The Smart Energy System concept is essential for cost-effective 100% renewable energy systems. The concept includes a focus on energy efficiency, end use savings and sector integration to establish energy system flexibility, harvest synergies by using all infrastructures, lower energy storage cost as well as to exploit low-value heat sources.

As opposed to, for instance, the smart grid concept, which takes a sole focus on the electricity sector, the smart energy systems approach includes the entire energy system in its identification of suitable energy infrastructure designs and operation strategies. Focusing solely on the smart electricity grid often leads to the definition of transmission lines, flexible electricity demands, and electricity storage as the primary means of dealing with the integration of fluctuating renewable sources. However, these measures are neither very effective nor cost-efficient considering the nature of wind power and similar sources. The most effective and least costly solutions are to be found when the electricity sector is combined with the heating and cooling sectors and/or the transport sector. Moreover, the combination of electricity and gas infrastructures may play an important role in the design of future renewable energy systems, and the electrification of heating and transport – possibly through electrofuels – can play a pivotal role in providing flexibility and ensuring renewable energy integration in all sectors.

In future energy systems, energy savings and 4th generation district heating can be combined, creating significant benefits. Low-temperature district heat sources, renewable energy heat sources combined with heat savings represent a promising pathway as opposed to individual heating solutions and passive or energy+ buildings in urban areas. Electrification in combination with district heat is a very important driver to eliminate fossil fuels. Power heat, power to gas and power to liquid together with energy efficiency and 4th generation district heating create a flexible smart energy system. These changes towards integrated smart energy systems and 4th generation district heating also require institutional and organisational changes that address the implementation of new technologies and enable new markets to provide feasible solutions to society.

We invite researchers and experts from industry and business to contribute to further enhancing the knowledge of smart energy systems, 4th generation district heating, electrification, electrofuels and energy efficiency.

Conference fees
- Early registration (for presenters with accepted abstracts): 350 EUR (attendance in Aalborg) / 250 EUR (virtual attendance)
- Normal fee: 450 EUR (attendance in Aalborg) / 350 EUR (virtual attendance)
- Additional fee for conference dinner (Aalborg): 100 EUR

Important dates 2022
- 28 March: Deadline submission of abstracts
- 08 April: Reply on acceptance of abstracts
- 25 April - 24 May: Early registration
- 25 May - 05 Aug: Normal registration
- 13 - 14 Sept: Conference

 Topics
- Smart energy system analyses, tools and methodologies
- Smart energy infrastructure and storage options
- Integrated energy systems and smart grids
- Institutional and organisational change for smart energy systems and radical technological change
- Energy savings, in the electricity sector, in buildings and transport as well as within industry
- 4th generation district heating concepts, future district heating production and systems
- Electrification of transport, heating and industry
- The production, technologies for and use of electrofuels in future energy systems
- Planning and organisational challenges for smart energy systems and district heating
- Geographical information systems (GIS) for energy systems, heat planning and district heating
- Components and systems for district heating, energy efficiency, electrification and electrofuels
- Renewable energy sources and waste heat sources for district heating

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Aim and Organisers
The aim of the conference is to establish a venue for presenting and discussing scientific findings and industrial experiences related to the subject of Smart Energy Systems based on renewable energy, 4th Generation District Heating Technologies and Systems (4GDH), electrification of heating and transport sectors, electrofuels and energy efficiency. This 8th conference in the series cements it as a main venue for presentations and fruitful debates on subjects that are pertinent to the development and implementation of smart energy systems to fulfill national and international objectives. The conference is organised by Aalborg University and Energy Cluster Denmark.

Format
Again in 2022, we look forward to welcoming our participants to a hybrid conference with the possibility to attend either online or in person – this time in Aalborg. In Aalborg, you can attend the conference sessions in person, while the online conference platform enables you to attend the conference virtually. Via the platform you will have access to watch all recorded presentations; interact in writing with the presenters and nominate candidates for the Best Presentation Award. The online conference platform will be open both before and after the conference in Aalborg.

Conference Chairs
Prof. Henrik Lund, Aalborg University
Prof. Brian Vad Mathiesen, Aalborg University
Prof. Poul Alberg Østergaard, Aalborg University
Hans Jørgen Brodersen, Senior Project Manager, Energy Cluster Denmark

International Scientific Committee
Prof. Anton Ianakiev, Nottingham Trent University, GB
Prof. Bent Ole G. Mortensen, University of Southern Denmark
Prof. Bernd Möller, University of Flensburg, DE
Prof. Christian Breyer, Lappeenranta University of Technology, FI
Prof. Dagnija Blumberga, Riga Technical University, LV
Prof. Erik Ahlgren, Chalmers University of Technology, SE
Prof. Ernst Worrell, Utrecht University, NL
Prof. Ingo Weidlich, HafenCity University, DE
Prof. Leif Gustavsson, Linnaeus University, SE
Prof. Marie Münster, Technical University of Denmark, DK
Prof. Mark Z. Jacobson, Stanford University, US
Prof. Martin Greiner, Aarhus University, DK
Prof. Neven Duić, University of Zagreb, HR
Prof. Richard van Leeuwen, Saxion University, NL
Prof. Stefan Holler, HAWK, DE
Prof. Sven Werner, Halmstad University, SE
Prof. Thomas Brown, TU Berlin, DE
Prof. Xiliang Zhang, Tsinghua University, CN
Dr. Hanne L. Raadal, NORSUS, NO
Dr. Hironao Matsubara, ISEP, JP
Dr. Matteo Giacomo Prina, EURAC Research, IT
Dr. Ralf-Roman Schmidt, Austrian Institute of Technology, AT
Dr. Robin Wiltshire, Building Research Establishment, GB

International Industrial Committee
Anders Bavnhej Hansen, Chief Engineer at Energinet.dk, DK
Anders Dyrelund, Senior Market Manager at Rambøll, DK
Anders N. Andersen, Head of Dept. at EMD International, DK
Dietrich Schmidt, Head of Department at Fraunhofer, DE
Dirk Vanhoudt, Senior Researcher at VITO, BE
Fabian Levihn, Head of R&D at Stockholm Exergi, SE
Gareth Jones, Managing Director at Fairheat, GB
Jan-Eric Thonsen, Manager DH Application Centre, Danfoss, DK
Jesper Møller Larsen, Head of heat utility Aalborg Forsyning, DK
John Bøgild Hansen, Senior Advisor at Haldor Topsoe, DK
Morten Aalborg, CEO at Viborg Fjernvarme, DK
Peter Jorsal, Product and Academy Manager at LOGSTOR, DK
Steen Schelle Jensen, Head of Business Development at Kamsstrup, DK
Ulrik Stridbæk, Vice President at Ørsted, DK

Submission Procedure
Both scientific and industrial contributions to the conference are most welcome.

To attend the conference as a presenter, you need to submit both an abstract and a recorded presentation. The abstract must be submitted by 28 March 2022. The recorded presentation must be prepared in the summer of 2022. Once your abstract is accepted for presentation, you will receive more information and a guideline to the recording of your presentation. Abstracts can be submitted via [www.smartenergysystems.eu](http://www.smartenergysystems.eu) from 15 December 2021 to 28 March 2022.

Submitted abstracts will be reviewed by a scientific and an industrial committee. Authors of approved abstracts may be invited to submit papers to special issues of Energy, Smart Energy, IJSEPM and Energies. Abstracts may be presented at the conference without uploading a full paper, as this is not a requirement.

Best Presentation Awards will be given to a selected number of presenters at the conference.

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