Polar night energy company

Polar night energy company

Finnish companies Polar Night Energy and Vatajankoski have built the world"s first operational "sand battery", which provides a low-cost and low-emissions way to store renewable energy.

The battery, which stores heat within a tank of sand, is installed at energy company Vatajankoski"s power plant in the town of Kankaanpää, where it is plugged into the local district heating network, servicing around 10,000 people.

The company behind the technology, Polar Night Energy, says it helps to solve one of the key obstacles in the transition to full renewable energy: how to store it for use during times when the sun isn"t shining or wind isn"t blowing, and particularly for use in the wintertime when demand is high.

"Solar and wind power is basically already really competitive in terms of energy price per produced energy unit," Polar Night Energy co-founder and chief technology officer Markku Ylönen told Dezeen.

He said that while lithium batteries are well suited for vehicles, "if we"re talking about gigawatt hours or terawatt hours of excess electricity, it"s not technically feasible to try to cover that with lithium batteries, and also the costs will be immense".

"Even even if we dug out all the lithium in the world, we couldn"t build batteries big enough to accommodate all the fluctuation in renewable energy production," Ylönen added.

Polar Night Energy"s sand battery stores heat for use weeks or even months later. It works by converting the captured renewable electricity into hot air by using an industrial version of a standard resistive heating element, then directing the hot air into the sand.

The heat transfers from the air to the sand, which ends up at temperatures of around 500 to 600 degrees Celsius and retains that heat well. To unlock it for use, the process is reversed and the hot air funnelled into a heating system used for homes or industry.

According to Ylönen, the process is low-cost – sand is inexpensive so the main costs are related to equipment and construction of the steel storage tank.

It is also low-impact, with the only substantial greenhouse gas emissions being embodied emissions from construction and the transport of sand, which should come from a location close to the battery site.

And although there is a sand shortage related to the material"s use in concrete and glass, Ylönen says the battery does not require this kind of fine-grain, high-quality sand.

Instead, they can use sand rejected by the construction industry, or even alternative "sand-like materials", of which Polar Night Energy already has several contenders.

Contact us for free full report

Web: https://hollanddutchtours.nl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346