

2010 HIGHLIGHTS

SHC Task 41 Solar Energy and Architecture

THE ISSUE

Our vision - and the opportunity - is to make architectural design a driving force for the use of solar energy. Solar energy use can be an important part of the building design and the building's energy balance to a much higher extent than it is today. The development towards zero energy buildings will cause a more frequent use of building integrated solar energy systems. Due to the large size of such systems in relation to the scale of the building envelope, the architectural quality of their integration has a major impact on the final architectural quality of the building. Many solar systems do exist on the market, and with better and better energy performance. But, if they are not designed to be integrated into buildings in an appealing way, probably no building permit will be given, at least not in urban areas. And then – what is the use of a highly efficient collector if it will not be used?

OUR WORK

The main objective of this Task is to help achieve high quality architecture for buildings integrating solar energy systems: on one hand by improving the qualifications of the architects, their communications and interactions with engineers, manufactures and clients; on the other hand by enhancing manufacturers' awareness on building integration issues.

Criteria are defined and guidelines proposed for all the actors in the field; architects, collector and façade/roof manufacturers, tool developers, clients and public bodies (municipalities, city planners). Through various interactions with all these actors, the results of this Task should largely contribute to increasing the architectural quality of the products and of the integrations.

SHC Task 41 is a three-year collaborative project that will be completed in April 2012.

PARTICIPATING COUNTRIES

Australia
Austria
Belgium
Canada
Denmark
France (2009-2010)
Germany
Italy
Norway
Portugal
Republic of Korea
Singapore
Spain
Sweden
Switzerland

Task Date 2009-2012
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KEY RESULTS OF 2010

International Survey on Architects Needs Related to Solar Energy Integration

A survey was conducted to identify barriers, needs and criteria to establish development needs.

The international survey was focused on:

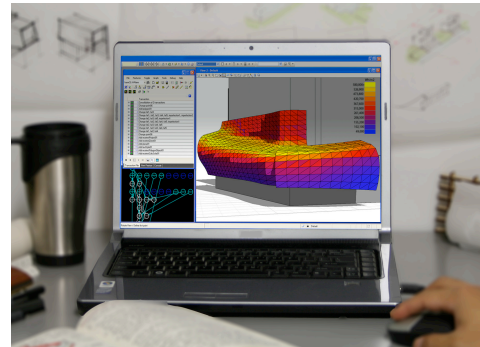
- architects' needs for increased/better use of active solar in their architecture and to help identify barriers, and
- architects' barriers, needs and criteria for tools and methods to support architectural design and integration at the early design stage

Participating countries were Australia, Austria, Belgium, Canada, Denmark, France, Germany, Italy, Norway, Portugal, Spain, South Korea, Sweden and Switzerland. The survey is now closed and two reports are in progress to analyse the results.

Tools for Architects at the Early Design Stage *State-of-the-Art of Digital Tools Used by Architects for Solar Design report is available.*

This report was finalized in 2010 and presents a review of existing digital tools widely used today. The review covers a total of 56 computer programs.

Results show that there is a lack of CAAD tools supporting architectural integration and sizing of active solar systems - feeding an iterative design process. Architects need to “see” and customize the active solar components directly in their building model – and get a rough estimate of the energy contribution simultaneously!



Source: Kuslikis & Clesle

The report is available on the official website:
<http://www.iea-shc.org/publications/task.aspx?Task=41>

Case Studies of Buildings and Urban Areas *The process of collecting and then selecting good examples based on architectural criteria and energy performance is ongoing.*

Around 100 proposed case studies have been collected so far. A Reference Group for Architectural Selection was established as responsible for ensuring that the selected case studies all hold high architectural quality with reference to various criteria, also respecting different national conditions. The selected case studies will then be described more in detail and presented in a document.



Photo: Daniel Malhão

The photo shows the proposed case study Solar XXI office building by the architects Pedro Cabrito and Isabel Diniz, Portugal.