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Let the daylight shine in, designers say

Promoting energy-efficient architecture

A conference in Dubai explores the downside of sealing buildings in the UAE against the bright light and searing heat of the desert sun

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ABU DHABI // Consider this energy paradox: keeping sunlight out of a building minimises solar heating and reduces the cost of cooling, but it increases the need for electrical lighting, which can cancel out the savings made on the cooling side.

This problem is common in the UAE, where many buildings are designed to seal their occupants off from the intense light and heat of the desert sun. But it need not be this way, according to participants in a conference in Dubai who said that if the region's abundant natural light were managed, not simply shut out, energy efficiency could be significantly increased.

Delegates at the two-day Architecture and Daylight conference, which took place this week, said that because of their design, many of the region's buildings also deprived their occupants of the healthy benefits of natural light.

"It has proven physical and mental implications for our well-being," said Markus Stebich, an architect in charge of the hospitality solutions division at the German architecture and design firm RKW Rhode Kellermann Wawrowsky.

Many of the UAE's buildings and the people who use them are not reaping the benefits that the efficient management of natural light can yield, according to delegates at the conference, which ended yesterday. The event was a collaboration between Dubai's Energy and Environment Park and the exhibition organiser Epoc Messe Frankfurt.

"There seems to be almost a phobia of daylight," said Florian Techel, assistant professor and head of the school of architecture and interior design at the Canadian University in Dubai. "The unfortunate thing is that we have to compensate that with artificial light."

The intensity of the sunlight and the large number of sunny days in the UAE mean that many people view sunlight as something against which they need protection. But the idea of managing natural light "is not about opening your entire building completely to sunlight", Mr Techel said. "It is filtering it."

Mario Seneviratne the director of the Dubai-based Green Technologies, said that a successful design balanced the amount of sunlight entering a building against issues such as glare and solar gain – the heating of a space or object by solar radiation.

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On the whole, designers in the UAE were either not letting enough light into buildings or letting in too much heat through inefficient use of glass, Mr Seneviratne said.

A design incorporating daylight harvesting with shading and other strategies to reduce solar gain could yield energy savings of up to 80 per cent in other parts of the world, he said.

In the UAE, where demand for cooling is high, potential savings are smaller but still significant. "You could save 30 per cent of all energy by bringing daylight in," he said.

These potential savings are important, considering the rapid rise in the demand for electricity and the fact that electricity generation is largely subsidised by the Government.

The UAE's total installed generating capacity has been doubling on average every five years, as opposed to every 20 years, as in many developed countries, said Dr Abdalla al Amiri, general secretary of the Emirates Energy Award, an initiative to recognise energy efficiency projects.

During the UAE summer, demand for electricity is so high that the country cannot rely solely on natural gas to generate power and resorts to burning crude oil.

"Heavy oil is used in summer at a cost of Dh0.9 per kilowatt hour and resulting in a 30 per cent increase in carbon dioxide emissions," Dr al Amiri said.

"Summer electricity consumption in the UAE is four times that in winter," he said, adding that the excess generating capacity was used in the cooler months to run desalination plants.

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Many buildings deprive their occupants of the health benefits of natural light. Philip Cheung / The National