

Black Hole Sun

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Forget grey water re-use, pre-cast concrete and carbon off-setting, there are few things that scream sustainability like solar panels.



But critics argue that it is a misconception that the Middle East is a natural home for solar power, just as it is that solar panels can substantially reduce the energy gain of a building. Solar may help boost a building's green credentials, but in terms of energy saving there are far better options available.

"Developers like photo-voltaic (PV) solar panels because they are visible, and people look at them and say: 'Hey, check out that building, it's got solar panels so it must be green'," said Nicholas Lander, senior associate at Inhabit.

"Well that's not the case. On a tower on Sheikh Zayed Road it's just saying: 'Here is my nod to the environment'."

Lander points out that on a large scale residential or office building, even covering the entire façade with solar photo-voltaic panels will likely only succeed in providing 2% of energy needs. The real drain on most office developments is lighting, which can account for up to 50% of a building's total power output.

"If you are looking at a small building with no local power access then PV panels can be an excellent source of power for the building. But if you are talking about commercial, PV panels are only useful as part of large scale power plants," he said.

It is not that solar panels are inherently useless, if every home was to install them the effect could be dramatic, but currently there is little financial incentive to do so. One of the problems in the Middle East, and particularly in the UAE, is that excess power generated by PV panels cannot be fed back into the country's national grid. This does not incentivize people to install panels, as they know that the power they don't use will be wasted.

"You're better off improving the efficiency of the systems in your building. You will spend a lot less money doing that," he said.

It is an attitude that Jacob Zukek, principal architect at Henning Larsen, the firm responsible for the master plan of the King Abdullah Financial District (KAFD) in Saudi Arabia, shares. In its plans for the KAFD, Henning Larsen has stressed that sustainability is not about installing token green measures after a building is constructed, it is about planning from the earliest stages.

"If you are looking from an individual building point of view then adding solar panels will only give you maybe 2 or 3% reduction in energy consumption," Zukek said.

Rather than looking to initiatives such as PV panels, Henning Larsen requires architects working on parcels of the KAFD site to design buildings that are appropriate for the climate. Shading, in addition to the increase of natural light in an office development, reduces heat gain and artificial light use, and is far more valuable than solar power.

This is a view that Till Stoll, CEO of green consultancy www.greendestinations.ae, agrees with. He believes that many architects look at energy saving initiatives as an afterthought, rather than part of planning at an early stage. Despite claims to the contrary, aesthetics still often come first.

"When we have a piece of land the first thing we do is measure the wind direction and strength and how much water we have available – those factors really limit our design, but they have to come first if you're serious about building green," Stoll said.

Heating water is an area where solar panels in the Gulf can be valuable. At the KAFD, Henning Larsen estimate that solar panels could provide 80% of hot water, seriously reducing the need for gas or electric boilers.

But even then, Stoll adds, there is a misconception that because of the region's constant sunshine, panels have a major role in a green building – actually, because of the dust and sand in the UAE, solar only has a limited impact on overall energy reduction.

He gives the example of a significant hotel in Dubai which purports to use a few solar panels to heat its water, when in reality the building would need some 7,000 panels. At the same time, Stoll said, the hotel in question has to regularly hose down the panels from dust and sand.

Henning Larsen's Zukek agreed. "You get so much dust out here that solar panels require a lot of maintenance. After a week or two the dust seriously minimizes the efficiency."

Bassam Elassaad, business development director for the Middle East at GEA Consulting, goes further. He argues that even using solar panels for heating water is unnecessary during the hot summer months in the Gulf.

"Anybody who has taken a shower from May to October can tell you that the sun heats the water on the roof of buildings and your cold tap becomes the source of hot water," he said.

Conversely, one area where solar can be useful, Elassaad said, is in cooling water and the air inside a building. He said that new technological advances in solar energy actually allows panels to do this.

Elassaad explained that desiccant materials, which absorb moisture and then can be dried by adding heat, can be used to aid cooling in a building. These systems use a wheel containing the desiccant material turning slowly picking up humidity and discharging it to the outdoors. The energy to drive the wheel and the heat needed to dry the material can be supplied from solar panels making the system virtually operation cost free.

"Such systems are a boost to solar and renewable energy in general. By expanding the use of solar panels in residences beyond heating water, solar energy will increasingly contribute to smart and environmentally-friendly homes," he said.