NTU's new sports hall to boast innovative construction features

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AS a part of its sustainability drive, Singapore's Nanyang Technological University (NTU) will soon be home to new campus facilities aimed at driving energy savings.

Slated for completion in the first quarter of next year, its new sports hall will be the first development in South-east Asia to be built using an engineered wood system construction method.

Under this method, cross laminated timber (CLT) and glued laminated timber (Glulam) will be used to make curved and arched shapes that can form vertical columns and horizontal beams.

While CLT and Glulam are common in Europe, the new sports hall will be the first in the region to use the engineered wood system on a large scale, said architects behind the development at a media briefing on Tuesday.

They added that the timber used in construction was derived from sustainable forests in Europe, the US and Canada.

Occupying a land area of approximately 10,000 square metres, the three-storey complex will have a wave-like timber roof which spans 70 metres and provides five times better heat insulation than concrete.

Its two-layer walls, likewise designed for heat insulation on hot days, will also conceal a passive induction cooling system.

Metal coils in the walls will have cold water flowing through them, cooling the wind that enters the hall through convection.

The hall's eco features, which also include a motion sensor LED system and "green cement" made from reused industrial by-products, are projected to cut energy and water consumption by approximately 40 and 30 per cent respectively.

In addition to enjoying an environment with natural ventilation, students can look forward to a larger space for sports and activities.
With over 900 mechanised retractable seats - twice the capacity of NTU's current sports hall - the new hall can be transformed into 13 full-sized badminton courts or three basketball, volleyball and netball courts.

It will also be home to a weights training gym, three activity rooms with floor-to-ceiling mirrors for aerobics and dance, two multi-purpose activity rooms, a VIP lounge, and an activity space for various student activities.

In addition, NTU's upcoming North Hill Residential Hall will see the construction of six 13-storey blocks with a total capacity to house over 1,850 students.

The blocks will be Singapore's first "Lego-style" public high-rise buildings. They are built using prefabricated pre-finished volumetric construction (PPVC), a new requirement imposed on selected government land sales (GLS) sites by the Building and Construction Authority (BCA) to raise productivity in the construction sector.

The prefabrication method saves up to 40 per cent in manpower and 20 per cent in construction time.

Whole room units complete with internal fixtures are produced off-site and installed on-site. With a gross floor area of 53,936 sq m, the residential hall will include eateries and shops.

Each block will also have three storeys of common facilities such as study areas, sky lounges, and common spaces. The hall will also house a 580 sq m gym - the largest on NTU's campus.

Like the sports hall, it is slated for completion in early 2016.

NTU is developing the facilities in collaboration with more than 10 teams of architects and design consultants.