

2014 HIGHLIGHTS

SHC Task 47 Renovation of Non-Residential Buildings Towards Sustainable Standards

THE ISSUE

The EU Parliament approved in April 2009 a recommendation that member states have to set intermediate goals for existing buildings as a fixed minimum percentage of buildings to be net zero energy by 2015 and 2020.

For the existing non-residential buildings, a dramatic reduction in primary energy consumption is crucial to achieve this goal. A few renovation projects have demonstrated that total primary energy consumption can be drastically reduced together with improvements of the indoor climate. However, most property owners are not even aware that such savings are possible, and they set too conservative energy targets. Buildings renovated to mediocre performance can be a lost opportunity for decades. It is therefore important that building owners are aware of such successes and set ambitious targets.

OUR WORK

The objectives of this Task are to develop a solid knowledge base on how to renovate non-residential buildings towards the NZEB standards in a sustainable and cost efficient way as well as to identify the most important market and policy issues as well as marketing strategies for such renovations.

The Task began by analyzing highly successful renovations and innovative concepts for the most important market segments.

To reach local authorities, companies and planners who need the knowledge on how to achieve market penetration using such solutions, the Task is communicating success stories and planning knowledge with target audiences to support the acceleration of a market break-through of highly effective renovations in non-residential buildings.

PARTICIPATING COUNTRIES

Australia
Austria
Belgium
Denmark
Germany
Italy
Norway

Task Date 2011-2014
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KEY RESULTS OF 2014

Exemplary Renovations

A 50-90% reduction in heat consumption and a 50-70% reduction in the overall energy demand is possible when renovating a building. Twenty exemplary renovation projects described in project brochures demonstrate how this can be achieved. Two of these buildings achieved the plus-energy standard and one of these two received the highest possible BREEAM score “Outstanding – As Built”. All these buildings used commercially available products and systems.

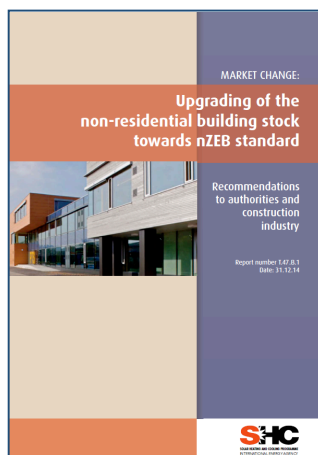
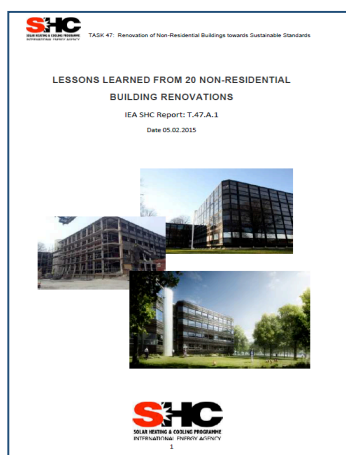
Task experts have worked to identify barriers and drivers for ambitious renovations. The final decision regarding a project’s level of ambition will always be made by the owner of the building, and five principles should be in place for a successful nZEB renovation:

- A holistic understanding of the tenant’s need
- Solutions offering values that completely fulfill the needs
- One or more enthusiastic persons who is committed to the process
- A multi-disciplinary team (including occupants)
- Project support by top management and in line with the company strategy.

The performance of eight buildings was analyzed in terms of energy consumption and thermal comfort achieved using long-term monitoring data in high time resolution. In particular, a comparison was made between the performance before and after the retrofit. These buildings studied show that they achieved their ambitious target values set during the design stage.

The Task work also is addressing indoor comfort and quality of life, with a special focus on school buildings refurbishment. Most schools in Europe are old, outdated and sorely lacking comfort. This discomfort has important consequences on the health of children and teachers but also on the learning and teaching abilities. From one of the exemplary school renovation projects it was documented that pupils showed significant improvements in concentration test scores and health and well-being questionnaires after the upgrade of the ventilation system.

Three technical reports are available from the Task 47 website.



The fourth report regarding “Assessment of Technical Solutions and Operational Management for Retrofit of Non-Residential buildings” will be published during first half of 2015.