

# NUS launches net-zero energy building

**Derek Wong**

The National University of Singapore (NUS) yesterday launched Singapore's first net-zero energy building built from scratch at its School of Design and Environment (SDE).

Environmentally friendly features such as a solar panel roof and hybrid cooling system help the new building, called SDE4, to have net-zero energy consumption.

This means that the building produces more energy than it consumes – by harnessing solar energy, for instance.

More than 1,200 solar photovoltaic panels help to power the entire building and produce more than 500MW-hours of energy a year, equivalent to the annual energy consumption of about 110 four-room Housing Board flats.

The building is estimated to save about \$180,000 in energy costs a year, although the cost of its construction was not revealed.

NUS president Tan Eng Chye said: "We hope that this novel concept will inspire future high-performance buildings and sustainable development designs in Singapore and beyond."

Mr Heng Swee Keat, Minister for Finance and chairman of the National Research Foundation, said it is important that buildings like SDE4 play a part in tackling climate change, as the building sector contributes a quarter of Singapore's carbon emissions.

"(SDE4) is a good example of how

we can achieve better and more sustainable outcomes when the Government, industry and academia work closely together," said Mr Heng.

He highlighted the building's hybrid cooling system, a mixed-ventilation design that combines air-conditioning and fresh air, as a way technology can help reduce energy consumption.

In Singapore, the process of cooling buildings usually accounts for 40 per cent to 50 per cent of a building's energy consumption.

SDE4's cooling system is designed as a single-pass system with no recirculated air, as it continuously supplies fresh air to the building's occupants. The public spaces are also designed to maximise natural breeze passing through.

Project partners include architecture firm Serie+Multiply, infrastructure consultancy Surbana Jurong and contractor Kajima Corporation.

Construction for SDE4 began about two years ago and the building can hold about 400 students.

Other net-zero energy buildings here are in the works.

The Tahir Foundation Connexion, which is also fully solar-powered, is due to be completed at the end of this year at Singapore Management University.

Existing net-zero energy buildings here, such as the BCA (Building and Construction Authority) Academy, have been modified to become so.

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## Eco-design from scratch

The National University of Singapore yesterday launched SDE4, which is designed to have net-zero energy consumption. This means the building produces more energy than it consumes – by harnessing solar energy, for instance. The six-storey building is the first net-zero energy building in Singapore to be built from scratch rather than retrofitted, and has a number of environmentally friendly features.

### Solar panels

**1,225**

solar photovoltaic panels installed on the roof will provide more than 500MW-hours of energy per year, enough to power about

**110** four-room Housing Board flats for a year.



### Hybrid cooling system

An innovative cooling system not only provides air-conditioning but also supplies fresh air at higher temperatures and humidity compared with a conventional air-conditioning system. This way, rooms will not be overly cooled. Ceiling fans help to circulate the cool air.



### "Floating boxes"

The rooms are designed to maximise ventilation and natural lighting. The 'floating box' structure creates space for natural breeze to flow into the rooms. This helps to cut back on the need for air-conditioning.



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