Building with renewable resources

By Liezl Knoll

The current and growing focus on the environment and energy saving has led to the use of different materials and techniques in design and construction around the world. Architects Susanne Körner and Tilman Schäberle of Shakti Hause recently won first prize in the category "Hybrid Buildings" at the International Bamboo Competition 2007 for their design of a bamboo and straw bale house in Germany.

According to Susanne Körner, the purpose of the project was to build a house using ecologically sound building materials, and at the same time create a design with a high aesthetic quality.

One of the early challenges to the project was obtaining a permit from the Ministry of Building in Germany to do the project. Being the first permanent bamboo structure in Germany, strict building laws meant much effort and scientific studies were needed to get approval. A further challenge presented itself through the curved design of the house, which made installing the straw bale walls difficult. However, with diligent work and thorough planning beforehand, this issue was resolved.

The ecologically sound materials used to build the house were chosen because of their renewable and recyclable qualities. Bamboo

The overall design of the house is based on the principles of Feng Shui, which aim to create harmony within the house and with the environment.

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The bamboo and straw house was built by German construction company Woelfel Bau, while bamboo specialists Conbam assisted with the bamboo.

is fast-growing, strong and recyclable, and requires little space to grow, while the clay, straw bales and hemp are completely natural, unprocessed materials. Should the house need to be demolished, huge monetary and environmental costs would be saved. Another important saving is achieved through the excellent insulation qualities of the straw bale. The house needs very little heating in the winter, which means a great saving of energy and money.

The house was built using 33 bamboo poles for load carrying and the frame construction of the exterior walls. Straw bales were compressed and plastered with several layers of clay for all the exterior walls, while adobe bricks were used for the interior walls. The roof was made from local plants and insulated with hemp. All furniture, doorframes and doors consist of untreated and unvarnished ash wood, and the window frames are made from certified non-rainforest wood.

During construction, all electrical installations were shielded to prevent health-damaging electrical fields, the heating was installed using pipes under the clay plaster to ensure a comfortable heat that requires little energy, and natural ventilation and cooling was achieved through the use of a cupola (which can be opened) installed in the centre of the house.

Laminate worktops were installed in the kitchen, while the cupboard doors have a wooden veneer. The table and chairs are made from natural and untreated ash wood. Colourful Moroccan handmade tiles were used on the walls and floor in the bathroom and toilet. The basin is freestanding and custom made from bamboo by Hansgrohe and the toilet door and frame are curved to follow the shape of the curved wall. All the bamboo poles are visible throughout the house and create an attractive interior element in the kitchen and bathroom.

The curved walls were challenging when organising the rooms and the furniture, but ultimately allow for a completely different feeling of space.

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Burkhard Rueger and Martina Scharf and their crew worked with the straw bale and clay plaster.