

Going flat out to turn smart-home vision into reality

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Smarter, greener homes of the future

Two new labs – the Smart Green Home and the Tropical Technologies Laboratory – were launched at the National University of Singapore last month. Here is a look at some of the technologies which will be test-bedded at the Smart Green Home, scheduled to be completed by December next year. With a total floor area of 100 sq m, the facility will resemble an apartment and will be located at the NUS School of Design and Environment.

Anti-noise tunable bedrooms

Noise insulative walls with nano-size or micro-size fillers that reduce noise transmission.

Anti-fogging glass in bathrooms

The glass contains nano-materials that prevent the formation of fog.

Wall coating

Anti-fungal properties ensure the walls are easy to clean and maintain.

1.5m raised floor

To accommodate underfloor air distribution system, and monitoring and sensing system.

Smart soundscape system

Technologies which can produce the sound of breeze or insects mask noise pollution from the external environment. These devices will be embedded in the ceiling and walls.

Anti-solar windows

The lab will experiment with thermochromic windows, which turn a darker tint when the temperature rises.

Self-cleaning glass

Dirt is broken down for ease of cleaning. It also prevents dirt from sticking to the surface.

Anti-haze air filter

Mounted on windows, it can be integrated with the air-conditioning system. This helps ensure that air quality remains healthy even in haze conditions.

Anti-bacterial floor tiles

Tiles contain nano-materials that release an anti-bacterial agent to prevent bacterial growth.

Cool pavements

The pavements contain heat-insulative nano-materials that reflect solar heat so that the minimum is absorbed.

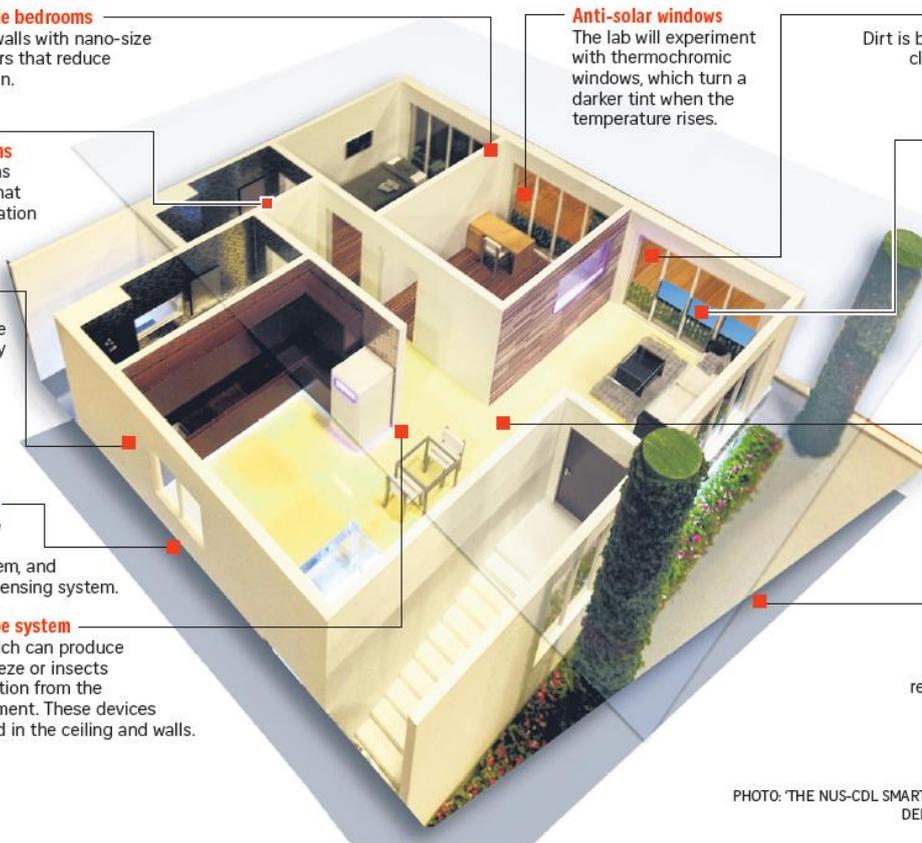


PHOTO: THE NUS-CDL SMART GREEN HOME PROGRAMME, DEPARTMENT OF BUILDING, NUS STRAITS TIMES GRAPHICS

What if your home was clad in an outer skin that sucked in sunlight and made it into electricity for the air-conditioner while keeping out noise and other pollution?

In a partnership between the National University of Singapore (NUS) and property developer City Developments (CDL), two labs are being setup to see how it can be done.

The labs will look at how homes can be made more comfortable and energy-efficient, and less vulnerable to everyday pollutants.

Technology they will test include solar panels not just on roofs but also walls and windows, and systems to mask noise pollution.

CDL has donated \$2.25 million to set up the labs– on the NUS campus –and to support their research.

One of the labs, to be ready by December next year, will be called the NUS-CDL Smart Green Home.

It will look at how different sounds, such as that of a breeze, can be introduced in a home to mitigate the impact of noise from outside.

It will also try mounting haze monitoring and filtering devices on windows to keep indoor air clean.

Smart materials and coatings – such as those that can prevent bathroom mirrors from fogging as well as anti-oil stain finishes in the kitchen – will also be studied.

The lab will be designed as an apartment of about 100 sq m, and the public will be able to visit and give feedback on the technologies.

Associate Professor Lee Siew Eang of the Department of Building, School of Design and Environment, who is in charge of the Smart Green Home, said noise pollution due to traffic, for instance, has worsened because buildings and roads are now nearer each other.

Having an apartment-like lab will facilitate a true test of how well the technologies work. “The test of their effectiveness is in people’s response and how people use them.”

The other lab, called NUS-CDL Tropical Technologies Laboratory, will be ready by this December.

It will look at how to optimise the amount of energy obtained through solar panels by integrating them with windows or vertical walls, among other technologies.

“Photovoltaic technology has been around for a long time. For us, the interest is not entirely in the solar cell itself,” said Professor Stephen Lau from the School of Design and Environment, Department of Architecture. “We might like to test those experimental solar cells that come in different colours and install them in the building facade to enhance the indoor ambience, similar to the effect of stained glass.”

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