Towards Net Zero Energy Solar Buildings

IEA SHC /ECBCS Project Factsheet

Task 40 / Annex 52

The Solar estate `*Solarsiedlung Freiburg am Schlierberg*`, Freiberg, Germany, *source*: Büro Disch.

The *EnerPos* Building, Université de la Réunion, île de la Réunion, France.

The *EcoTerra*™ house by Les Maisons Alouette, Eastman, Quebec, Canada.

CONTEXT: Energy Use in buildings worldwide accounts for over 40% of primary energy use and 24% of greenhouse gas emissions. Energy use and emissions include both direct, on site use of fossil-fuels and indirect use from electricity, district heating / cooling systems and embodied energy in construction materials. Several International Energy Agency (IEA) countries have adopted a vision of so-called 'net zero energy buildings' as 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, programmes and industry adoption around the world.

OBJECTIVES: The objectives of the joint Task/Annex "Towards Net Zero Energy Solar Buildings" is to study current net-zero, near net-zero and very low energy buildings and to develop a common understanding of a harmonised international definitions framework, tools, innovative solutions and industry guidelines. To achieve this objective the Task/Annex will document and propose practical NZEB demonstration projects, with convincing architectural quality.

SCOPE: The Task/Annex will cover major building types (both residential and non-residential), new and existing, for the climatic zones represented by the participating countries. Individual buildings, clusters of buildings and small settlements will be considered.

AIM: To support the conversion of the NZEB concept from an idea into practical reality in the marketplace. Demonstrating and documenting real projects will also lower industry resistance to adoption of these concepts.

STATUS: On-going to September 2013.

RESEARCH STREAMS

Subtask A: Definitions & Implications

- Activity A1: NZEB definitions framework
- Activity A2: Monitoring, verification and compliance guide
- Activity A3: Grid interactions

Subtask B: Design Processus & Tools

- Activity B1: Processes and tools
- Activity B2: Pre-concept design, feasibility tools
- Activity B3: Tools guide and worked examples

Subtask C: Solution Sets (Design, Engineering, Technologies)

- Activity C1: NZEB STC Database:
- Activity C2: Analysis Matrix
- Activity C3: Research analysis of themes undertaken
- Activity C4: STC Source Book

Subtask D: Dissemination & Outreach

- Activity D1: NZEB web page
- Activity D2: Reports production, Source book(s): Vols. 1, 2 and 3
- Activity D3: Education network for PhD students and summer schools
- Activity D4: Outreach (conferences, seminars, workshops etc.)

http://www.iea-shc.org/task40/

NET ZEB

Task 40 / Annex 52

PRODUCTS

- A source book, targeting specific groups such as national policy makers, Industry and industry associations, utilities, academic and funding programme managers
- An international education network
- Expansion of the US DOE High Performance Buildings Databases with `as-designed`and `as-achieved`
- Knowledge transfer portal / web-site

Solution Sets

SUBTASK (ST) LEADERS

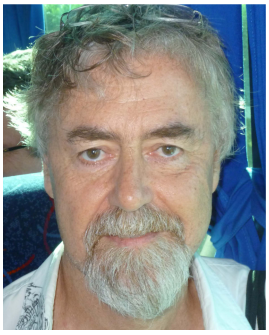
STA
Karsten Voss
Bergische Universität Wuppertal
Haspeler Straße 27
42285 Wuppertal, Germany
Phone: 0049 (0)202 439 4094
Fax: 0049 (0)202 439 4296
E-Mail: kvoss@uni-wuppertal.de
Web: www.btga.uni-wuppertal.de

STA
Assunta Napolitano
EURAC Research
Institute for Renewable Energy
Viale Druso n°1, 39100 Bozen/ Bolzano ,Italy
Phone: +39 0471 055 651
Fax +39 0471 055 699
E-mail: assun-ta.napolitano@eurac.edu
Web: www.eurac.edu

STB
Andreas Athienitis
Prof. & Concordia
Research Chair Tier I
Dept. of Building, Civil and Env. Eng.
Concordia University
1455 Maisonneuve W.
Montreal, Québec, Canada, H3G 1M8
Tel. + (1) 514 848-2424 Ext. 8791,
Fax + (1) 514-848-7965
E-mail: aathieni@encs.concordia.ca
Web: www.solarbuildings.ca

STB
Adam Hirsch
National Renewable Energy Laboratory
1617 Cole Blvd.
Golden, Colorado 80401-3305, USA
Phone: + 303-384-7874fax
Fax +: 303-384-7540
E-mail: adam.hirsch@nrel.gov
Web: www.nrel.gov/about/

STC
François Garde
ESIROI-CODE/Labo PIMENT
Université de La Réunion
Campus Université Sud
117 rue Général Ailleret
97430 Le Tampon, Ile de La Réunion
Phone: +262 692 67 20 51
Fax : +262 262 57 95 41
E-mail: garde@univ-reunion.fr
Web: www.univ-reunion.fr/



STC
Michael Donn
Victoria University of Wellington
School of Architecture
PO Box 600, 139 Vivian St.
Wellington, New Zealand
Phone: +64 4 463 6221
Fax: +64 4 463 6204
E-mail: michael.donn@vuw.ac.nz
Web: www.victoria.ac.nz/home/

PARTICIPATING COUNTRIES

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SHC SOLAR HEATING & COOLING PROGRAMME INTERNATIONAL ENERGY AGENCY

SHC Vision
The greater use of solar designs and technologies in the built environment, and for agricultural and industrial process heat.

International Energy Agency
Energy Conservation in Buildings and Community Systems Programme

ECBCS Vision
For near-zero primary energy use and carbon emission solutions to be adopted in buildings and communities, where energy is produced on demand.

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974), with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy Conservation in Buildings and Community Systems Programme has sponsored various research Annexes associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA sponsored research.

OPERATING AGENT

(STD Leader)

Josef Ayoub
CanmetENERGY/Natural Resources Canada
P.O. Box 4800, Varennes, Québec , CANADA J3X 1S6
Phone: + (1) 450-652-1981 / Fax: + (1) 450- 652-5177
E-mail : josef.ayoub@nrcan.gc.ca
Web: www.canmetenergy.nrcan.gc.ca