

2013 HIGHLIGHTS

SHC Task 40 / ECBCS Annex 52 Towards Net-Zero Energy Solar Buildings

THE ISSUE

Energy use in buildings worldwide accounts for over 40% of primary energy use and 24% of greenhouse gas emissions. Several International Energy Agency (IEA) countries have adopted a vision of so-called 'net zero energy buildings' as a long-term goal of their energy policies. However, what is missing is a clear definition and international agreement on the measures of building performance that could inform 'zero energy' building policies, programs and industry adoption around the world.

OUR WORK

The objective of the Task was to study current net-zero, near net-zero and very low energy buildings and to develop a common understanding, a harmonized international definitions framework, tools, innovative solutions and industry guidelines. A primary means of achieving this objective was to document and propose practical NetZEB demo projects, with convincing architectural quality. These projects aimed to equalize their small annual energy needs, cost-effectively, through building integrated heating/ cooling systems, power generation and interactions with utilities. These examples and the supporting sourcebook, guidelines and tools are viewed as keys to industry adoption. The Task built upon recent industry experiences with net-zero and low energy solar buildings and the most recent developments in whole building integrated design and operation. This joint international collaborative activity addressed concerns of comparability of performance calculations between building types and communities for different climates in the participating countries. The goal was solution sets that are attractive for broad industry adoption.

PARTICIPATING COUNTRIES

Australia
Austria
Belgium
Canada
Denmark
Finland
France
Germany
Italy
South Korea
New Zealand
Norway
Portugal
Singapore
Spain
Sweden
Switzerland
United Kingdom
United States

Task 40 was a five-year collaborative project with the IEA ECBCS Programme and was completed in September 2013.

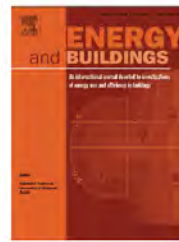
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KEY RESULTS OF 2013

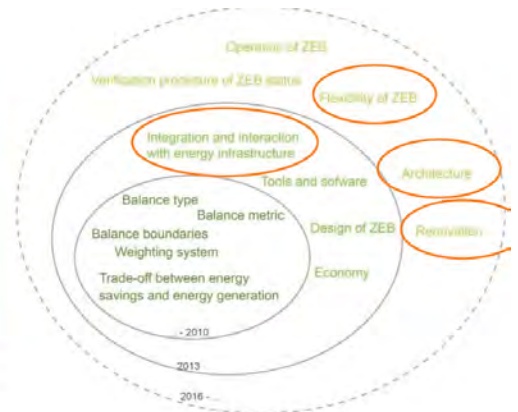
Net-ZEB Definitions Framework, Grid Interaction and Implications

Internationally agreed understanding on NZEBs based on a common methodology

A highlight of 2013 was the completion of two Technical Reports 1) *Analysis of Load Match and Grid Interaction Indicators in Net-Zero Energy Buildings with High Resolution Data* and 2) *Management and Verification Protocol for Net-Zero Energy Buildings*. These reports will be available for download from the Task webpage in 2014.



Shift of the focus over time



NetZEB Design Processes and Tools

Identify and refine design approaches and tools to support industry adoption

A key highlight was winding-down the activities of this Subtask and finalizing the draft of Volume 2 of the source book, *Modeling, Design, and Optimization of Net-Zero Energy Buildings*, that will be published by Ernst & Sohn publishers (a Wiley & Sons company).

Modeling, Design, and Optimization of Net-Zero Energy Buildings



Nearly 400 pages pdf file submitted to Wiley Sep. 9, 2013



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NetZEB Solution Sets

(design, engineering and technologies)

Develop and test innovative, whole building net-zero solution sets for different climates with exemplary architecture and technologies that would be the basis for wide industry uptake

A key highlight was the 3rd PhD Summer Training Workshop on August 25, 2013 in Chambéry, France. This Workshop was coordinated in conjunction with the 13th International Conference of the International Buildings Simulation Conference. Another highlight was advancing the work on Volume 3 of the source book entitled, *Solution Sets for NZEBs: Feedback from 30 Case Studies Worldwide*.

3rd PhD Workshop



13th International Conference of the International Building Performance Simulation Association.



Building Simulation Conference

Chambéry, 25-28 August 2013



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Simergy Training Workshop
Python for Building Modellers
IEA/EBCS Annex 31 Workshop
Sophia Project Workshop
Task 40 Annex 52 Workshop

**Towards Net Zero Energy Solar Buildings
Experience and Feedback from the
IEA SHC**

Task 40 / ECBCS Annex 52

When? Sunday, August 25th from 9am to 4pm
Where? Centre des congrès, Rue Jean Monard, Aix les Bains

