5TH INTERNATIONAL CONFERENCE ON

Smart Energy Systems

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

10-11 SEPT 2019 · COPENHAGEN

AALBORG UNIVERSITY
DENMARK

Powered by

AALBORG UNIVERSITY
DENMARK

UN environment

DISTRICT ENERGY IN CITIES INITIATIVE

reINVEST

sEEnergies

4DH

Innovation Fund Denmark

Fonden Energi- & Miljødata
www.emdfonden.dk

Sponsored by

Danfoss
ENGINEERING TOMORROW

kamstrup

COWI

EUROHEAT & POWER

DHC+ TECHNOLOGY PLATFORM

#SESAAU2019

5TH INTERNATIONAL CONFERENCE ON

Smart Energy Systems

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

10-11 SEPT 2019 · COPENHAGEN

AALBORG UNIVERSITY
DENMARK

4DH
4th Generation District Heating Technologies and Systems

350 Participants

32 different countries

180 presentations

AALBORG UNIVERSITY
DENMARK

reINVEST

sEEnergies

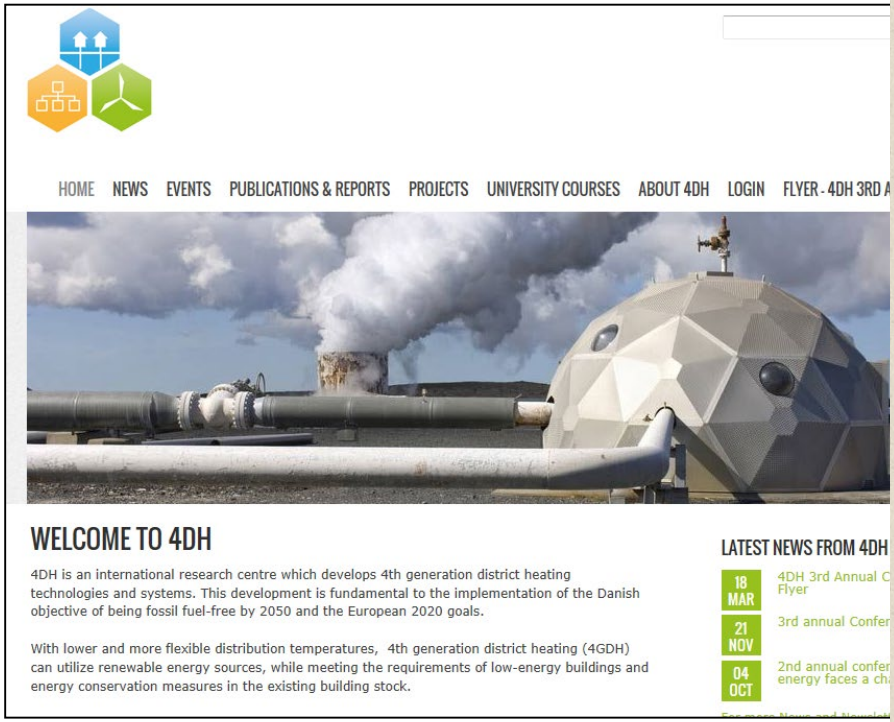
4DH

#SESAAU2019

www.4DH.dk

4DH

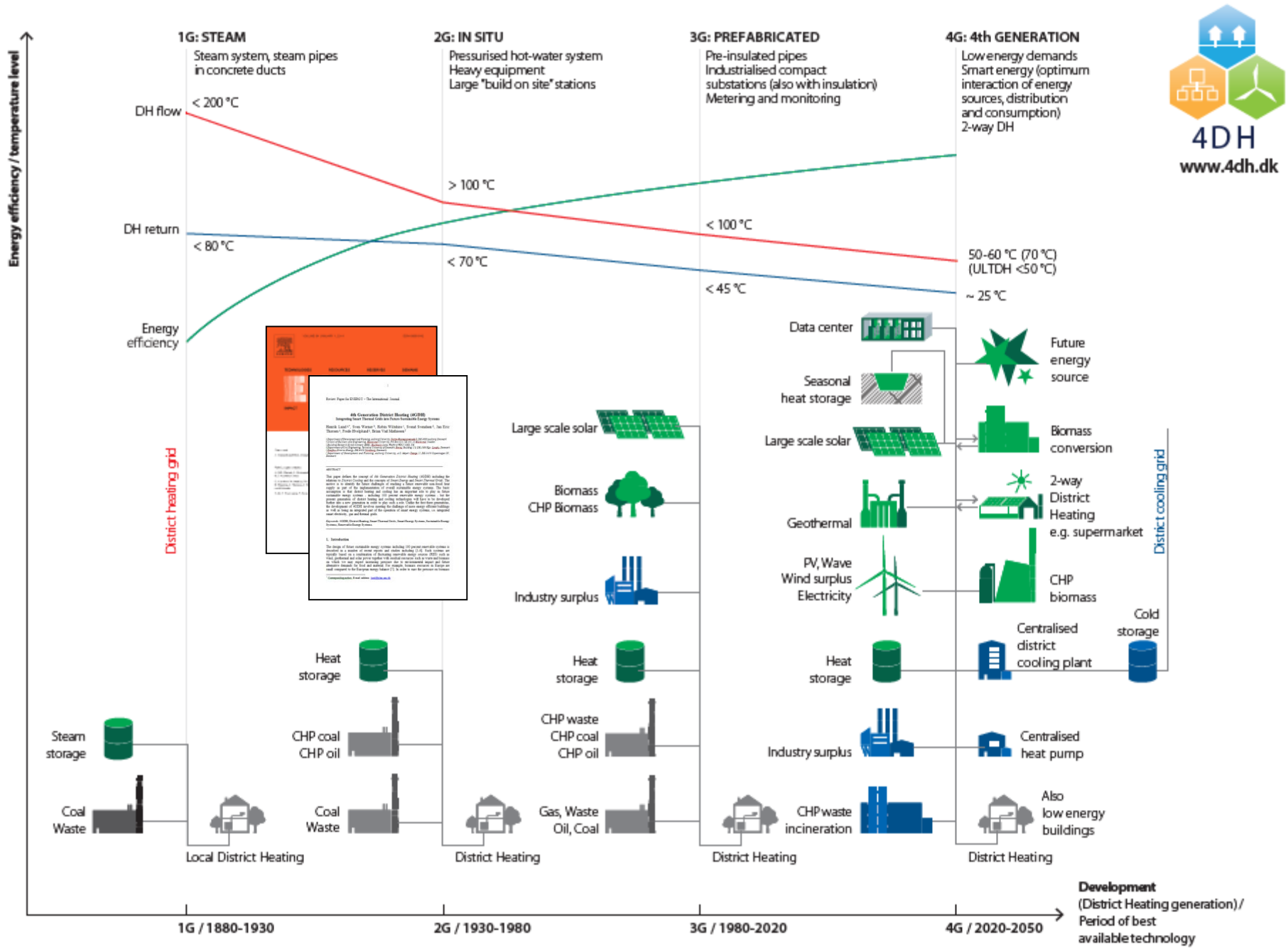
4th Generation District Heating Technologies and Systems



AALBORG UNIVERSITY
DENMARK

#SESAAU2019

Innovation Fund Denmark
RESEARCH, TECHNOLOGY & GROWTH



4DH
www.4dh.dk

reINVEST

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

AALBORG UNIVERSITY DENMARK
AARHUS UNIVERSITY
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 TOPSØE
HMN NATURGAS
kamstrup
Magistre & Psykologer
Statkraft
AALBORG CSP - Changing Energy
Fonden Energi- & Miljøde www.emdfonden.dk

9 Advisory Board Members

Confederation of Danish Industry
United Federation of Danish Workers
Engineering Society english.ida.dk
AALBORG ENERGIKONCERN
UNIVERSITY OF COPENHAGEN
CONCITO DENMARK'S GREEN THINK TANK
dansk byggeri Danish Construction Association
DGC
DANMARKS VINDMØLLEFORENING

AALBORG UNIVERSITY DENMARK

#SESAAU2019

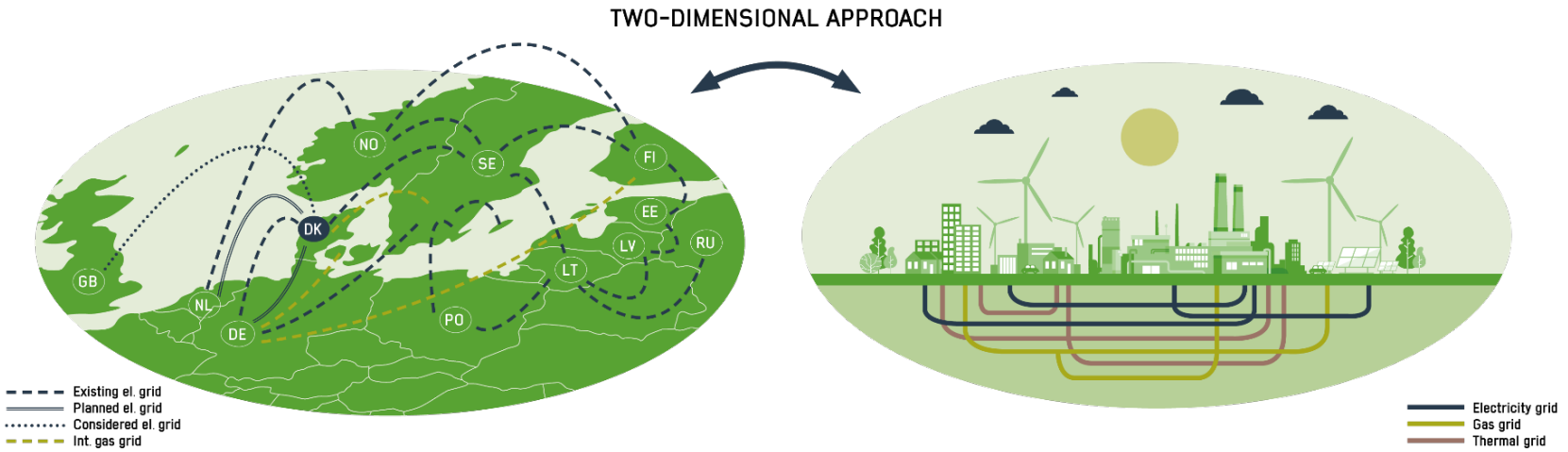
Innovation Fund Denmark

@ReInvestEU

#SmartEnergySystems & #4DH

RENEWABLE ENERGY INVESTMENT STRATEGIES

A TWO-DIMENSIONAL APPROACH



AALBORG UNIVERSITY
DENMARK

#SESAAU2019

Innovation Fund Denmark

@ReInvestEU

#SmartEnergySystems & #4DH

sEEnergies

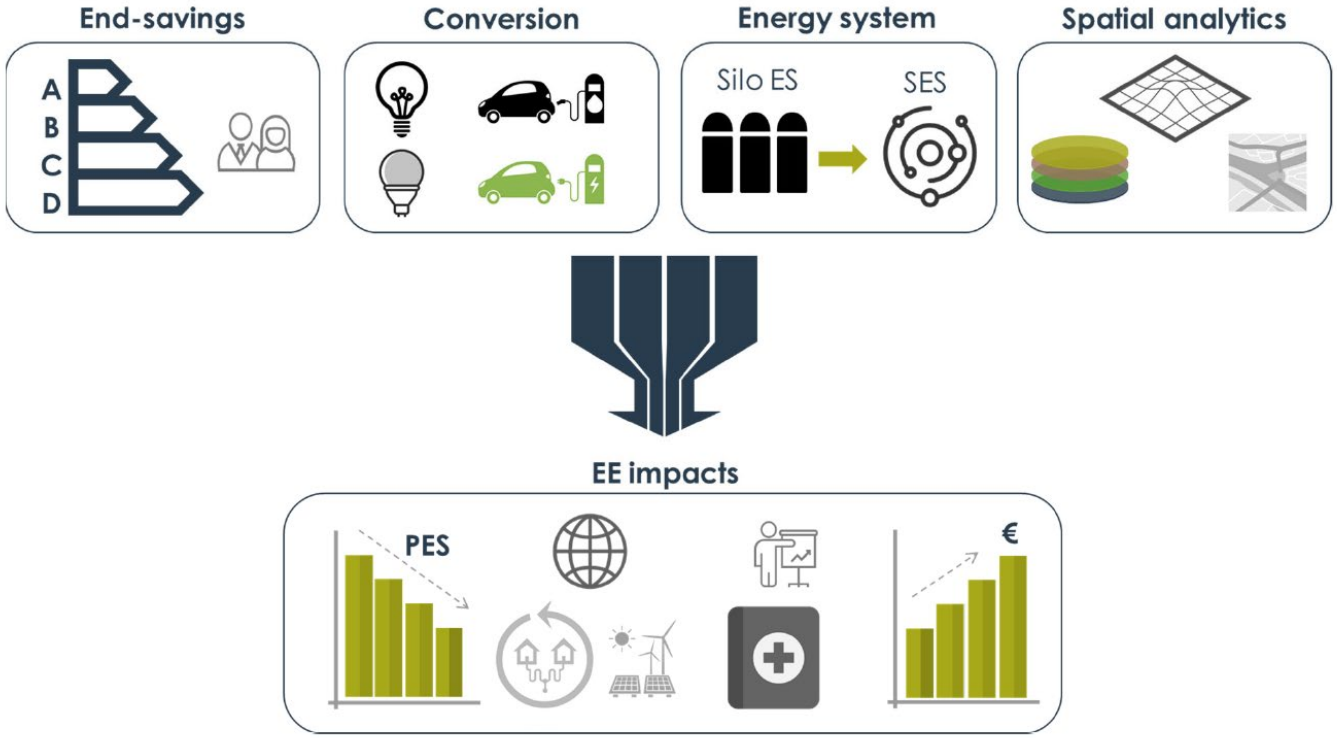
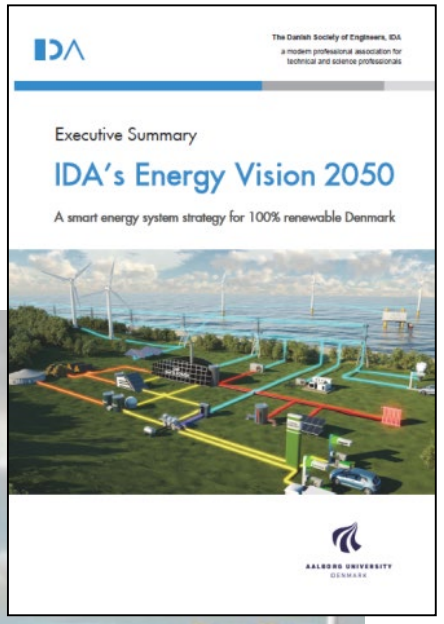
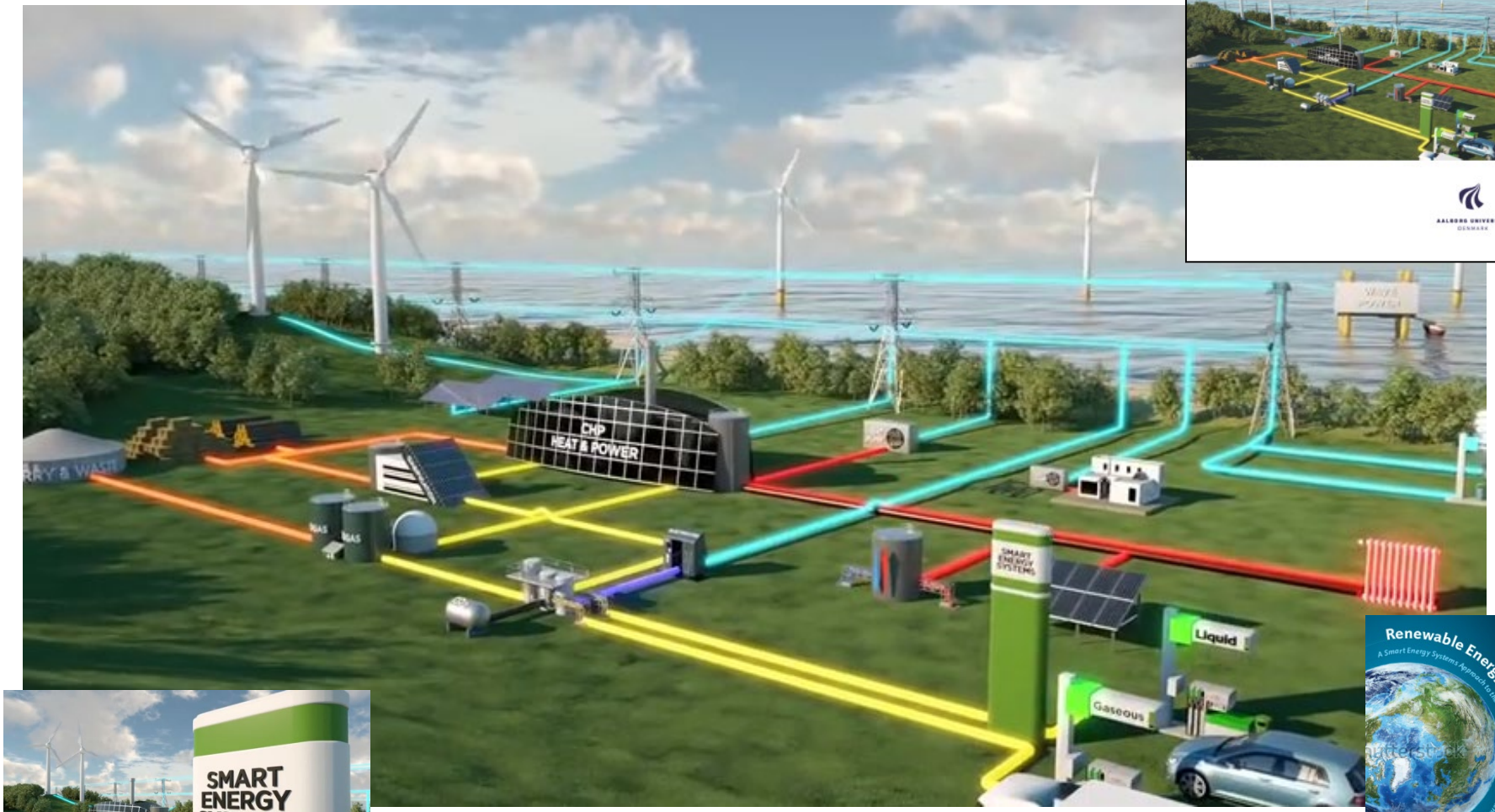


Figure 2. Make EE more operational by using sEEnergies' improved EE-modelling approach

Quantification of synergies between Energy Efficiency first principle and renewable energy systems

Smart Energy Systems

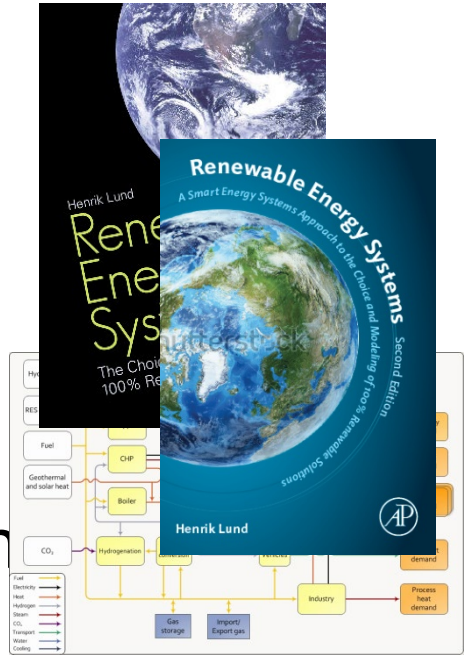




Smart Energy Systems

The key to cost-efficient 100% Renewable Energy

- A sole focus on renewable **electricity (smart grid)** production leads to electricity storage and flexible demand solutions!
- Looking at renewable electricity as a part **smart energy systems** including heating, industry, gas and transportation opens for cheaper and better solutions…



Power-to-Heat

Power-to-Gas
Power-to-Transport

AALBORG UNIVERSITY
DENMARK

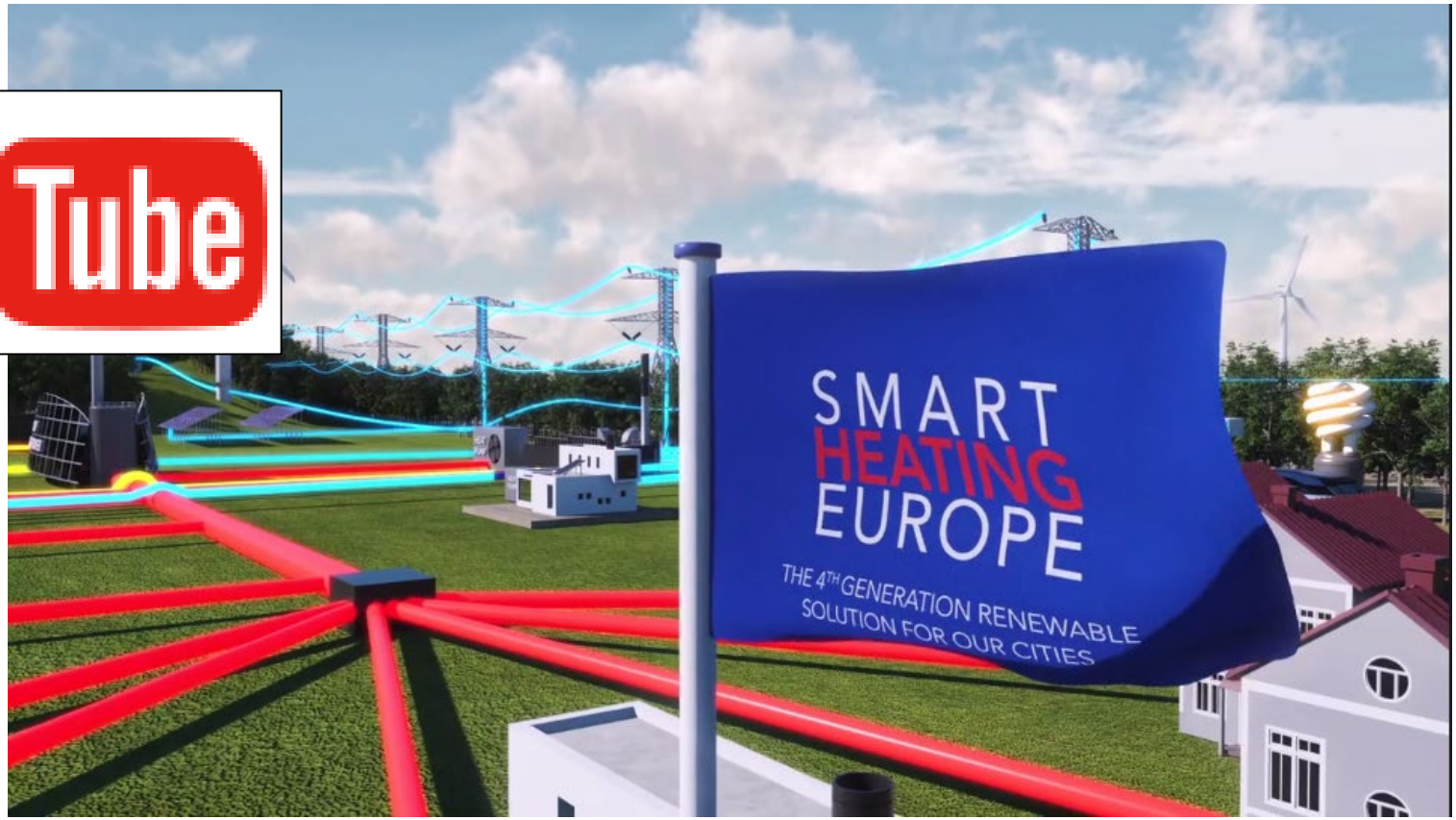
#SESAAU2019

Smart Energy Systems

AALBORG UNIVERSITY
DENMARK

#SESAAU2019

Smart Heating Europe



AALBORG UNIVERSITY
DENMARK

#SESAAU2019

Program

5TH INTERNATIONAL CONFERENCE ON

Smart Energy Systems

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

10-11 SEPT 2019 • COPENHAGEN

AALBORG UNIVERSITY
DENMARK

PROGRAMME

Tuesday 10 September 2019

#SESAAU2019

08:00-09:00	**Registration and breakfast**	Lobby 1st floor
09:00-11:00	**1st plenary session chaired by Professor Poul Alberg Østergaard**	Mermaid /Citadel 1st floor
09:00	Opening speech by Professor Henrik Lund	
09:15	Plenary keynote by Professor Jianjun Xia: District Energy Systems in China	
09:40	Plenary keynote by Kristian Ruby, Secretary General: Dispatches from the European energy transition	
10:05	Plenary keynote by David Connolly, PhD, CEO: Wind power and district energy in Ireland	
10:30	Questions and discussion	
10:45-11:15	**Coffee break**	Lobby 1st floor

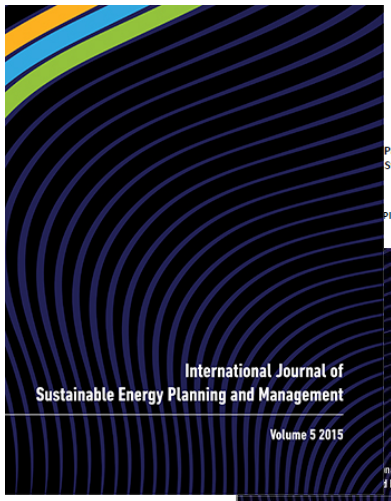
Parallel sessions 1-6

11:15-13:00 LOUNGE 1, 2nd	11:15-13:00 CITADEL 1, 1st	11:15-13:00 LOUNGE 2, 2nd	11:15-13:00 CITADEL 2, 1st	11:15-13:00 MERMAID, 1st	11:15-13:00 HARBOUR, 1st
Session 1: Smart Energy Systems analyses, tools and methodologies	**Session 2: Smart Energy Systems analyses, tools and methodologies**	**Session 3: Integrated energy systems and smart grids**	**Session 4: GIS for energy systems, heat planning and DH**	**Session 5: Energy Lab Nordhavn**	**Session 6: 4GDH concepts, future DH production and systems**
Chair: Paula Ferreira	**Chair: Reinhard Haas**	**Chair: David Connolly**	**Chair: Steffen Nielsen**	**Chair: Svend Svendsen**	**Chair: Henrik Madsen**
Session keynote: Dagnija Blumberga	**Session keynote: Pierrick Haurant**	**Session keynote: Ralf-Roman Schmidt**	**Session keynote: Bernd Möller**	**Session keynote: Jan Eric Thorsen**	**Session keynote: Ingo Weidlich**
Amir Mohammad J. Khoshbaf	Bernhard Gerardts	Behnam Zakeri	Eva Wiechers	Christine Emilie Sandersen	Annelies Vandermeulen
Borna Doračić	Jes Donneborg	Akos Revesz	Hermann Edtmayer	Hanmin Cai	Jens Møller Andersen
Carles Ribas Tugores	Arthur Clerjon	Mathieu Vallée	Marcus Hummel	Henrik Pieper	Janette Webb
Ingo Leusbrock	Michael-Allan Millar	Edward O'Dwyer	Magda Kowalska	Kevin Michael Smith	Helge Averfalk
Carlo Winterscheid	Mariagrazia Dotoli	Jens Brage	Mostafa Fallahnejad	Morten Herget Christensen	Anna Volkova

13:00-14:00	**Lunch**	Lobby 1st floor

#SESAAU2019

Paper-flow: 3 Special Issues



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

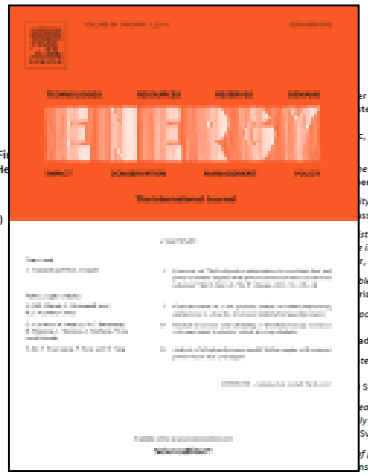
Planning and Management, Vol 10 (2016)

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

c, 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

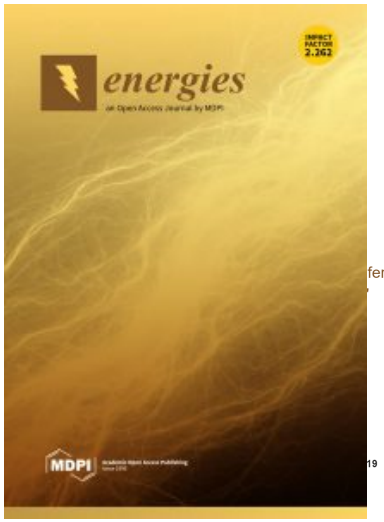
Mapping of potential heat sources for heat pumps for district heating in Denmark
Rasmus Lund, Urban Persson

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

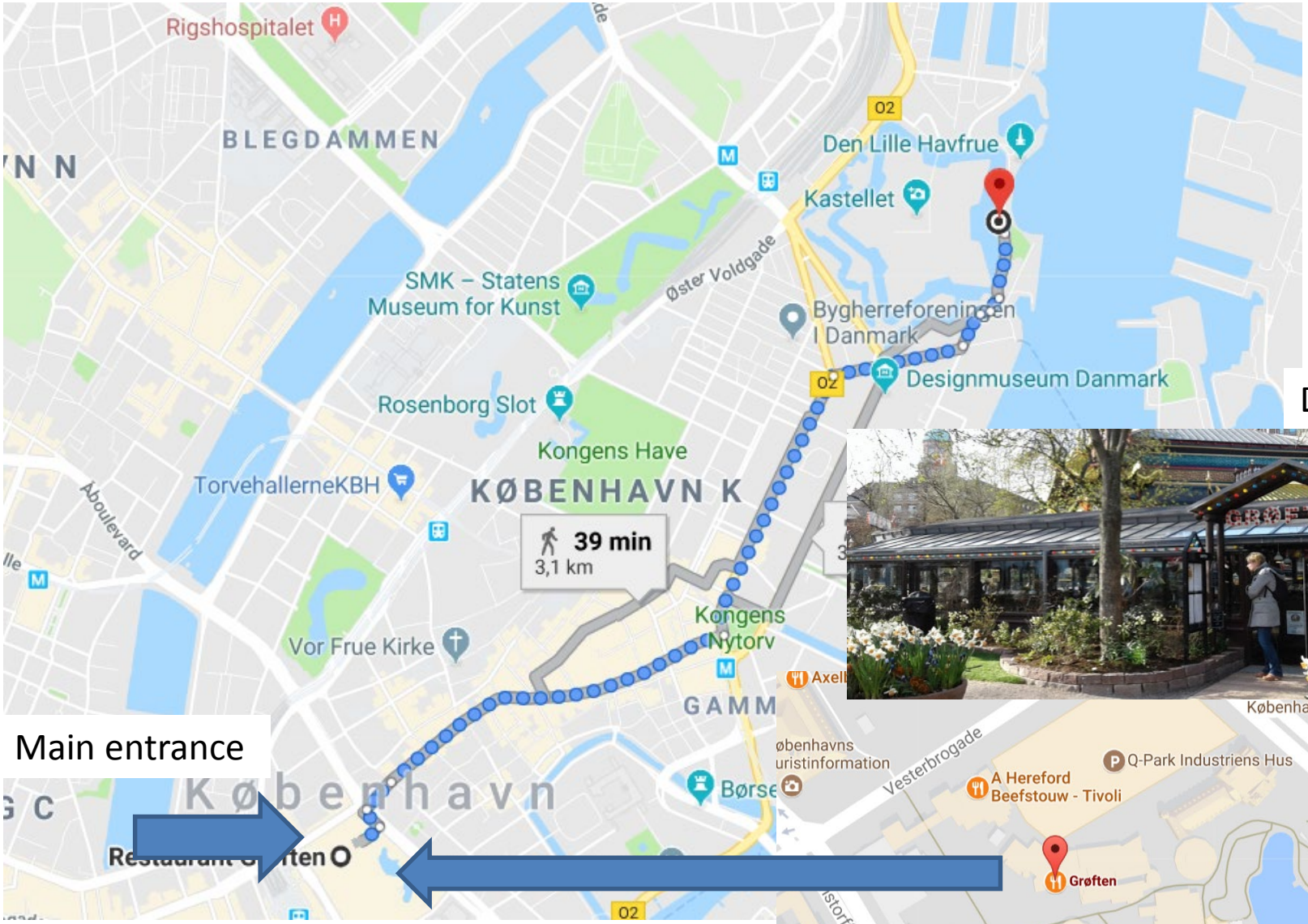
AALBORG UNIVERSITY
DENMARK

#SESAAU2019

Awards for Best Presentation Junior and Senior

AALBORG UNIVERSITY
DENMARK

#SESAAU2019



Dinner:

4DH
4th Generation District Heating Technologies and Systems

AALBORG UNIVERSITY
DENMARK

#SESAAU2019

6TH INTERNATIONAL CONFERENCE ON
Smart Energy Systems
6-7 OCTOBER 2020 • AALBORG

sEEnergies

4DH
4th Generation District Heating Technologies and Systems

reINVEST

Location:

NORDKRAFT

Save the date!

AALBORG UNIVERSITY
DENMARK

#SESAAU2019

5TH INTERNATIONAL CONFERENCE ON

Smart Energy Systems

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

10-11 SEPT 2019 · COPENHAGEN

AALBORG UNIVERSITY
DENMARK

Enjoy..!

Powered by

AALBORG UNIVERSITY DENMARK

UN environment

DISTRICT ENERGY IN CITIES INITIATIVE

reINVEST

sEEnergies

4DH

Sponsored by

Danfoss
ENGINEERING TOMORROW

kamstrup

COWI

EUROHEAT & POWER

DHC+ TECHNOLOGY PLATFORM

Innovation Fund Denmark

Fonden Energi- & Miljødata
www.emdfonden.dk

#SESAAU2019