

ARCHITECTURE

Wooden sports hall rides The Wave of sustainable design



Adam Williams | April 26, 2017



The Wave's impressive 72 m (236 ft)-long roof is supported without any internal columns (Credit: NTU)

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Large-scale timber architecture is [increasingly popular](#) lately, and with projects like The Wave, a new sports hall in Singapore's Nanyang Technological University (NTU), it's easy to see why. Attractive, sustainable, and impressively efficient, the building is yet another reminder of how engineered wood is revolutionizing sustainable construction.

Presumably deriving its name from the shape of its sculpted roof, The Wave is the first mass engineered timber (aka mass timber) building in Southeast Asia, according to NTU. Put simply, mass timber refers to a range of wood products (including [CLT](#) and [glulam](#)) that consist of multiple layers of wood laminated into dense prefabricated panels.

The panels allow buildings to be assembled quickly and can actually have a stronger weight-to-strength ratio and perform *better* in a fire than reinforced concrete. For a deeper dive, read our story on [timber skyscrapers](#).

In The Wave's case, using mass timber sped construction time up and saved an estimated 25 percent in manpower, compared to conventional methods. It also meant that the large 72 m (236 ft)-long roof can be easily supported without any internal columns. Instead, external columns support the roof's seven long-span timber arches, which weigh over 440 tonnes (more than 490 US tons).



Computer modeling of on-site sun and wind patterns was used to ensure optimal natural ventilation inside the sports hall.

"Each external wall has two layers with a pocket of air between them that insulates the heat on hot days," explains a press release. "The walls have special metal coils installed with chilled water flowing through them. This cools the wind that enters the hall allowing warmer air to escape through convection."

This cooling, combined with mass timber's excellent insulation, means that users of the Wave's basketball courts and badminton courts can play comfortably without needing ceiling fans or air-con. The sports hall also includes 980 mechanized retractable seats, energy-saving LED lighting, and solar power.

The Wave isn't NTU's only notable example of stunning green architecture, as Heatherwick Studio's Learning Hub was also completed there just a couple of years ago.

Source: NTU

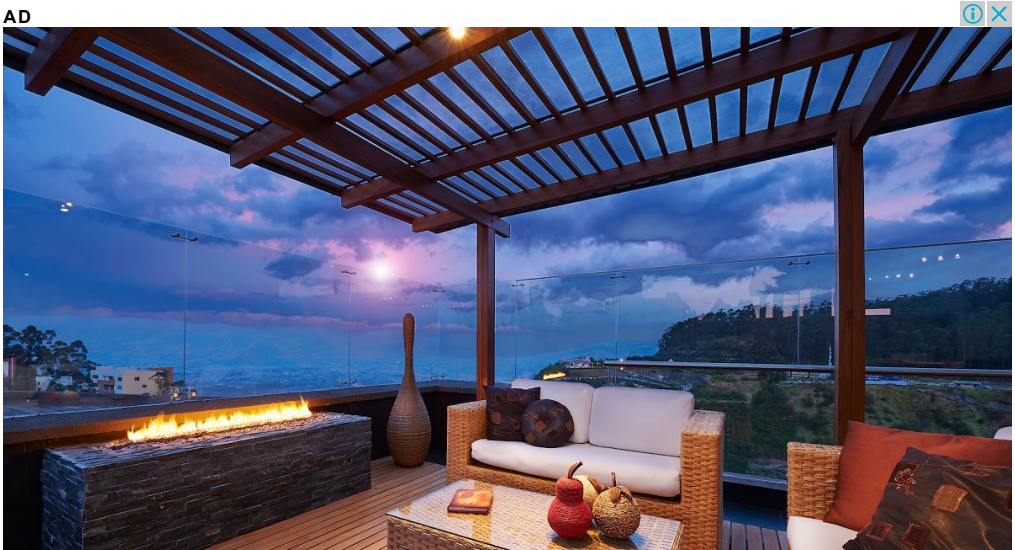
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