Web 57DHYAFZZFLMj October 29 2026 Batteries storing blistering heat can release energy to industry

Batteries storing blistering heat can release energy to industry
Some startup companies are betting on these heat batteries
To charge up. One company draws from a nearby wind farm's surplus electricity
that would otherwise go to waste, using it at Fahrenheit degrees
as high as Four Thousand Three Hundred Fifty Two degrees
to heat carbon blocks. The blocks stay hot for days, releasing
heat on demand, producing steam for a biofuel refinery, replacing
the need to burn natural gas and coal. Thermal storage is the technology,
which has potential to unlock vast amounts of low-cost clean energy.
Wind and solar power can generate electricity cheaply, but they are intermittent
and often produce power when it's not needed, like on windswept nights.
That means periodic gluts of low-cost energy. How can we harness it?
Storing that energy as heat has advantages. Wind turbines generate Sixty percent
of South Dakota's power, but bottlenecks on transmission lines means shutdown
of turbines by grid operators, which sometimes has to happen. Big Stone
City in South Dakota is a place where thermal batteries are being used.
Industries and factories need tremendous amounts of heat steamed.
They usually burn coal or natural gas to generate high temperatures,
which creates more greenhouse gases than all of the world's cars
combined . Nearly a dozen start-ups have emerged with their own
ideas for thermal storage. An Energy Company in California owns
and uses superheated brick. Others use ceramic bricks, crushed rock, or dirt.
Companies have to prove they can scale up and that their materials won't
degrade under extreme temperatures. In many regions, regulations make it difficult
For heat batteries to take advantage of inexpensive renewable power: Employees for
the California Energy Company monitor local grid conditions.
When prices drop low enough, the batteries start charging. When prices rise, charging stops. The
economics work.
We take electricity when it's abundant and inexpensive and when no one else needs it.
California Energy Company founded in Two Thousand Eighteen wanted to make sure that
they were never going to add extra strain to the grid. That electricity powers large resistance
heaters similar to those found in toasters, which heat hundreds of carbon blocks in steel-encased
modules the size of shipping containers. The carbon blocks glow white- hot at high temperatures,
transferring energy to a circulating fluid that's used to generate steam. In overtures
after the California Energy Company's project came online, South Dakota's Republican
governor and senators praised it. Many conservatives like the idea of power that relies on
domestic materials. The company's battery charges faster than it releases heat.
Once fully charged, the battery can provide a constant flow of steam for 100 hours,
Yet can work during a long lull in wind power. An industry study did identify a major catch,
however. In many parts of the country, it can be difficult for heat batteries to charge
only when electricity is plentiful and cheap, because local rules don't allow retail prices
to vary by the hour. In South Dakota, the California Energy Company spent long hours
negotiating a new rate structure with the local utility. But reworking the rules across
hundreds of different utilities and grid regions could take time. There's an inertia challenge
to overcome, said a former member of the Minnesota Public Utilities Commission.
As you often see with new innovations, many of these rules by states were written
before thermal batteries came along. One recent study estimated that thermal storage

could potentially outcompete natural gas in many places and eventually supply an average of up to one-third of America’s industrial heat needs if battery costs keep declining. Industrial heat now accounts for Ten percent of greenhouse gases, more than cars or airplanes.