4th International Conference on

Smart Energy Systems and 4th Generation District Heating

13-14 November 2018 · Nordkraft · Aalborg

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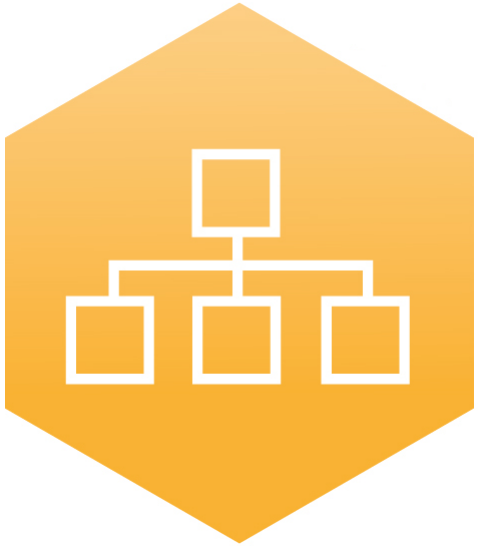
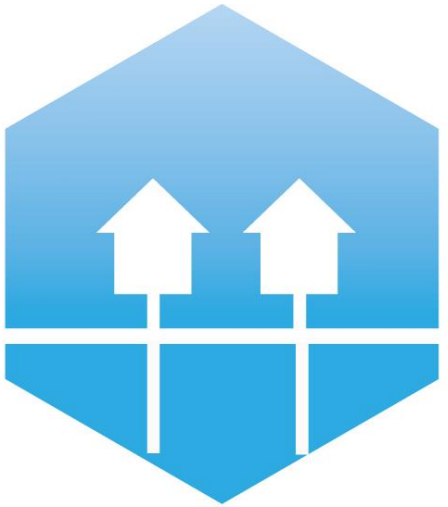
Welcome





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reINVEST

4DH
4th Generation District Heating
Technologies and Systems

#SES4DH2018

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4DH
4th Generation District Heating Technologies and Systems

310 Participants

25 countries from 4 Continents

140 presentations

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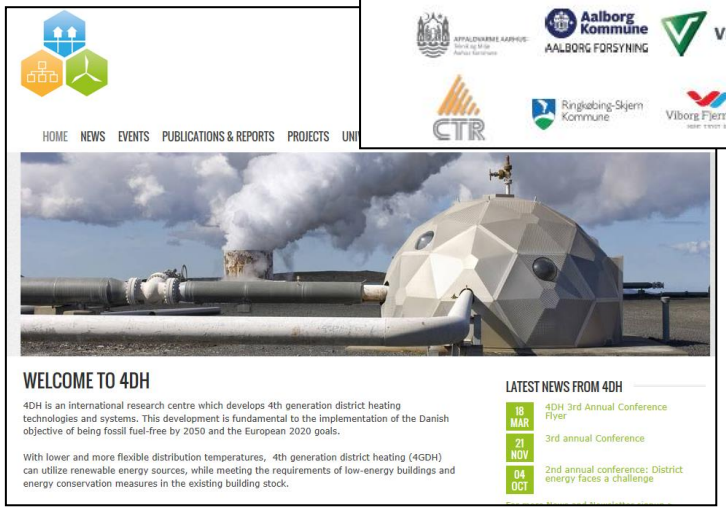
The 4DH Centre is ending…
But our focus remains

4DH

4th Generation District Heating Technologies and Systems



Sign up for our newsletters and join our conference:

www.4dh.eu

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www.reinvestproject.eu

RENEWABLE ENERGY INVESTMENT STRATEGIES

A TWO-DIMENSIONAL APPROACH

- Analyzing synergies in low-cost energy storages across sectors and potential energy savings with high amounts of renewable energy
- Identifying the role of international electricity and gas transmission in integrated renewable Smart Energy Systems
- Overcoming silo-thinking from traditional energy sectors and development of novel methodologies and results for renewable energy investment strategies in Denmark and Europe.
- Research based design of robust and cost-effective investment strategies

17 Partners

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Østfoldforskning
Stanford University
FIAS Frankfurt Institute for Advanced Studies
Danfoss
DANISH DISTRICT HEATING ASSOCIATION
Danish Energy Agency
DONG energy
EMD International A/S www.emd.dk
ENERGINET.DK
HALDOR TOPSOE
HMN NATURGAS
kamstrup
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Statkraft
AALBORG CSP - Changing Energy
Fonden Energi- & Miljøda www.emdfonden.dk

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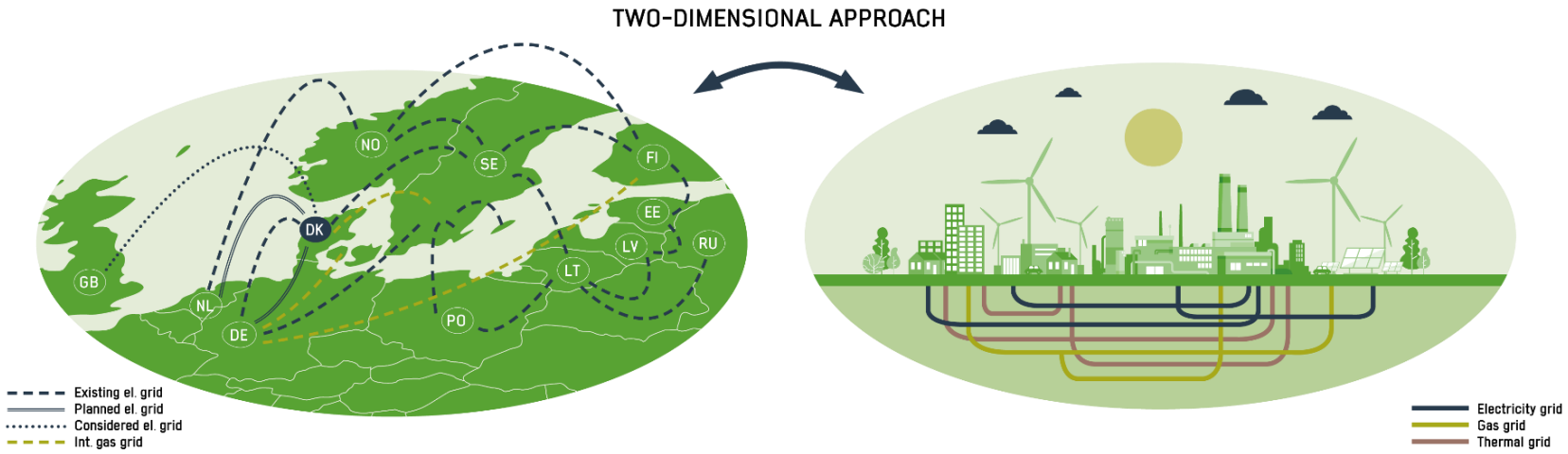
A TWO-DIMENSIONAL APPROACH



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4th International Conference on

Smart Energy Systems and 4th Generation District Heating

13-14 November 2018 · Nordkraft · Aalborg

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DENMARK

Tuesday 13 November 2018 · Overall programme

#SES4DH2018

08:00-09:00 Registration and breakfast — "KEDELHALLEN" GROUND FLOOR, LEVEL 1

09:00-10:30 ***1st plenary session chaired by Professor Brian Vad Mathiesen***

09:00 Opening speech by Professor Brian Vad Mathiesen
09:15 Plenary keynote by Professor Henrik Lund: The Status of 4th 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

PLENARY ROOM 6.1-6.3, LEVEL 6

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	**Session 2: Future district heating production and systems**	**Session 3: Energy planning and planning tools**	**Session 4: Low-temperature district heating grids**	**Session 5: Low-temperature DH and buildings**	**Session 6: Organisation, Ownership and Institutions**
Chair: Poul Alberg Østergaard	**Chair: Neven Duic**	**Chair: Urban Persson**	**Chair: Peter Jorsal**	**Chair: Nina Detlefsen**	**Chair: Frede Hvelplund**
Session keynote:	**Session keynote:**	**Session keynote:**	**Session keynote:**	**Session keynote:**	**Session keynote:**
Benedetto Nastasi	**Richard P. van Leeuwen**	**Bernd Möller**	**Carsten Bojesen**	**Jan Eric Thorsen**	**Gijsbert Korevaar**
Hanmin Cai	Hanne Kauko	Kamal Kuriyan	Dirk Vanhoudt	Christian Holmstedt Hansen	Søren Djørup
Andrei David	Alexandre Canet	Joseph Maria Jebamalai	Igor Krupenski	Kevin Michael Smith	Niels M. Westera
Sara Bellocchi	Johannes Pelda	Jakob Zinck Thellufsen	Tobias Sommer	Pierre Vogler-Finck	Daniel Møller Sneum
Timo Kannengiesser	Marcello Aprile		Marco Pellegrini	Jens Møller Andersen	David G. Barns

12:30-13:30 Lunch — "KEDELHALLEN" GROUND FLOOR, LEVEL 1

12:30-13:00 Steering Committee Meeting (4DH SC members only) — 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	**Session 8: Future district heating production and systems**	**Session 9: Energy planning and planning tools**	**Session 10: Smart Energy Systems**	**Session 11: Low-temperature DH and buildings**	**Session 12: Smart Energy Systems**
Chair: Atli Benonysson	**Chair: Gorm Bruun Andresen**	**Chair: Younes Noorollahi**	**Chair: Alfred Heller**	**Chair: Svend Svendsen**	**Chair: Bernd Möller**
Session keynote:	**Session keynote:**	**Session keynote:**	**Session keynote:**	**Session keynote:**	**Session keynote:**
Daniel Trier	**François Maréchal**	**Steen Schelle Jensen**	**Morten Hofmeister**	**Leif Gustavsson**	**Anna Volkova**
Jay Hennessy	Henrik Pieper	Matteo Giacomo Prina	Roman Geyer	Dorte Skaarup Østergaard	Nadine Aoun
Shalika Walker	Gaétan Chardon	Mostafa Fallahnejad	Olatz Terreros	Øystein Rønneseth	Kaisa Kontu
Tommy Rosén	Matteo Caramaschi	Richard Büchele	Sylvain Quoilin	Kerstin Sernhed	Sonja Salo
Nicolas Lamaison	Diego Hangartner	Julian Wruk	Wiebke Meesenburg	Anna Kallert	Morten Karstoft Rasmussen

#SES4DH2018

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**

Parallel sessions 13-18

15:30-16:45 ROOM 6.3, LVL 6

Session 13: Smart Energy Systems
Chair: Karl Sperling
Session keynote:
Ralf-Roman Schmidt
Salem Alsaleh
Gabriele Cassetti
Hironao Matsubara

15:30-16:45 ROOM 6.2, LVL 6

Session 14: Future district heating production and systems
Chair: Xiliang Zhang
Session keynote:
Dagnija Blumberga
Jes Donneborg
Borna Doračić:
Marcin Bugaj

15:30-16:45 ROOM 6.1, LVL 6

Session 15: Low-temperature district heating grids
Chair: John Bøgild Hansen
Session keynote:
Peter Jorsal
Luis Sánchez-García
Aleksandr Hlebnikov
Johannes Küchle

15:30-16:45 ROOM 3.3.17, LVL 3

Session 16: Smart Energy Systems
Chair: Anders N. Andersen
Session keynote:
Elisa Guelpa
Esmir Maslesa
Jonas Hinker
Romain Lambert

15:30-16:45 ROOM 4.3.02, LVL 4

Session 17: Low-temperature district heating grids
Chair: Carsten Bojesen
Session keynote:
David Pearson
Dietrich Schmidt
Federico Bava
Gašper Stegnar

15:30-16:45 ROOM 6.8, LVL 6

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

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

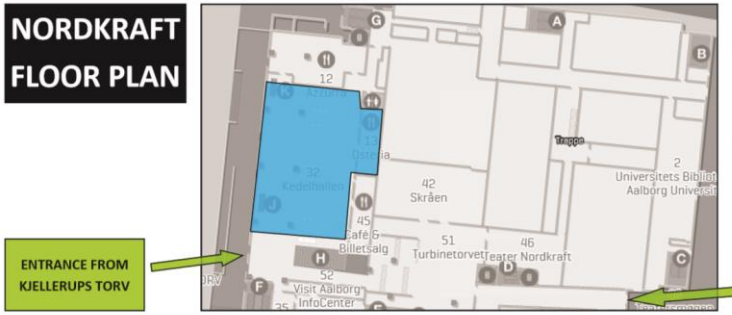
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 695989.

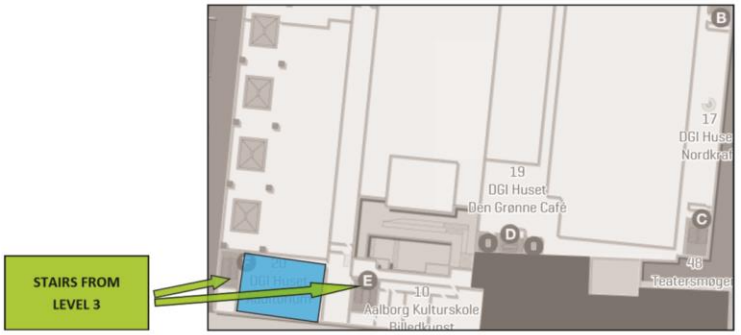
#SES4DH2018

AALBORG CITY CENTRE

1: Nordkraft, conference	2: Musikkens Hus, conference dinner	3: Hotel Aalborg
4: CABINN Aalborg Hotel	5: First Hotel Aalborg	

NORDKRAFT FLOOR PLAN





Do you have a ticket for the dinner you are not using?

#SES4DH2018

08:00-09:00 Coffee — **ROOMS 6.1 and 6.3, LVL 6 and 4.3.02, LVL 4**

Parallel sessions 19-22

9:00-10:30 ROOM 6.3, LVL 6

Session 19: Smart Energy Systems
Chair: Anders M. Odgaard
Session keynote:
Anders N. Andersen
Daniela Guericke
Lennart Merkert
Sara Månsson

9:00-10:30 ROOM 6.2, LVL 6

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

9:00-10:30 ROOM 4.3.02, LVL 4

Session 21: Energy planning and planning tools
Chair: Steen Schelle Jensen
Session keynote:
Casey Cole
Asad Ashfaq
Russell McKenna
Lisa Brange

9:00-10:30 ROOM 6.8, LVL 6

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

9:00-10:30 ROOM 6.1, LVL 6

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**

Parallel sessions 23-27

11:00-12:30 ROOM 6.2, 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

11:00-12:30 ROOM 4.3.02, LVL 4

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

11:00-12:30 ROOM 6.1, LVL 6

Session 25: Energy planning and planning tools
Chair: Ralf-Roman Schmidt
Session keynote:
Urban Persson
Tomislav Novosel
Michiel Fremouw
Miguel Chang
Nis Bertelsen

11:00-12:30 ROOM 3.3.17, LVL 3

Session 26: Future district heating production and systems
Chair: Rasmus Aaen
Session keynote:
Louise Ödlund
Britta Kleinertz
Toshihiko Nakata
Cord Kaldemeyer
Hrvoje Dorotić

11:00-12:30 ROOM 6.3, LVL 6

Session 27: Smart Energy Systems
Chair: Benedetto Nastasi
Session keynote:
Vittorio Verda
Peter Lorenzen
Marta Victoria
Danica Maljkovic
Shobhana Singh

11:00-12:30 ROOM 6.8, LVL 6

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***

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**

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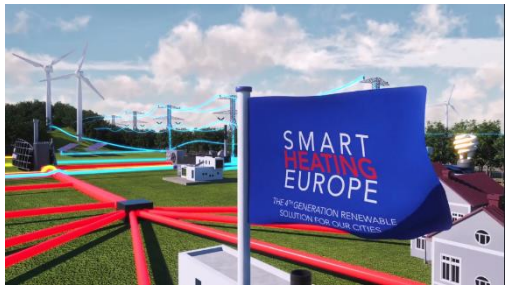
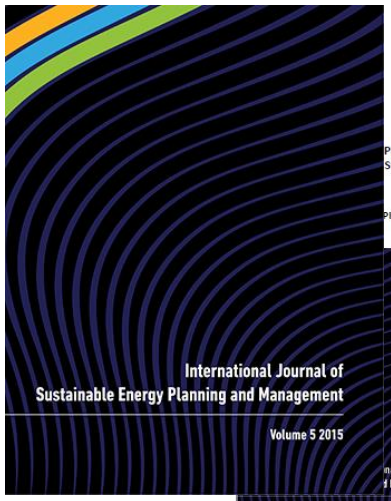


Paper-flow: 3 Special Issues



Papers Based on Abstracts from the Fi
Systems and 4th Generation District He

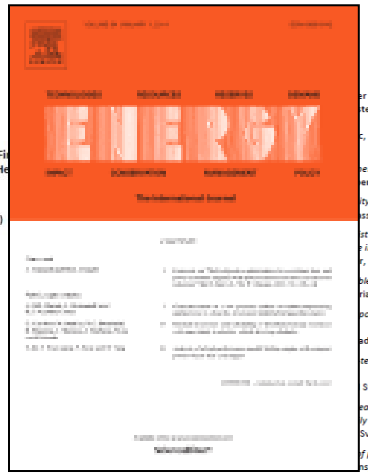
Planning and Management, Vol 10 (2016)

Smart energy systems and 4th generation district heating
Poul Alberg Østergaard, Henrik Lund, Brian Vad Mathiesen

Comprehensive Assessment of the Potential for Efficient District Heating and Cooling and for High-Efficient Cogeneration in Austria
Richard Büchele, Lukas Kranzl, Andreas Müller, Marcus Hummel, Michael Hartner, Yvonne Deng, Marian Bons

A genetic algorithm technique to optimize the configuration of heat storage in DH networks
Amru Rizal Razani, Ingo Weidlich

Smart energy systems applied at urban level: the case of the municipality of Bressanone-Brixen
Matteo Giacomo Prina, Marco Cozzini, Giulia Garegnani, David Moser, Ulrich Filippi Oberegger, Roberto Vaccaro, Wolfram Sparber



er 2016)
tems and 4th Generation District

, Poul Alberg Østergaard

eration district heating
erg Østergaard, Brian Vad Mathiesen

ity in the transition towards future Smart Energy Systems
sso

stributed cogeneration on the minutes reserve market and
impacts on CO2 emissions
, Frank Merten, Arjuna Nebel

ble multi-generation systems
iano Viana Ensinas, Marie Münster, Fredrik Haglind

potential contributions regarding wind curtailment in

ad Mathiesen, Xiliang Zhang

temperature district heating with no Legionella risk, and low

Svendsen

ease the potential to use low-temperature district heating – A
ly houses from the 1930s
Svendsen

f pathway to 4th generation district heating in Latvia
ns, Andra Blumberga, Girts Vigants, Dagnija Blumberga

Complex thermal energy conversion systems for efficient use of locally available biomass
Jacek Kalina

Current and future prospects for heat recovery from waste in European district heating systems: A literature and data review
Urban Persson, Marie Münster

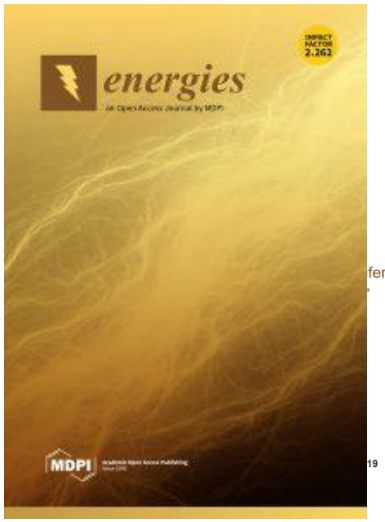
Mapping of potential heat sources for heat pumps for district heating in Denmark
Rasmus Lund, Urban Persson

Industrial surplus heat transportation for use in district heating
J.NW. Chiu, J. Castro Flores, V. Martin, B. Lacarrière

European space cooling demands
Sven Werner

Optimal planning of heat supply systems in urban areas
Valery A. Stennikov, Ekaterina E. Iakimetc

Ringkøbing-Skjern energy atlas for analysis of heat saving potentials in building stock
Stefan Petrović, Kenneth Karlsson



ference on Smart Energy Systems

19

Special Issue Editor

Guest Editor
Assoc. Prof. Karl Sperling
The Technical Faculty of IT and Design, Department of Planning, Sustainable Energy Planning Research Group, Aalborg University, Aalborg, Denmark
Website | E-Mail
Phone: + 9940 7219
Fax: 9815 3788
Interests: public regulation; community energy; smart energy systems; district heating; renewable energy sources

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Awards for Best Presentation Junior and Senior

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Next year:

5th International Conference on Smart Energy Systems:

4th Generation District Heating, Electrification, Electrofuels and Energy efficiency

10-11 September 2019 · Copenhagen

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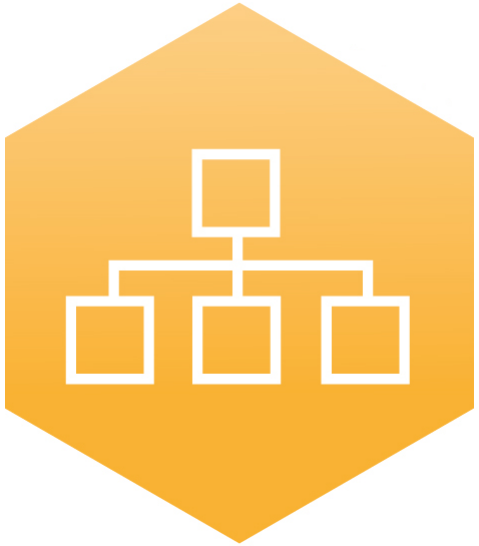

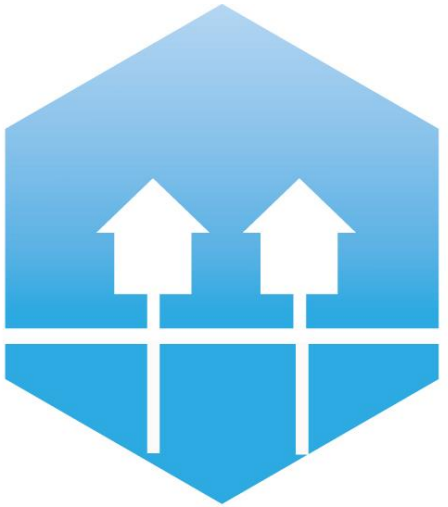

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