

green moves



The installation of mineral wool insulation would cost RM2,000 for the average Malaysian home

Mineral wool withstands heat through its low combustibility

Mineral wool insulation can come in the form of blankets, slabs, rigid, loose fill and sectional pipes

Wrapping up to keep cool

BY Wong King Wai

The Year of the Golden Tiger has brought with it a heat wave that has driven many Malaysians into the comfort of air-conditioned space — day and night — raising electricity usage, and the bills.

But did you know that if every house in Malaysia was insulated with mineral wool, some RM2 billion could be saved over 10 years through reduced consumption? That's a cool RM200 million a year.

These figures appear in a study on mineral wool insulation in Malaysia conducted by the Singapore-based independent consultant Solidiance. Other benefits would be in the form of savings of some RM790 million in energy subsidies. Energy consumption would be reduced by over 3,300 GWh, while carbon dioxide emissions would drop by 2.5 million tonnes, says Solidiance director Heiko Bugs.

Bugs presented the results of the four-month study in Kuala Lumpur late last year at the High-Performance Green Building Conference. It was commissioned by the Malaysian Insulation Manufacturers Group (MIMG) which comprises three insulation companies — CSR Building Materials (M) Sdn Bhd, Poly Glass Fibre Manufacturing Sdn Bhd and Roxul Asia Sdn Bhd.

What is mineral wool? It is a material made from molten glass, stone or slag spun into fibre-like structures. It comes in blankets, slabs, rigid, loose-fill and sectional pipes, among others.

Aside from mineral wool, there is cellulose fibre, made from recycled newspapers that are chemically treated for fire and moisture resistance. Another insulation product is spray foam — a two-part liquid containing a polymer (such as polyurethane or modified urethane) and a foaming agent.

What these products do in the case of Malaysia, is basically to help prevent the flow of heat into a building and the flow of cooled air out of the space. This helps to reduce the use

of air-conditioning as the cooler air is contained for longer periods than in non-insulated buildings.

Given its merits, why then isn't mineral wool insulation making waves in Malaysia? "It is basically because the product is often attributed to countries with colder climates," Thomas Heldgaard, vice-chairman of MIMG, tells *City & Country*.

Mineral wool insulation is not alien to Malaysia; it has been around for over 25 years, used mainly for acoustic control and fire prevention in commercial buildings like hotels, airports and shopping complexes, Heldgaard says.

He estimates there are only about 3,000 homes in Malaysia that have been mineral wool insulated, and attributes the lukewarm response to what he calls a previous lack of physical evidence of the benefits of mineral wool insulation. As a result, he says, property developers have been reluctant to include it in their projects.

"The investment is small. It would cost about RM2,000 (to insulate) an average-sized home, and with the price of a terraced house about half a million (ringgit), the cost of installing mineral wool insulation is very small to add to a house," points out Chow Hon Piew, MIMG treasurer. On average, he adds, the construction cost would increase by only 1% or 2%.

How effective is insulation?

Homeowner Chong Siow Yen had her 18 ft by 65 ft 1½-storey terraced house in Port Klang insulated with mineral wool not long ago. Relatives used to comment that the house felt like an oven at times. This has since changed. "It is significantly cooler," says Chong, who invested about RM1,800 in the installation, which took about three hours.

Architect Asmadi Aswad, from Bukit Katil, Melaka, tells *City & Country* he spent about RM4,000 to insulate his brand new 7,000 sq ft, 2-storey home before moving in last year. The building has a metal roof, and Asmadi decided to insulate it to reduce the noise level when



C K TANG

Tang: Aside from insulation the choice of building material and the design can make a house cooler



LEE LAY KIN/THE EDGE

Bugs: RM200 million a year in energy costs could be saved through the use of insulation



LEE LAY KIN/THE EDGE

Heldgaard: Only about 3,000 homes in Malaysia are mineral wool insulated

it rains heavily. He says the house now feels cooler as well.

Another study on mineral wool insulation has been carried out by IEN Consultants — a local green building consultancy. Among its clients is Roxul, a member of MIMG.

In that study, a semi-detached house in Cheras was used as a test bed. Mineral wool was installed in the rafters, the roof floor and on the outer walls. Gypsum was installed on the inner surface. Under these conditions, the study showed a saving of about 32% on energy consumption from reduced use of air-conditioners compared with a similar house that was not insulated.

In an email interview, IEN director C K Tang says aside from insulation, other options that can help reduce energy consumption would include using materials like brick or concrete that have a high thermal mass (the ability to absorb plenty of heat before getting warm) for walls and building houses with windows on north and south facing walls, planting shady trees and ensuring natural cross-ventilation with big window openings on opposite sides of the house.

An example of energy conversation in action is the Cooltek house in Melaka, home of UK couple Harry Boswell and Stephanie Bacon. When they built it in 2005, the couple wanted a home with energy-saving elements. The house has windows on the north and south facing walls, and none on the east and west sides to escape the morning and evening sun. The owners also painted the external walls white to reflect heat, installed double-glazed windows with argon gas in the cavity, and use low-energy lighting. Mineral wool insulation was installed in the roof to prevent heat radiating into the house, and the flooring to prevent the cool air from escaping down into the concrete foundations and out of the house.

In addition, the house is fitted with multi-split air-conditioning units that use R410A non CFC refrigerant gas, which is more effi-

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Building an eco-house

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cient than other gases and will not damage the ozone layer, to maintain a constant room temperature of 24°C. Once the temperature of 24°C which is controlled by a thermostat, is reached the units shutdown and only start up again when the temperature in the house increases. Although, the air-conditioning is on 24 hours a day, the couple effectively uses, on average, only 8kWh of electricity in a 24-hour period, costing about RM2.

Boswell tells *City & Country* that the message of energy conservation needs to be spread because the effect of global warming is increasing temperatures in Malaysia. He has his own weather station near his home, and he says it recorded an increase of 0.6 degrees Celsius in January 2010 compared with January 2009.

Although the Cooltek house is highly efficient in the use of energy, it is not a type of house that can easily be mass produced. But it does show there are ways to conserve energy without sacrificing comfort — and in this case, insulation plays a role in the overall energy savings of the house.

Green Building Index

Efforts to reduce energy consumption are particular timely for Malaysia. It has been reported that the country could be a net importer of oil and natural gas in the near future. Currently, half of Malaysia's power plants run on gas. Other sources include coal and hydro-power. It has been reported that Tenaga Nasional is even contemplating constructing a nuclear power plant by 2025 to ensure enough energy for the nation's needs.

Green Building Index (GBI) — Malaysia's green building rating tool — has been launched, but currently only has ratings for new buildings. The ratings for existing buildings are expected to be launched later this year, says



Harry Boswell and Stephanie Bacon in front of the Cooltek House in Melaka which they built in 2005. Air-conditioning the building 24 hours a day costs only RM2 a day

Boon Chee Wee, director of Greenbuildingindex Sdn Bhd and president of the Malaysian Institute of Architects (PAM).

The Greenbuildingindex Sdn Bhd was incorporated in February 2009 and is a wholly owned subsidiary of PAM and the Association of Consulting Engineers Malaysia (ACEM). The company manages all aspects of the GBI from the training to the accreditation. The Index was devised by PAM and ACEM.

Boon believes that a building green goes beyond the structure, to the construction processes and the surroundings. "With this in mind,



KENNY YAP/THE EDGE

Boon: Building green goes beyond the structure

GBI has started developing a rating for neighbourhood and township development."

"The criteria of the ratings are being finalised now in consultation with the industry, ready to be launched in the first half of 2010. They will be suitable for housing development projects," he tells *City & Country*.

On insulation, Boon says 70% of solar heat gain into a 1-storey terraced house enters through the roof and 50% in a 2-storey terraced house. Research, he adds, has shown that insulation can bring down the temperature inside the house by up to 5°C.

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singapore briefs

A-REIT to buy three properties worth S\$228.5 mil

Ascendas Real Estate Investment Trust (A-REIT), the largest industrial property trust in Singapore, is buying three properties worth a total of S\$228.5 million (about RM551.5 mil) to add to its portfolio. A-REIT says these deals will add 0.054 cents in distribution per unit (DPU) on a pro-forma basis for FY2009 ended March 31. The trust holds an asset base of 91 properties worth some S\$4.8 billion.

A-REIT is acquiring the S\$116 million DBS Asia Hub, a built-to-suit facility at 2 Changi Business Park Crescent that is leased to DBS. The second property, a multi-storey light industrial building at 31 Joo Koon Circle, along Jalan Ahmad Ibrahim, costs S\$15 million. It is leased to Flextronics Manufacturing (Singapore) Pte Ltd. The third property, located in Jurong, is still being built. The S\$97.5 million transaction will be completed when the property is ready by 2012 or earliest, 2011.

Capital Square refinanced for \$549 mil

Queensley Holdings Ltd has refinanced its property Capital Square for S\$549 million in what has been described as the largest Singapore-dollar corporate-bond issue in 2009. The refinancing deal, which was arranged by ANZ Bank, was funded by MEAG, the asset manager of reinsurer Munich Re, as well as insurance company ERGO. Law firm Khattar Wong advised the two Europe-based financiers.

The deal consists of S\$320 million worth of three-year senior secured notes, as well as S\$151 million of three-year junior secured notes.

— by The Edge Singapore