeast China*

09:45 Keynote: Anders Eldrup: *District heating - the Danish case as an export model?*

10:15 Questions and discussion

10:40 Coffee break

11:10-12:50 Parallel sessions 1-3

Track 1: Smart Energy Systems

Chair: Jan Eric Thorsen, co-chair: Erik Ahlgren

Session keynote: Erik Ahlgren

Jean Duquette

Amru R. Razani

Benedetto Nastasi

PLENARY ROOM 1.001 (floor 1)

Track 2: Future district heating production and systems

Chair: Goran Krajačić, co-chair: Leif Gustavsson

Session keynote: Leif Gustavsson

David Maya-Drysdale

Dražen Balić

Oddgeir Gudmundsson

Veronika Wilk

AUDITORIUM 1, 1.008 (floor 1)

Track 3: Energy planning and planning tools

Chair: Sven Werner, co-chair: Bernd Möller

Session keynote: Bernd Möller

Ekaterina E. Iakimetc

Lars Grundahl

Romain S.C. Lambert

AUDITORIUM 2, 0.091 (floor 0)

12:50-14:05 Lunch

PLENARY ROOM 1.001/ CANTEEN (floor 1)

12:50-13:20 Steering Committee Meeting (4DH SC members only)

ROOM 2.1.043

14:05-15:45 Parallel sessions 4-6

Track 4: Low-temperature district heating grids

Chair: Carsten Bojesen, co-chair: Markus Köfinger

Session keynote: Markus Köfinger

DHC+ Student Award Winner Wiet Mazairac

Edgars Vigants

Maksym Kotenko

Soma Mohammadi

PLENARY ROOM 1.001 (floor 1)

Track 5: Low-temperature district heating and buildings

Chair: Svend Svendsen, co-chair: Anders Dyrelund

Session keynote: Anders Dyrelund

Julio E.V. Rebollar

DHC+ Student Award Winner Susana Paardekooper

Kasper Qvist

Dorte S. Larsen

AUDITORIUM 1, 1.008 (floor 1)

Track 6: Organisations, ownership and institutions

Chair: Bent Ole G. Mortensen, co-chair: Dagnija Blumberga

Session keynote: Dagnija Blumberga

Søren Djørup

Kirsten Hasberg

Sara Fritz

DHC+ Student Award Winner Spyridon Provatas

AUDITORIUM 2, 0.091 (floor 0)

15:45-16:15 Coffee break

16:15-17:55 Parallel sessions 7-9		
<p>Track 7: Smart Energy Systems Chair: Erik Ahlgren, co-chair: Anders B. Hansen Session keynote: Anders B. Hansen Damien Casetta Christoffer Lythcke-Jørgensen Jakob Z. Thellufsen Jørgen Boldt</p>	<p>Track 8: Future district heating production and systems Chair: Leif Gustavsson, co-chair: Ingo Weidlich Session keynote: Ingo Weidlich Goran Krajačić Oliver Martin-Du Pan Kenneth Hansen Paweł Gilski</p>	<p>Track 9: Energy planning and planning tools Chair: Bernd Möller, co-chair: Sven Werner Session keynote: Sven Werner Stefan Petrović Fanni Sáfián Richard Büchele</p>
	PLENARY ROOM 1.001 (floor 1)	AUDITORIUM 1, 1.008 (floor 1)
		AUDITORIUM 2, 0.091 (floor 0)
17.55	Wrap-up	PLENARY ROOM 1.001 (floor 1)
19:30	Conference dinner	
19:50	Special guest speaker Steen Gade	

Tuesday 25 August 2015 · Content of Tracks

<p>Track 1: Smart Energy Systems - Chair: Jan Eric Thorsen, co-chair: Erik Ahlgren</p> <p>Session keynote Erik Ahlgren: <i>Assessing impacts of a regional collaboration on large-scale excess heat utilization</i> Jean Duquette: <i>Assessing the Impact of Wave Energy Integration in a Remote Canadian Community Equipped With a District Energy Grid</i> Amru R. Razani: <i>Genetic algorithm Technique to optimize the configuration of heat storage in DH Network</i> Benedetto Nastasi: <i>Hydrogen to link Heat and Electricity in transition stage to Future Smart Energy Systems</i></p>	
<p>Track 2: Future district heating production and systems - Chair: Goran Krajačić, co-chair: Leif Gustavsson</p> <p>Session keynote Leif Gustavsson: <i>Renewable-based heat supply of multi-apartment buildings with varied heat demands</i> David Maya-Drysdale: <i>Matching heat demand with heat supply resources in district heating systems</i> Dražen Balić: <i>District heating as the thermal storage – support to the power system with potential for a higher integration of RES</i> Oddgeir Gudmundsson: <i>Cost of District Heating and Individual Heating Technologies</i> Veronika Wilk: <i>River water heat pumps for district heat supply in large cities in Austria: Study of potential and techno-economic optimization</i></p>	
<p>Track 3: Energy planning and planning tools - Chair: Sven Werner, co-chair: Bernd Möller</p> <p>Session keynote Bernd Möller: <i>A Pan-European Thermal Atlas of Potentials, Costs and System Properties</i> Ekaterina E. Iakimetc: <i>Heat supply planning in the conditions of development of energy-efficient technologies in construction</i> Lars Grundahl: <i>Comparison of heat atlas results with real-world measurements</i> Romain S.C. Lambert: <i>Optimal multi-stage district heat expansion planning with real options</i></p>	

Track 4: Low-temperature district heating grids - Chair: Carsten Bojesen, co-chair: Markus Köfinger

Session keynote Markus Köfinger: *Low temperature district heating micro-networks in Austria: comparison of four case studies*

DHC+ SA Winner Wiet Mazairac: *Integrated Modeling and Simulation of Electricity, Gas and Heat Networks Underlying a Sustainable City Infrastructure*

Edgars Vigants: *Low return temperature impact to DH system efficiency. Case study*

Maksym Kottenko: *Minimization of losses in low temperature district heating*

Soma Mohammadi: *Determination of optimal supply temperature in existing district heating networks by applying new insulation series in pipes – A Thermo-economic analysis*

Track 5: Low-temperature district heating and buildings - Chair: Svend Svendsen, co-chair Anders Dyrelund

Session keynote Anders Dyrelund: *The District Energy System – a cost effective virtual electricity storage*

Julio E.V. Rebollar: *Nearly Zero Carbon neighbourhood development in Kortrijk (BE), implementation and first year monitoring results*

DHC+ SA Winner S. Paardekooper: *Optimal heat pump use in European cities*

Kasper Qvist: *Ultra Low-Temperature District Heating With 35 °C Supply Temperature*

Dorte S. Larsen: *Possibilities and costs of preparing existing Danish single family houses from the 1930s for space heating with low-temperature district heating*

Track 6: Organisations, ownership and institutions - Chair: Bent Ole G. Mortensen, co-chair: Dagnija Blumberga

Session keynote D. Blumberga: *Legislative analysis for the 4th generation district heating in Latvia. Riga case*

Søren Djørup: *Public Regulation of District Heating Companies in a Smart Energy System*

Kirsten Hasberg: *Development of an open heating platform – The case of Hamburg*

Sara Fritz: *The impact of policies in the building sector influence the economic feasibility of district heating*

DHC+ SA Winner S. Provatas: *An online machine learning algorithm for heat load forecasting in District Heating systems*

Track 7: Smart Energy Systems - Chair: Erik Ahlgren, co-chair: Anders B. Hansen

Session keynote Anders B. Hansen: *Energy system integration with efficient use of high temperature excess heat*

Damien Casetta: *Dynamic Modelling of a District Cooling Network with Modelica*

Christoffer Lythcke-Jørgensen: *A method for designing flexible multi-generation plants*

Jakob Z. Thellufsen: *Multiple Energy System Analysis of Smart Energy Systems*

Jørgen Boldt: *Demonstration of 4DH solutions in a large city development area*

Track 8: Future district heating production and systems - Chair: Leif Gustavsson, co-chair: Ingo Weidlich

Session keynote Ingo Weidlich: *Challenges in smart energy transport using trenchless technology*

Goran Krajačić: *Contributing global CO2 mitigation by utilisation of food industry heat into smart Croatian DHS via Total Site heat recovery*

Oliver Martin-Du Pan: *Heat Losses in District Heating Systems and Heat Meters*

Kenneth Hansen: *Comparing heat supply to heat savings with a levelised costs approach and an energy system approach*

Paweł Gilski: *Influence of stray currents on district heating pipelines failure rate*

Track 9: Energy planning and planning tools - Chair: Bernd Möller, co-chair: Sven Werner

Session keynote Sven Werner: *European cooling demands*

Stefan Petrović: *Ringkøbing-Skjern energy atlas for analysis of heat saving potentials in building stock*

Fanni Sáfián: *Is there room for renewables in 2030? – analysing the effects of a new nuclear power plant in Hungary*

Richard Büchele: *Comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling*

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Wednesday 26 August 2015 · Overall programme

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08:15-08:40 Coffee

08:40-10:20 Parallel sessions 10-12

Track 10: Smart Energy Systems

Chair: Poul A. Østergaard, co-chair: Johan Desmedt

Session keynote: Johan Desmedt

Lisa Brand
Barbara Fricke
Magdalena Berberich
Natalia Kabalina

PLENARY ROOM 1.001 (floor 1)

Track 11: Future district heating production and systems

Chair: Anders N. Andersen, co-chair: Goran Krajačić

Session keynote: Goran Krajačić

Matteo G. Prina
Leif Gustavsson
Gunnar Lennermo
Jacek Kalina

AUDITORIUM 1, 1.008 (floor 1)

Track 12: Energy planning and planning tools

Chair: Xiliang Zhang, co-chair: Ralf-Roman Schmidt

Session keynote: Ralf-Roman Schmidt

Paul Booij
Weiming Xiong
Tomislav Novosel

AUDITORIUM 2, 0.091 (floor 0)

10:20-10:50 Coffee break

10:50-12:30 Parallel sessions 13-15

Track 13: Smart Energy Systems

Chair: Frede Hvelplund, co-chair: Justin NW. Chiu

Session keynote: Justin NW. Chiu

Peter Sorknæs
Tim Farrell
Johan Desmedt
Dietmar Schüwer

PLENARY ROOM 1.001 (floor 1)

Track 14: Future district heating production and systems

Chair: Allan N. Hansen, co-chair: Urban Persson

Session keynote: Urban Persson

Dominik Bothe
Jelena Ziemele
Charlotte Marguerite
Rasmus Lund

AUDITORIUM 1, 1.008 (floor 1)

Track 15: Low-temperature district heating grids/and buildings

Chair: Morten Abildgaard, co-chair: Jan Eric Thorsen

Session keynote: Jan Eric Thorsen

Marek Brand
Christian Engel
Xiaochen Yang
José C. Flores

AUDITORIUM 2, 0.091 (floor 0)

12:30-13:45 Lunch

PLENARY ROOM 1.001 (floor 1)

13:45-16:45 2nd plenary session - Chaired by Henrik Lund

13:45 Keynote: Eva Hoos: *District heating and cooling in the EU energy policy framework and the EU Strategy for Heating and Cooling*

14:15 Keynote: Philippe Schild: *EU Research and Innovation towards an integrated approach on district heating and cooling*

14:45 Questions and discussion

15:15-15:45 Coffee break

15:45-16:30 Closing ceremony

The 3rd International DHC+ Student Awards

Best Presentation Awards to Senior and PhD Fellow, funded by Danfoss and Kamstrup

16:30-16:45 Closing remarks by Brian Vad Mathiesen

Track 10: Smart Energy Systems - Chair: Poul A. Østergaard, co-chair: Johan Desmedt

Session keynote Johan Desmedt:	<i>The role and potential of distributed thermal energy storage systems for active control of district heating networks</i>
Lisa Brand:	<i>Prosumers in District Heating networks - problems and possibilities</i>
Barbara Fricke:	<i>100% renewable municipal energy supply: Chances and restrictions of solar thermal district heating</i>
Magdalena Berberich:	<i>Solar-CHP - development of multifunctional systems combining CHP with solar thermal plant</i>
Natalia Kabalina:	<i>Exergy analysis of polygeneration DHC system based on the gasification of RDF</i>

Track 11: Future district heating production and systems - Chair: Anders N. Andersen, co-chair: Goran Krajačić

Session keynote Goran Krajačić:	<i>Reducing CO2 emissions and increasing the integration of renewables through the utilization of smart district heating system in the City of Velika Gorica</i>
Matteo G. Prina:	<i>Smart energy systems applied at urban level: the case of the municipality of Bressanone-Brixen</i>
Leif Gustavsson:	<i>Effects of energy efficiency measures in buildings on different types of district heating systems</i>
Gunnar Lennermo:	<i>Decentralised heat generation in district heating systems</i>
Jacek Kalina:	<i>Advanced hybrid and combined small-scale thermal energy conversion systems for efficient use of locally available resources</i>

Track 12: Energy planning and planning tools - Chair: Xiliang Zhang, co-chair: Ralf-Roman Schmidt

Session keynote Ralf-R. Schmidt:	<i>Feasibility of micro-DH networks in scattered urban areas using local sources: analyses of technical and non-technical barriers of a case study</i>
Paul Booij:	<i>Integrated planning, design and operation of 4th generation district heating and cooling networks</i>
Weiming Xiong:	<i>Case study of the constraints and potential contributions regarding wind curtailment in Northeast China</i>
Tomislav Novosel:	<i>Heat demand mapping and the utilization of district heating in energy systems with a high share of renewables: Case study for the city of Osijek</i>

Track 13: Smart Energy Systems - Chair: Frede Hvelplund, co-chair: Justin NW. Chiu

Session keynote Justin NW. Chiu:	<i>Economic Assessment of Industrial Surplus Heat Transportation</i>
Peter Sorknæs:	<i>The transition of small-scale CHP into market-based smart energy systems</i>
Tim Farrell:	<i>District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy</i>
Johan Desmedt:	<i>The H2020 STORM project: Self-organising thermal resource management as future intelligent control of district heating and cooling networks</i>
Dietmar Schüwer:	<i>The potential of heat and grid orientated block CHP on the minute reserve market and its impacts on CO2 emissions - prospects for the German energy market</i>

Track 14: Future district heating production and systems - Chair: Allan N. Hansen, co-chair: Urban Persson

Session keynote Urban Persson:	<i>Current and future prospects for heat recovery from waste in European district heating systems: A literature and data review</i>
Dominik Bothe:	<i>Thermo-hydraulic simulation of district heating networks</i>
Jelena Ziemele:	<i>System dynamics model analysis of pathway to 4th generation district heating systems in the Baltic States</i>
Charlotte Marguerite:	<i>Selection of design scenarios for an industrial waste heat based micro-district heating network supplying low-energy buildings</i>
Rasmus Lund:	<i>Mapping of potential heat sources for large heat pumps in Denmark</i>

Track 15: Low-temperature district heating grids / and buildings - Chair: Morten Abildgaard, co-chair: Jan Eric Thorsen

Session keynote Jan Eric Thorsen:	<i>Thermal length of heat exchangers for the next generation of DH substations</i>
Marek Brand:	<i>District heating substation with electric booster supplied by 40°C warm district heating water</i>
Christian Engel:	<i>Highly prefabricated, tailor made District Heating and Cooling networks</i>
Xiaochen Yang:	<i>Analysis of individual heating unit for domestic hot water production in multi-storey buildings with low temperature district heating</i>
José C. Flores:	<i>Conceptual Study of the Integration of Decentralized Solar Heat Generation to a Low-Temperature District Heating Network via Substation Net-Metering</i>