

NTU's new sports hall roof doesn't need pillars

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NTU's new sports hall uses glued laminated timber, or glulam, for its roof. It is lighter than steel, needs 60 times less energy to produce, and was assembled in less than a month. ST PHOTO: AZMI ATHNI

The massive arched roof of Nanyang Technological University's (NTU) new sports hall has taken shape - without a supporting pillar or scaffolding in sight.

Instead, the curved surface is formed by beams arching from one end to the other, with the last one hoisted into place yesterday.

Unlike conventional buildings, these structural beams are not steel - but specially engineered wood.

Layers of wood are glued together to form glued laminated timber, or glulam, which is much lighter than steel. This allows for a design that does not need supporting pillars, explained Mr Paul Tan, deputy director of projects in NTU's office of development and facilities management.

It also speeds up construction. The roof took 3½ weeks to assemble, compared to three months if conventional methods had been used.

The seven roof beams are each composed of 36m-long halves of glulam manufactured in Austria and shipped here. Each half is secured to its respective wall, then hoisted up and secured at the top of the arch, to form the full 72m beam.

Besides glulam, the hall also uses cross-laminated timber. It involves sticking layers of timber together at right angles, to produce solid panels.

The sports hall is the first building in South-east Asia to use engineered wood on such a large scale.

These lightweight materials conform to building codes and are being promoted by the Building and Construction Authority.

Besides requiring less time and manpower to assemble, engineered wood is also more eco-friendly. It takes 60 times more energy to manufacture 1kg of steel, compared to making 1kg of engineered timber.

The three-storey hall, which is set to open later this year, will feature a weights training gym and three activity rooms with floor-to-ceiling mirrors for aerobics and dance, among other facilities.

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