

# KEY NOTE ABSTRACT

## SMART HEATING AND SMART ENERGY SYSTEMS

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### Abstract

In recent years, the terms “Smart Energy” and “Smart Energy Systems” have been used to express an approach that reaches broader than the term “Smart grid”. Where Smart Grids focus primarily on the electricity sector, Smart Energy Systems take an integrated, holistic focus on the inclusion of more sectors (electricity, heating, cooling, industry, buildings and transportation) and allows for the identification of more achievable and affordable solutions to the transformation into future renewable and sustainable energy solutions.

This presentation addresses smart and efficient solutions for the future heating of buildings. The design of smart heating solutions is essential for the implementation of future sustainable energy systems for two reasons: First, savings in heat demands and heating infrastructures in the form of district heating have an important role to play in the task of increasing energy efficiency and thus making scarce resources meet future demands. And next, the heating sector carry one of the most important and least cost options of integrating fluctuating renewable energy sources into the overall system. To enable this, a holistic smart energy system must coordinate between a number of smart grid infrastructures for the different sectors in the energy system, which includes electricity grids, district heating and cooling grids, gas grids and different fuel infrastructures.

### Short Curriculum Vitae

Henrik Lund (born 2 July 1960) is a Danish engineer (M.Sc.Eng.1985) and Professor in Energy Planning at Aalborg University in Denmark. He holds a Ph.D. in Implementaion of Sustainable

Energy Systems (1990), and a Dr.Techn. in Choice Awareness and Renewable Energy Systems (2009).

Henrik Lund is listed among ISI Highly Cited researchers ranking him among the top 1% researchers in the world within engineering.

Henrik Lund is Editor-in-Chief of Elsevier's high-impact journal Energy, and is the author of more than 300 books and articles including the book "Renewable Energy Systems". He is the architect behind the advanced energy system analysis software EnergyPLAN, which is a freeware used worldwide that have form the basis of more than 100 peer reviewed journal papers around the world.