



Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

Load Matching and Grid Interaction of Net Zero Energy Buildings

Voss, Karsten; Candanedo, José A.; Geier, Sonja; Gonzalves, Helder; Hall, Monika; Heiselberg, Per; Karlsson, Björn; Musall, Eike; Napolitano, Assunta; Sartori, Igor; Torcellini, Paul; Widén, Joakim

Published in:
EuroSun 2010

Publication date:
2010

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Voss, K., Candanedo, J. A., Geier, S., Gonzalves, H., Hall, M., Heiselberg, P., Karlsson, B., Musall, E., Napolitano, A., Sartori, I., Torcellini, P., & Widén, J. (2010). Load Matching and Grid Interaction of Net Zero Energy Buildings. In *EuroSun 2010: Book of Abstracts* (pp. 28). EuroSun 2010.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- ? Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- ? You may not further distribute the material or use it for any profit-making activity or commercial gain
- ? You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Load Matching and Grid Interaction of Net Zero Energy Buildings

**Mr Karsten Voss¹ Mr José A. Candanedo² Ms Sonja Geier³ Mr Helder Gonçalves⁴
Ms Monika Hall⁵ Mr Per Heiselberg⁶ Mr Björn Karlsson⁷ Mr Eike Musall⁸
Mr Assunta Napolitano⁹ Mr Igor Sartori¹⁰ Mr Paul Torcellini¹¹ Mr Joakim Widén¹²**

¹University Wuppertal, Haspeler Strasse 27, 42285 Wuppertal, Germany

²Concordia University, -, -, Canada

³AEE INTEC, -, -, Austria

⁴LNEG, -, -, Portugal

⁵Applied University Northwest Switzerland, -, -, Switzerland

⁶Aalborg University, -, -, Denmark

⁷Mälardalen University, -, -, Sweden

⁸University Wuppertal, Haspeler Str. 27, 42285 Wuppertal, Germany

⁹EURAC, -, -, Italy

¹⁰SINTEF, -, -, Norway

¹¹NREL, -, -, United States

¹²Uppsala University, -, -, Sweden

Net zero energy use. The goal sounds simple and is presented excessively in variations all over the world. Major advantage of the Net Zero Energy Building (Net ZEB) concept is – on the first look – the absence of energy performance indicators such as kWh/m² with the need to set agreed energy limits and reference areas. This simplicity is a major background for the high political and public acceptance of the wording. In general a conventional building might be called Net ZEB as long as the annual energy needs or the associated carbon emissions are balanced by credits from excess energy feed into the grid. Within the IEA activity “Towards Net Zero Energy Buildings” requirements and performance criteria adding to the annual balance have been discussed and analyzed. A major issue was the discussion of the various forms of temporal mismatch between energy needs and energy generation as well as the mismatch between the type of energy imported to the site (e.g. natural gas + electricity) compared to the type of energy exported to grids (e.g. electricity only). The paper reports on the analysis of example buildings concerning the various levels of mismatch and concludes with a proposal, how to integrate the mismatch aspect as criteria within a harmonized Net ZEB definition framework and methodology.