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Burj Khalifa sets energy landmark

World's tallest tower will use solar power to heat residents' water.

By Staff writer

The Burj Khalifa will use solar power to meet the bulk of the water heating requirements of its residents.

Solar panels can heat 140,000 litres of water per day, and this will be distributed to homes and commercial establishments in the world's tallest building. The solar-powered water system will produce energy savings equivalent to 3,200 kilowatts per day and 690MWh of energy per year.



"The thermal energy initiative at the Burj Khalifa highlights Emaar's commitment to partner the government's sustainable development goals," said Ahmad Al Matrooshi, Managing Director of the developer. "Energy efficient measures, especially through the use of renewable sources, are not an option but an imperative for sustainable growth.

"By leveraging solar power, the Burj is setting an example as well as creating a reference mark on how urban developments can effectively integrate energy-friendly initiatives," he said.

The system has been installed and will be operated by Sole UAE Solar Systems, whose spokesman John Owen said: "The Burj Khalifa presented us with a remarkable opportunity to use solar energy to meet the water heating needs of residents in the tower.

"The significant benefits include cost savings on energy uses – not only for the tower but the government utility provider too – as well as reduced pollution levels, leading to a healthier environment," he said.

The panels serve as solar energy collectors as against photovoltaic electricity generation technology. The 378 collector panels, each measuring 2.7 sq m, are located on the roof of the Burj's Offices annexe and can heat 140,000 litres of water in seven hours.

Among other sustainable energy and water use measures, the condensate from all the air-conditioning equipment in Burj Khalifa will be reclaimed to cool the potable water supplied by the Dubai Electricity and Water Authority. The condensate will then be collected in an on-site irrigation tank and used for the tower's landscaping. When operational, this system will provide 15 million gallons of supplemental water per year.

To ensure energy efficiency, fresh air handling units have been fitted with thermal wheels and, wherever possible, economy modes. There is extensive use of variable-speed drives on the air-handling and water-circulating equipment to boost energy efficiency further. The air-conditioning and water systems incorporate energy saving control systems to reduce consumption.

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The Burj also features several measures to reduce water consumption including water flow restrictors.

And the tower's cladding has been manufactured to a high standard with a high shading coefficient and a low U-value to reduce the transfer of external heat gains. Other energy efficiency measures include automated solar shading at the entrance pavilions.