



National Development Minister Lawrence Wong (third from left) viewing the Living Laboratory display showcasing living laboratories across Singapore at the Urban Sustainability R&D Congress yesterday. With him were (from left) the Ministry of National Development's chief technology officer/senior director (research and development) Johnny Wong and deputy secretary (planning) Lim Wan Yong, the Housing Board's director (environmental sustainability research) Tan Sze Tiong and chief executive officer Cheong Koon Hean, and the Building and Construction Authority's CEO Hugh Lim. PHOTO: LIANHE ZAOBAO

HDB working on building cooler flats with more smart solutions

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As temperatures rise, the Housing Board is seeking to turn out cooler homes with integrated smart systems that reduce the need for residents to turn on the air-conditioner.

It has teamed up with German industrial giant Evonik to study incorporating a high-performance insulation material into the roof panels of blocks of flats to reduce heat gain and transmission. The aim is to cut indoor temperatures by 2 deg C.

It involves using the company's new silicon-based material, called Calostat, which has already been adopted in buildings in Germany, Switzerland and England.

The study on its use for HDB roofs is expected to start early next year. If the tests are successful, the material could be used in other parts of HDB buildings, such as the facade and intersections of roof

parts, to enhance residents' comfort, HDB said in a statement.

The agreement for the joint effort was inked between the board and Evonik (SEA) at the Government's 5th Urban Sustainability R&D Congress yesterday.

Evonik's regional president Peter Meinhausen said: "We look forward to advancing the quality of Singapore's living environment in the long term."

HDB and Evonik will research the use of 3D concrete printing in construction, which will reduce the time needed to build flats and offer buyers more design options. Unlike the present fabricating process, which takes up to two months to complete, 3D printing does not require the creation of customised mould sets.

It will also address the issue of labour shortages by reducing the dependency on conventional fabrication workers.

Studies to improve the strength and flow of 3D-fabricated con-

crete will begin in the last three months of this year.

Yesterday, HDB also signed a research collaboration agreement with local digital security solutions provider V-Key to enhance its smart infrastructure for smart-enabled flats.

Each flat may be fitted with a smart distribution board and sockets that can seamlessly integrate devices and solutions of different providers. This extends to smart lighting, motion sensors and even smart curtains that automatically open when a person enters a room.

Flat owners can also choose to install a monitoring system for the elderly, in which motion sensors detect and "learn" the movements of the elderly, like the time they get out of bed or leave the home. If the sensors fail to detect these regular movements, their next-of-kin or caregiver will receive an alert.

Experts interviewed welcomed the move, noting the urgent need

for sustainable urban solutions amid global warming.

"Even a 2 deg C reduction in temperature can reduce air-conditioning consumption by a large amount, especially in top-floor units," said Dr Lee Nai Jia, senior director and head of research at property consultancy Knight Frank.

"It is good the Government is taking the lead as such research can be very expensive. When the technology is more widely adopted and the price drops, more private sector players can then come in."

Dr Lee noted that while smart living systems are common in private housing, HDB's tie-up with V-Key is different as it allows devices by various brands to be plugged in. "But what needs to be sorted out are privacy and cyber-security issues with the monitoring systems."

Nanyang Technological University civil and environmental engineering associate chair, Professor Chu Jian, said the HDB-Evonik collaboration "is a good step towards developing more cost-effective solutions for heat insulation and energy conservation".

"There will be widespread applications as all our buildings are exposed to the hot sun."

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