

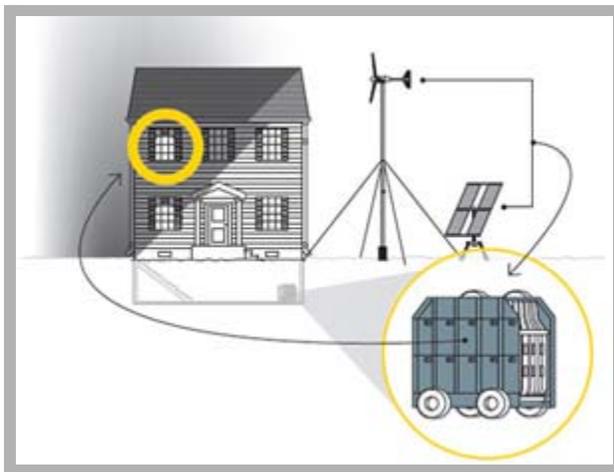
Popular Mechanics

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10 Most Brilliant Innovators of 2009: Sodium-Sulfur Home Battery

We need innovators. Sure, we need their inventions: the medical tools, the batteries for storing wind power, the efficient engines and agile robots. But we also need their spirit of inquiry to inspire us, their mix of skill and imagination to remind us how real work gets done. PM has been presenting the Breakthrough Awards for five years now, and we've considered thousands of potential winners. So we know. The fundamentals are strong. Innovation promises a brighter future. And the breakthroughs keep coming. On October 8, we have invited representatives from all 10 of this year's brilliant innovators to celebrate their remarkable achievements. Check in to the [Breakthrough Awards 2009 page](#) for behind-the-scenes coverage as PM shares an evening with these innovators and their inventions.

BY LOGAN WARD



sodium sulfur battery

Diagram by Dogo

The most popular alternatives to fossil fuels for generating electricity--wind and solar--don't look so good once the sun sets and the wind dies down. To provide a home with reliable power, either technology must be coupled with an energy-storage system. For now, that means a bank of lead-acid batteries. But there's a better way, according to research scientist Grover Coors. "The problem [with lead-acid batteries] is they tend to fail after a few hundred charge-discharge cycles," he says. "We need a battery that cycles so many times we lose count." Sodium-sulfur batteries are a promising alternative, but only for industrial settings--they operate at temperatures around 600 F, far too hot to sit in anyone's basement.

ENERGY: WIND-AND-SOLAR-POWER BATTERY

INNOVATORS: Grover Coors, John Watkins; Ceramatec
BRILLIANT IDEA: A whole-house battery that could help make home generation of electricity a mainstream alternative.

Coors was the chief scientist at CoorsTek, an advanced ceramics company founded by his great-grandfather, the brewer Adolph Coors, when the company

bought a ceramics R&D firm last year. Coors knew that the new subsidiary, Ceramatec, was working on a material that could form the electrolyte heart of a sodium battery cool enough for

residential use. Coors and fellow researcher John Watkins built a promising prototype by sandwiching the material-- a sodium super-ionic conductor--between a sodium metal anode and a still-undisclosed aqueous cathode. Now they hope to develop a \$2000 refrigerator-size unit that can yield 5 kilowatts for 4 hours before recharging--and keep it up for 10 years. If they succeed, it could help bring at-home generation of electricity from the margins into the mainstream.

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