Jerusalem energy storage systems

The solar-plus-storage system aimed to strengthen Israel"s energy security - ...

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It seems like any time a serious discussion is held about solar or wind power, the same question arises: what do you do when the sun isn"t shining, or the wind isn"t blowing?Renewable energy technologies share a common disadvantage that prevents them from completely revolutionizing the world"s current energy profile — sufficient energy storage.

And where there are gaps, there are also opportunities. Yaron Ben Nun, the founder of Nostromo, an Israeli company poised to provide an innovative energy storage system and a sustainable source of indoor cooling called the IceBrick, says he quickly “understood that if solar power was going to be the big winner for clean energy, then the next big thing in its technology would be storage because at sunset, the whole system would turn off.”

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"I wanted to be part of something that could bring about a big change for the greater good," says Ben Nun. "My enthusiasm stems from being at this point in time where we can truly influence reality."

Nostromo"s IceBrick is a modular thermal cell based on the high energy storage potential in water as it experiences a phase change from liquid to ice. The thermal ice energy storage process works by freezing water using either a surplus of unused solar energy or inexpensive electricity at off-peak hours and thawing the ice during the day to supply plentiful air conditioning to buildings. Doing so alleviates the added pressure air conditioning would normally place on electrical infrastructure and reduce the need for utilities to build additional power plants to meet rising demand.

According to Nostromo, only 102 MW of the 196,000 MW of energy storage systems utilize the thermal ice method despite it being ten times more efficient in its energy density per square meter than any other available solution. This is why Ben Nun is so confident that regular tap water is the answer.

"The ability of water to hold cold energy when it changes from liquid to solid is unbelievably high, and tap water is widely accessible," he says. "It"s not lithium, or cobalt, or any other kind of rare earth material. You just open the tap water, and you have the best material by far to hold cold energy."

The IceBrick can save 8 to 12 kWh in electricity consumption, although it depends on what kind of cooling system you are replacing, Ben Nun explains.

Nostromo"s thermal ice energy storage technology is seen as more environmentally conscious and sustainable than the majority of energy storage systems on the market that rely on lithium-ion energy storage, which requires intensive mineral extraction, a process infamous for water contamination, especially in the regions where water is already scarce.

For instance, the area bordering Argentina, Bolivia, and Chile contains one of the world"s largest subterranean metal deposits, and for each metric ton of extracted lithium, 500,000 gallons of water are pumped to bring it to the surface, depriving local farmers and communities. Tibet represents another notorious example suffering from the environmental consequences of lithium mining. There, the waste left from lithium mines were dumped into the Lichu River, killing and contaminating massive amounts of fish and polluting the drinking water for the nearby communities.

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