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the architects' journal

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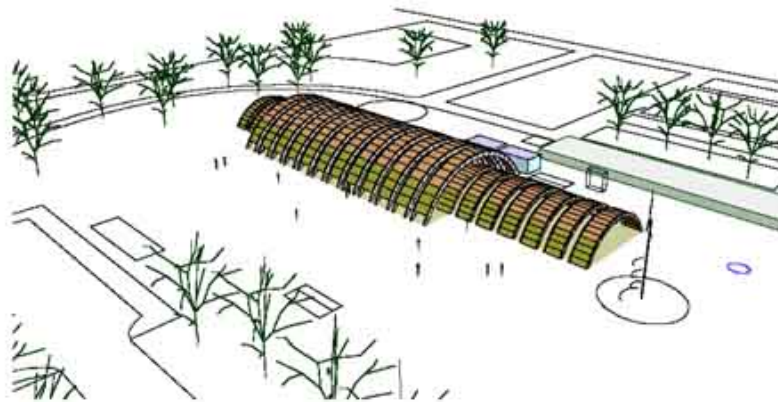
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**Weather: South East**  
Often cloudy with some showers, especially this morning. Brisk northwest winds.  
13°Hi | 4°Lo  
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**BUILDINGS BANK from: 09/03/2001**

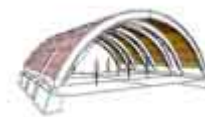


Smaller arches form an introductory section to the exhibit, and a conference room.

**Demountable timber structure designed for a sustainable energy exhibition**

A team led by London-based architect Robert Webb Associates is designing a low-energy demountable exhibition hall to showcase products and systems that are highly energy-efficient and environmentally-friendly.

The 15,000 sq ft exhibition, on the theme of "Energy for the future", is designed for use at major world gatherings on sustainability. Its intended final destination is "Earth Summit 3" - the Rio+10 conference of the United Nations Commission on Sustainable Development - to be held in Johannesburg in August 2002.



The design team is an international and multidisciplinary collaboration led by RWA, with New York architects A Form Architecture and the New York office of structural and services engineer Buro Happold. Following Earth Summit 3 the aim is to install the exhibit at United Nations Headquarters, New York, providing conference as well as exhibition facilities.

The team has developed a demountable timber structure with the

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following features:

- Efficient and simple structural arch made of timber I-beams using steam-bent timber with a plywood web.
- Minimal embodied-energy through the efficient use of timber as both the structural and the principal cladding material - the embodied energy is 6GJ per arch instead of 26GJ for an equivalent steel arch.
- Fast erection and demounting - packs up for transport.

The building is designed to be low energy in-use with integrated supply of renewable energy:

- Heat and power provided by fuel cell unit.
- Well daylight space with low-energy exhibit task lighting at night.
- Photovoltaic panels are integrated with the facade, and medium-sized wind turbines installed nearby.
- Ventilation is by displacement supply from under floor, with extract by wind and stack effect from the top of the building.
- The design team is seeking partnerships with manufacturers of energy-efficient and renewable products and services to integrate a range of products and materials with the building, providing a demonstration of the best in sustainable materials and technology.

Click on the thumbnail images to view the pictures.

*Structural analysis model - cables and rods provide great stiffness to the straightforward timber structure.*



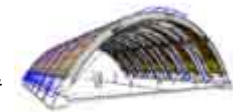
*Geometric setup for the large arch structure*



*The demountable exhibition hall is designed for swift erection and dismantling.*

*Each arch is delivered to site in two pieces of steam-bent timber I-beams. It is attached to precast concrete feet and steel pins.*

*The floor structure acts as a tie.*



*The plywood cladding is in panels measuring 4 by 8 feet. Daylight enters through the polycarbonate glazing which is used between the plywood cladding. Air is extracted through the ridge.*



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