



1st Nordic Conference on
Zero Emission and Plus Energy Buildings
 Towards carbon neutral built environments

November 6
 registration starts at 08:00

	Auditorium Cosmos 2	Auditorium Cosmos 1	Auditorium Cosmos 3ab	Auditorium Cosmos 3cd
09:00	Opening Keynote 1			
10:15	Break	Break	Break	Break
10:45	Lessons learnt from design and use of ZEB+	Policy and business models	Indoor Environment	Scenarios and potential studies
12:00	Lunch and excursion	Lunch and excursion	Lunch and excursion	Lunch and excursion
14:00	Lessons learnt from design and use of ZEB+	LCA and carbon footprint	Energy Flexibility	Energy performance simulation
15:00	Break	Break	Break	Break
15:30	Lessons learnt from design and use of ZEB+	LCA and carbon footprint	Energy Flexibility	Methods and tools for design
16:30	Break	Break	Break	Break
17:00	Keynote 2			

20:00 Conference dinner

Opening Session

Day: Wednesday Nov 6

Time: 09:00-10:15

Auditorium: Cosmos 2

Chair: I. Andresen

09.00 Opening address, Inger Andresen, Norwegian University of Science and Technology (NTNU)

09:30 Keynote: The development and management of carbon neutral buildings: Challenges and Opportunities
Anna Denell, Sustainability Director of Vasakronan, Sweden

Session 1: Lessons learnt from design and use of ZEB+

Day: Wednesday Nov 6

Time: 10:45-11:45

Auditorium: Cosmos 2

Chair: A.G. Hestnes

10.45 New town hall in Freiburg (D): concept, performance, and energy balance after the first year of monitoring of a large net plus-energy building
Nicolas Réhault, Fraunhofer Institute for Solar Energy Systems

11:00 The first 'NollCO2' building in Sweden
Alexander Landborn, LINK Arkitektur

11.15 Powerhouse Telemark: A plus energy building with a low exergy heating and cooling system
Christofer Tapper, Skanska Norway

11.30 The Norwegian ZEB definition and lessons learnt from nine pilot building projects
Inger Andresen, NTNU

Session 2: Policy and business models

Day: Wednesday Nov 6

Time: 10:45-11:45

Auditorium: Cosmos 1

Chair: A.K. Kvellheim

10.45 Zero energy at the neighbourhood scale: Regulatory challenges regarding billing practices in Norway
Magnus Askeland, SINTEF Energy Research AS

11:00 The influence of emerging technologies acceptance in residential built stock on electric energy cost and grid load
Ruslan Zhuravchak, NTNU

11.15 Towards low carbon economy - green bond and asset development
Suvi Nenonen, Tampere University

11.30 Business models for nZEB renovation of small wooden buildings
Ann Kristin Kvellheim, SINTEF Community

Session 3: Indoor Environment

Day: Wednesday Nov 6

Time: 10:45-11:45

Auditorium: Cosmos 3ab

Chair: H.M. Mathisen

10.45 Energy and indoor climate measurements in Denmark's first energy neutral block of flats
Kim B. Wittchen, Aalborg University

11:00 Users' satisfaction of indoor environmental quality conditions in ZEB+ at high latitudes
Claudia Moscoso, NTNU

11.15 Overheating and daylighting evaluation for free-running classroom designs
Martin Kiil, Tallinn University of Technology

11.30 Activity Based Working Environment – Towards Sustainable Space Use
Satu Kankaala, Aalto University Campus & Real Estate

Session 4: Scenarios and potential studies

Day: Wednesday Nov 6

Time: 10:45-11:45

Auditorium: Cosmos 3cd

Chair: R. Holopainen

10.45 Opportunities for Local Energy Supply in Norway: A Case Study of a University Campus Site
Stian Backe, NTNU

11:00 Future energy pathways for a university campus considering possibilities for energy efficiency improvements
Natasa Nord, NTNU

11.15 Estimating the aggregated energy savings from large-scale introduction of zero emission buildings in the Norwegian Building Stock, Nina Holck Sandberg, NTNU

11.30 Use of GIS for energy modelling of Trondheims building stock
Raquel Alonso Pedrero, NTNU

Session 5: Lessons learnt from design and use of ZEB+

Day: Wednesday Nov 6

Time: 14:00-15:00

Auditorium: Cosmos 2

Chair: T.H. Dokka

14.00 Kilden Barnehage

Ingunn Jensen, LINK Arkitektur

14:15 OBOS climate neutral "Start learning" kindergarten. An assessment of greenhouse gas emissions

Andreas Eggertsen Teder, White Arkitekter

14.30 Hoppet - the first fossil free preschool

Maria Perzon, Bengt Dahlgren AB

14.45 Lia Kindergarten – A plus energy building: First year experience with regard to energy use

Tor Helge Dokka, Skanska Norway

Session 6: LCA and carbon footprint

Day: Wednesday Nov 6

Time: 14:00-15:00

Auditorium: Cosmos 1

Chair: H. Birgisdottir

14.00 Assessing building's absolute environmental sustainability performance using LCA focusing on climate changes impacts

Camilla Andersen, Danish Building Research Institute, Aalborg University

14:15 Life cycle assessment for Zero Emission Buildings – A chronology of the development of a visual, dynamic and integrated approach

Aoife H. Wiberg, NTNU

14.30 Combination of Dynamic Material Flow and Life Cycle Analysis to assess Zero Emission Neighbourhoods

Carine Lausset, NTNU

14.45 A parametric study of the energy performance and carbon footprint of super-insulation in roof terrace constructions

Christofer Skaar, SINTEF Community

Session 7: Energy Flexibility

Day: Wednesday Nov 6

Time: 14:00-15:00

Auditorium: Cosmos 3ab

Chair: I. Sartori

14.00 Keynote: Energy flexibility in buildings – what is the potential and how can it be realized?

Igor Sartori, SINTEF Community

14:15 The FlexNet Simulator

Bernt Bremdal, University of Tromsø

14.30 Energy Flexibility For Institutional and Commercial Buildings with Integrated Solar Systems: Case Study Analysis

Fatima Amara, Concordia University

14.45 Analysing electricity demand in neighbourhoods with electricity generation from solar power systems: A case study of a large housing cooperative in Norway

Karen B. Lindberg, SINTEF Community

Session 8: Energy and environment performance simulation

Day: Wednesday Nov 6

Time: 14:00-15:00

Auditorium: Cosmos 3cd

Chair: V. Novakovic

14.00 Simulation vs Reality – a comparison of energy need of building models representing the Norwegian residential building Stock

Nina Holck Sandberg, NTNU

14:15 Energy performance evaluation of a nearly Zero Energy Building and the reasons of disparity between the expected and actual building operation

Hicham Johra, Aalborg University

14.30 Microclimate analysis of a university campus in Norway

Johannes Brozovsky, NTNU

14.45 The Thermal Performance Prospects of Courtyards in Cold Conditions

Omar Al-hafith, University of Plymouth

Session 9: Lessons learnt from design and use of ZEB+

Day: Wednesday Nov 6

Time: 15:30-16:30

Auditorium: Cosmos 2

Chair: T. Kleiven

- 15.30 Horten videregående skole**
Grethe Brox-Nilsen, LINK Arkitektur
- 15:45 Horten VGS – Et foregangsbygg innen helhetlig miljøprosjektering**
Arnkell Petersen, Erichsen & Horgen AS
- 16.00 Heimdal videregående skole. Virkelig drift: Hva er beregnet. Hva måler vi?**
Tore Wigenstad, Skanska Norge
- 16.15 Heimdal videregående skole. Dokumentasjon av ZEB-O**
Tore Wigenstad, Skanska Norge

Session 10: LCA and carbon footprint

Day: Wednesday Nov 6

Time: 15:30-16:30

Auditorium: Cosmos 1

Chair: H. Brattebø

- 15.30 Life cycle study of an office building with site specific data**
Peter Ylmén, RISE
- 15:45 LCA for Zero-Emission Neighbourhood: Ydalir, a Norwegian case study**
Kristi Marie Lund, NTNU
- 16.00 OmrådeLCA, assessment of area development: Case study of the Zero-Emission Neighbourhood Ydalir**
Vidar Yttersian, NTNU / Asplan Viak
- 16.15 Comparison of different measures for reducing the carbon footprint of the building sector – a rental house case study**
Riikka Holopainen, Ecolabelling Finland

Session 11: Energy Flexibility

Day: Wednesday Nov 6

Time: 15:30-16:30

Auditorium: Cosmos 3ab

Chair: L. Georges

- 15.30 Validation of a Flexibility Assessment Methodology for Demand Response in Buildings**
Sarah O'Connell, National University of Ireland, Galway
- 15:45 Using residential buildings to manage flexibility in the district heating network: perspectives and future visions from sector professionals**
Kirsten Gram-Hanssen, Aalborg University
- 16.00 User Engagement With Smart Home Technology For Enabling Building Energy Flexibility in a District Heating System**
Simon P. A. Kondrup Larsen, Aalborg University
- 16.15 Local energy markets as a solution for increased energy efficiency and flexibility**
Bernt Bremdal, University of Tromsø

Session 12: Methods and tools for performance prediction

Day: Wednesday Nov 6

Time: 15:30-16:30

Auditorium: Cosmos 3cd

Chair: M. Haase

- 15.30 Exploring the tools and methods to evaluate influence of social groups on individual occupant behavior with impact on energy use**, Masab K. Annaqeeb, NTNU
- 15:45 Process of Energy Master Planning of Resilient Communities for comfort and energy solutions in districts**
Matthias Haase, SINTEF Community
- 16.00 SIMIEN 7.0 – A revised software package suited for design of plus energy and low emission buildings**
Tor Helge Dokka, Programbyggerne
- 16.15 Development of LCAByg for the Danish building sector – drivers for the development and application of the tool**
Harpa Birgisdottir, Aalborg University

Keynote Session

Day: Wednesday Nov 6

Time: 17:00-18:00

Auditorium: Cosmos 2

Chair: A.G. Hestnes

- 17.00 Keynote: Is Heaven a Place on Earth?**
Kjetil Thorsen, Partner of Snøhetta, Norway

November 7
registration starts at 08:00

Auditorium
Cosmos 2

Auditorium
Cosmos 1

Auditorium
Cosmos 3ab

Auditorium
Cosmos 3cd

09:00

Keynote 3
Keynote 4

10:15

Break

Break

Break

Break

10:45

Lessons learnt
from design
and use of
ZEB+

Energy supply
systems

Performance
criteria and
certification

Heating,
cooling and
ventilation

12:00

Lunch and
excursion

Lunch and
excursion

Lunch and
excursion

Lunch and
excursion

14:00

Lessons learnt
from design
and use of
ZEB+

Energy supply
systems

Building
Physics

Planning
strategies

15:00

Break

Break

Break

Break

15:30

Planning and
procurement
strategies

Existing
buildings:
renovation and
management

Indoor
Environment

Carbon
Footprint and
the design
process

16:30

Break

Break

Break

Break

17:00

Keynote 5
Closing

Keynote Session

Day: Wednesday Nov 7

Time: 09:00-10:15

Auditorium: Cosmos 2

Chair: A. Gustavsen

09.00 Keynote: The world needs a new approach. Buildings as key players in the transformation to a low carbon society

Harald Schnur, Division Director, Siemens Smart Infrastructure, Finland and Baltic countries

09:45 Keynote: How to deal with the users? Consumer roles and everyday practices in Zero Carbon built environments

Kirsten Gram-Hanssen, Professor at Aalborg University, Denmark

Session 13: Lessons learnt from design and use of ZEB+

Day: Thursday Nov 7

Time: 10:45-11:45

Auditorium: Cosmos 2

Chair: R. Woods

10.45 Login Vagle - Commercial implementation of optimized power control based on forecasts for an interrelated electrical and thermal system at REMA Distribution Central in Rogaland, Norway.

Håkon Person, Multiconsult

11:00 The design process for achievement of an office living laboratory with a ZEB standard

Berit Time, SINTEF Community

11.15 Living labs in a zero emission neighbourhood context

Ruth Woods, NTNU

11.30 Reanalysis of occupant experiment in ZEB Living Lab

Kristian Skeie, NTNU

Session 14: Energy supply systems

Day: Thursday Nov 7

Time: 10:45-11:45

Auditorium: Cosmos 1

Chair: N. Nord

10.45 Parametric study for the long term energetic performance of geothermal energy piles

Andrea Ferrantelli, Tallin University of Technology

11:00 Geo-Solar District Heating – Lessons learnt from a not realized project

Dietrich Schmidt, Fraunhofer IEE

11.15 POLYSOL – Thermal and electrical performance assessment of a cost-effective polygeneration system

Szabolcs Varga, INEGI

11.30 SPARCs: Sustainable energy Positive & zero cARbon Communities (H2020 Project) & IEA PED Annex

Francesco Reda, VTT

Session 15: Performance prediction and certification

Day: Thursday Nov 7

Time: 10:45-11:45

Auditorium: Cosmos 3ab

Chair: T. Kristjansdottir

10.45 SGBC NollCO2 certification

Pia Stoll, Sweden Green Building Council, Hans Wallström, Skanska, Filip Elland, Castellum, and Mattias Tas, Lidl

11:00 SGBC NollCO2 certification (continued)

Pia Stoll, Sweden Green Building Council, Hans Wallström, Skanska, Filip Elland, Castellum, and Mattias Tas, Lidl

11.15 Towards climate neutral office buildings. Assessment of an office building in Gothenburg

Andreas Eggertsen Teder, White Arkitekter

11.30 A Norwegian zero emission neighbourhood (ZEN) definition and a ZEN key performance indicator (KPI) toolkit

Marianne R.K. Wiik, SINTEF Community

Session 16: Heating, cooling, ventilation, and lighting

Day: Thursday Nov 7

Time: 10:45-11:45

Auditorium: Cosmos 3cd

Chair: M. Berner

10.45 Case study of personal heaters in a Plus energy building – Simulations of potential energy savings and results from a field test

Niels Lassen, Skanska Teknikk / NTNU

11:00 Latent heat storage for centralized heating system in a ZEB living laboratory: integration and design

Alexis Sevault, SINTEF Energy AS

11.15 Monitoring of Passive House and Near Zero Energy Buildings with Advanced Thermal Energy Systems Exchanging Excess Heat with Adjacent Buildings, Jørn Stene, COWI

11.30 Influence of smart lighting control on the lifetime of high power LED

luminaires, Janne Askola, Aalto University

Session 17: Lessons learnt from design and use of ZEB+

Day: Thursday Nov 7

Time: 14:00-15:00

Auditorium: Cosmos 2

Chair: M. Berge

14.00 Collaboration for Climate Action: Canada Sweden. C40 Reinventing Montréal, a circular community focused on climate and social resilience.

Marie-France Stendahl, White Arkitekter AB

14:15 Lessons learnt from the design and construction strategies of two Norwegian low emission construction sites

Selamawit Mamo Fufa, SINTEF Community

14.30 Nytt administrasjons- og velferdsbygg for Ringvegen borettslag - helhetlig energikonsept med lokal energiproduksjon.

Alise Plavina, Pir2 Arkitekter

14.45 Familieboliger Kringsjø studentby. Massivtre, passivhus, ulike solcelleanlegg, VP og geotermiske brønner. Fase II i utvikling av et ZEN-område

Eivind Selvig, Civitas

Session 18: Energy supply systems

Day: Thursday Nov 7

Time: 14:00-15:00

Auditorium: Cosmos 1

Chair: F. Reda

14.00 Wood burning habits and its effect on the electrical energy demand of a retrofitted Norwegian detached house

Laurina C. Felius, NTNU

14:15 Efficiency of BIPV system – Field study in Norwegian climate

Lars Gullbrekken, SINTEF Community

14.30 Energy analysis and energy planning for kindergartens based on data analysis

Yiyu Ding, NTNU

14.45 Innovativ energiforsyning for Landbrukskvartalet

Hanne Bø Andreassen, Erichsen&Horgen AS

Session 19: Building physics

Day: Thursday Nov 7

Time: 14:00-15:00

Auditorium: Cosmos 3ab

Chair: R. Peuhkuri

14.00 Webtool for quantitative sustainability evaluation of hydro-thermally optimized insulation solutions

Signe Walther, Technical University Denmark

14:15 Defrosting and Frost Protection Measurements of Heat Recovery in Cold Climate

Åsa Wahlström, Lund University

14.30 Thermal conductivity of high-performance insulation - a laboratory study. Realistic design values for use in energy-efficient buildings.

Malin Sletnes, SINTEF Community

14.45 How to renovate masonry walls in historic buildings in a moisture safe way

Ruut Peuhkuri, Aalborg University

Session 20: Planning strategies

Day: Thursday Nov 7

Time: 14:00-15:00

Auditorium: Cosmos 3bc

Chair: I. Kildsgaard

14.00 Co-Creation of Positive Energy Blocks

Dirk Ahlers, NTNU

14:15 Designing a ZEN Campus: An exploration of ambition levels and system boundaries

Christofer Skaar, SINTEF Community

14.30 Perimeter Blocks in Nordic Towns - how latitude affect daylighting

Bengt Sundborg, NTNU

14.45 Assessing cities: Applying GIS-based methods for mapping cross-scale spatial indicators

Lillian Rokseth, NTNU

Session 21: Planning, innovation and procurement strategies

Day: Thursday Nov 7

Time: 15:30-16:30

Auditorium: Cosmos 2

Chair: D. F

15.30 Innovative public procurement (IPP) – Implications and potential for zero-emission neighborhood (ZEN) projects?

Hasan Hamdan, NTNU

15:45 Heimdal videregående skole. Bruk av EPC (Energy Performance Contracting) for økt måloppnåelse

Torger Mjønes, Trøndelag Fylkeskommune

16.00 Towards Plus Energy Districts

Volker Schaffler, Austrian Ministry for Transport, Innovation and Technology

16.15 Enova: Fostering Innovation in Norway

Guro Watten Furu, Enova

Session 22: Existing buildings – renovation and management

Day: Thursday Nov 7

Time: 15:30-16:30

Auditorium: Cosmos 1

Chair: S. Geving

15.30 Review of HVAC strategies for energy renovation of detached houses towards NZEB in cold climates

Vegard Heide, NTNU

15:45 Process-related risks in refurbishment of dwellings using prefabricated wall elements with integrated PV and ventilation ducts. Kari Thunshelle, SINTEF Community

16.00 Refurbishment of historic buildings at a district scale: Enhancement of cultural value and emission reduction potential

Arian Loli, NTNU

16.15 Defining a niche for Facilities Management in Smart Cities

Carmel Lindquist, NTNU

Session 23: Indoor Environment

Day: Thursday Nov 7

Time: 15:30-16:30

Auditorium: Cosmos 3ab

Chair: T. Lexow

15.30 Overheating in Dutch Net-Zero Energy Buildings: results from a large demonstrator

Hussain Kazmi, KU Leuven

15:45 Relation between daylight availability and electric lighting in a single-family house

Gabriele Lobaccaro, NTNU

16.00 On the relation of thermal comfort practice and the energy performance gap

Runa T. Hellwig, Aalborg University

16.15 Energy efficiency of strategies to enable temperature zoning during winter in highly-insulated residential buildings equipped with balanced mechanical ventilation. Laurent Georges, NTNU

Session 24: Carbon footprint in the design process

Day: Thursday Nov 7

Time: 15:30-16:30

Auditorium: Cosmos 3bc

Chair: C. Skaar

15.30 A tool for the parametric assessment of operational energy use and embodied GHG emissions in a single-family house concept study. Marianne R. K. Wiik, SINTEF Community

15:45 Bærekraftig materialbruk

Bård S. Solem, Eggen arkitekter

16.00 The role of Environmental Product Declarations (EPD) in the design process ZEB+ buildings

Christofer Skaar, EPD Norway

16.15 Innovative procurement strategies for materials and components for low carbon buildings

Closing Session

Day: Wednesday Nov 7

Time: 17:00-18:00

Auditorium: Cosmos 2

Chair: I. Andresen

17.00 Keynote: Is this enough to save the future? The added value of buildings with integrated sustainability concepts. Matthias Schuler, founder of Transsolar KlimaEngineering, Germany

17:45 Closing address, Inger Andresen, NTNU and Ivana Kildsgaard, Tengbom

Excursions

During the lunch breaks on November 6 and 7, we will arrange visits to the nearby plus-energy building called Powerhouse Brattørkaia. This is included in the standard conference fee.

On November 8, there will be an option to attend post-conference excursions from 9-12 in the morning. More info about this will be given on the conference web-site.

