B A T T L E M c C A R T H Y©
Consulting Engineers & Landscape Architects

PROJECT:
EVERHOUSE, COPENHAGEN

CLIENT:
Nordicom A/S, the Danish Technological Institute and the Knowledge Center for Industrial Construction.

ARCHITECTS:
Dissing + Weitling Architects, Gitte Juul Arkitekter

BM SERVICES:
Sustainability Consultancy

VALUE:
Unknown

DATE OF COMPLETION:
2009

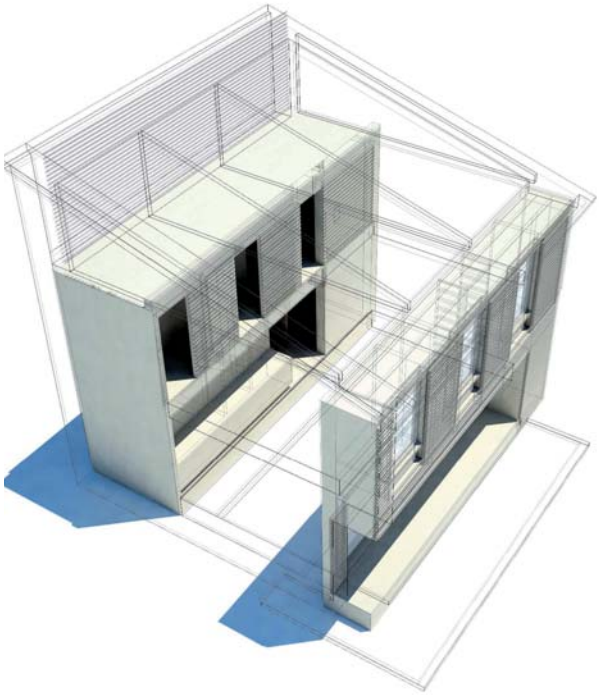
PROJECT DESCRIPTION

SUNSHINE HOUSE is a development project consisting of 12 two-storey terraced houses,

DESIGN BRIEF

Four consortia were invited to develop this development, each team designing and buidling 3 identical terraced houses each based on the principles of passive housing and set in the beautiful rolling countryside at the south of Kolding on the Danish mainland. Battle McCarthy formed part of one of these teams in collaboration with Dissing+Weitling, Gitte Juul Arkitekten, and KLH.

The brief required creative ideas to design and develop 'four good examples of robust, sensible, reproducible and low-energy two-storey terraced housing.' The terraced houses will be prefabricated and certified as Passive housing. They will also bear the Danish interior climate label.



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DESIGN CONCEPT

The architectural strength of the layout lies within the composition: this consists of a densely packed core as a prefabricated module to the north, containing serving functions (entrance, bathrooms, staircase and kitchen) as well as all installations which demands certified installers and an adjacent large, open space for flexible living needs to the south, optimized according to the principles of passive-housing technology, where the living areas with large windows are placed.

The prefabricated module allows a very high degree of detailing, where the CNC-technology of the production can embed features like the detailing of stairs, integrated handrails and shelving, wardrobes and ladders to the bed loft with the quality of craft-quality carpentry.

On the ground floor, the open space towards the garden leaves many different options open for the use of the living area, were the in-line kitchen unobtrusively opens the plan to a variety of furniture lay-outs. The entire room opens towards the terrace. On the upper floor the main lay-out, combined with the bed lofts on top of the core, creates an array of spatial configurations and possible flexibility from three small bedrooms to one large rooms. The triangular beams carrying the roof makes the erection of dry-lining partitions a breeze.

OUR APPROACH

Battle McCarthy was brought on board for sustainable design consultancy services. The aim was not only to ensure that the house is passively designed in terms or energy efficiency but to also combine the wider sustainability concepts such as water, landscape, community and education. The strategies were also considered with respect to future climate change and strategies for flexibility of the design in terms of the potential expansions and integration of the vairous systems for a multi-housing development scheme were also investigated.

SUSTAINABLE STRATEGIES

Low Environmental Impact: Prefabricated cross-laminated timber construction meaning less waste, more environmentally friendly materials and minimal embodied energy, easily recyclable. Screw pile foundations which can be easily removed at end of life and have minimal impact on the existing land. Building is raised off the ground to allow a continuous ecological corridor beneath the ground

Passively House Concepts: Solar energy heats up the house. The energy is contained within the house due to high envelope standards i.e. super-insulated walls, low U-values and maximum air-tightness. The building is also naturally lit due to adequately positioned and sized glazing areas

Ventilation, Heating and Cooling: A full house mechanical ventilation system is adopted with the option for natural ventilation when external environmental conditions permit. The system is linked to a ground source heat pump and a heat recovery unit to maximise the system's efficiency.

Water: Best practice low water flow appliances shall be used.. Rainwater will be harvested fro irrigation. Consideration for grey or black water recycling system may be considered for a larger scale development.

Smart Controls: The prefabricated unit shall contain a number of smart controls and meters to control the amount off resources used in the house, also serving as an educational tool. A master switch will also be used to switch off unnecessary electrical supply when unoccupied.

Renewable Energy: A photovoltaic array shall be installed on the building roof. Its energy will be used to supply the electrical demand of the ground source heat pump system and excess shall be distributed to the grid.

Landscape & Ecology: The landscape concept has been developed for two reasons: to encourage the production of home grown organic food and secondly to allow the semi-public space for neighbourly interaction.