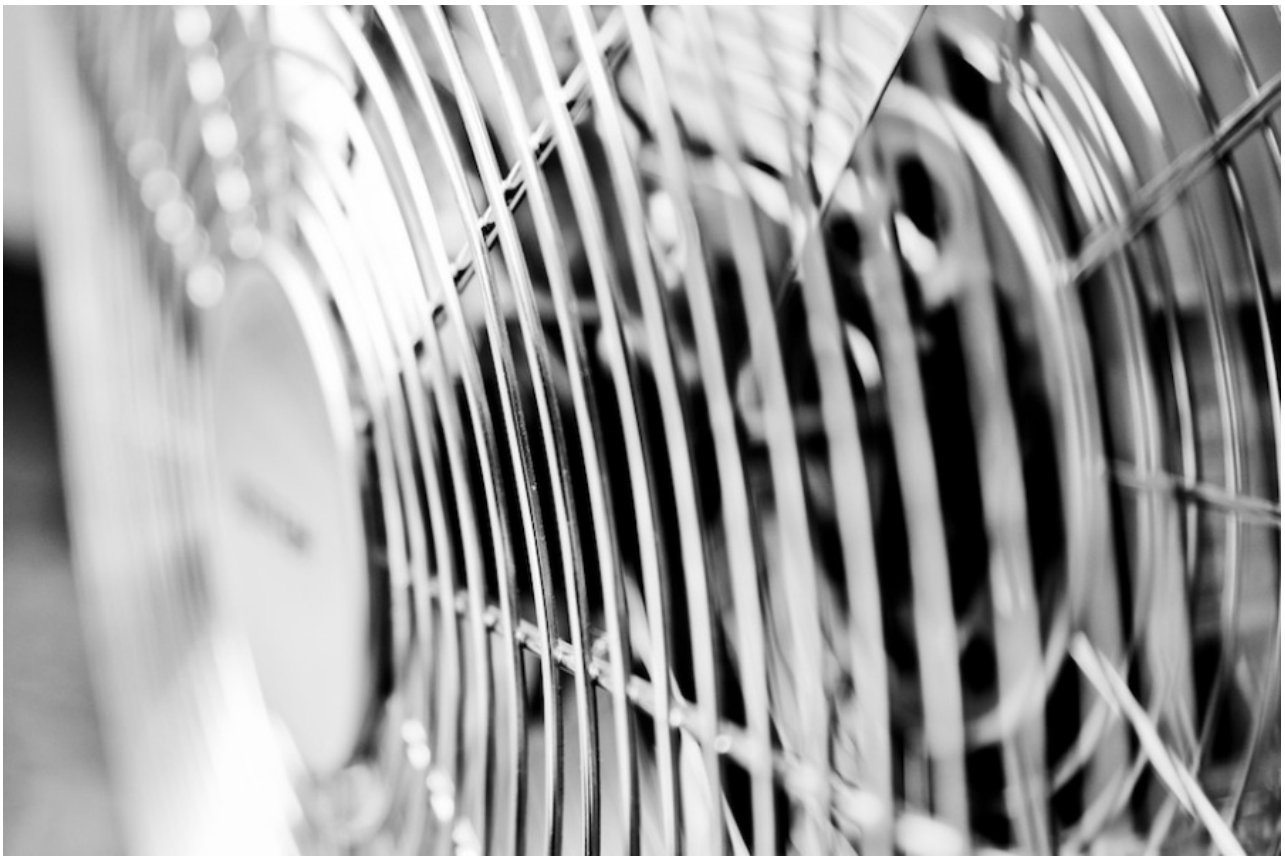
NANOTECH PANEL KEEPS BUILDINGS COOL WITHOUT AIR CON



A novel solar cooling panel could keep buildings cool in bright sunlight by radiating heat out to space, cutting the need for energy-intensive air conditioning.

Designed by researchers at Stanford University, the panel uses nanotechnology to selectively radiate unwanted heat out to space, achieving a net cooling effect in the warmth of sunlight.

It is made of nanostructured quartz and silicon carbide, which are capable of enhancing and suppressing the radiation of heat for certain wavelengths. At most wavelengths, greenhouse gases in the atmosphere reflect thermal radiation back down to Earth; however, this panel emits heat at the specific wavelength at which radiation can cut through the atmosphere. By sending

more energy into space than is reflected back to the panel, the device is able to achieve an overall loss of heat.

Of course, it's important that the panel itself doesn't heat up in the sun. Researcher Shanghai Fan, a professor of electrical engineering at Stanford, explains that, to avoid this, it has been designed as a broadband mirror, also reflecting the majority of the sunlight.

The panel can generate a net cooling of over 100W per square meter, equivalent to the power generated by a solar panel of the same size. So, a one-storey house with only a 10th of its roof covered with cooling panels could offset 35% of previous air conditioning costs during the hottest hours of the summer, the team says.

Such cooling panels could therefore prove a viable alternative to existing solar panel/air conditioning combinations. Moreover, the brilliance of this new solution lies in its passive nature. With no moving parts to maintain and no energy requirements, it would have very low operating costs, and could be used in off-grid locations. The same principle could also be applied to car roofs.

"Thermal engineering and control with nanostructures is a relatively new but growing frontier", says Geoff Smith, a professor of applied physics at the University of Technology, Sydney, who was not involved in this study. "The practicalities, durability, manufacture and costs of such structures over large areas are hard to judge at this stage, but the science is very good as far as it goes."

Source : http://thisbigcity.net/nanotech-panel-keeps-buildings-cool-without-air-con/