Inc.com
The Daily Resource for Entrepreneurs

From solar panels to clean coal, betting big on the future of energy.

Introducing the PowerSheet, a solar panel as thin as foil

It's easy to get behind the idea of solar power, but solar panels themselves have been far from lovable. They're large, rigid, and expensive, and have to be mounted on rooftops or other exposed surfaces. But **Nanosolar** is making solar technology that anyone can love. Using nanotechnology, the company has created a kind of photovoltaic ink that can convert sunlight into electricity. The ink is coated onto sheets of foil with a printing-press-like device, a manufacturing process that costs a tenth of that of conventional solar cells. The company calls its cells PowerSheets.

Founded in 2002 by Martin Roscheisen, a 37-year-old serial entrepreneur who sold his last company, eGroups, to Yahoo for $450 million, Nanosolar has raised about $100 million from some powerful investors, including Larry Page and Sergey Brin, the founders of Google, and Jeff Skoll, founding president of eBay, as well as top-tier venture capital firms like Benchmark Capital and Mohr Davidow. The company is using that cash to build one of the largest solar cell factories in the world near its headquarters in Palo Alto, California. When completed, the factory will produce a million solar panels a year.

Coal is bad and dirty. Natural gas is nice and clean

What if you could take a lump of coal and transform it, via a nonpolluting process, into clean-burning pipeline-grade natural gas? That's what **GreatPoint Energy** is attempting at its test facility in Des Plaines, Illinois, and it has attracted a lot of believers, including some leading VC firms, among them Draper Fisher Jurvetson.

Converting coal into gas is not novel. But until now, the process has led to the creation of another dirty fuel called Syngas. GreatPoint's technology, on the other hand, converts coal directly into natural gas, and Andrew Perlman, the firm's CEO, believes the company will be able to produce the gas at roughly half the current market price. The impact could be huge, because coal isn't going away anytime soon. "If you want to do something in the next hundred years to deal with global warming and air emissions and mercury pollution and acid rain, you have to clean up coal," Perlman says. "You can't just wish it away."

How to solve the world's energy problems? Easy. Just change the hydrogen atom

Randell Mills is thinking big by thinking small. Really small. The founder and CEO of **BlackLight Power**, in Cranbury, New Jersey, is rethinking the hydrogen atom--and if he's right, he just might solve all of the world's energy problems.

This is heady, obscure stuff, and more than a little controversial. According to conventional physics, whenever an electron moves closer to a nucleus, energy is released. But the single electron in a hydrogen atom, physicists have long agreed, cannot get any closer to its nucleus. Mills argues that this is not the case. When you heat hydrogen into a plasma, and add a catalyst like potassium or argon gas, he says, you create a chemical reaction that forces the electron sphere to shrink, giving off up to 1,000 times more energy than conventional combustion. That means you could create a highly efficient energy source from mere water.

Most physicists are highly skeptical. But some chemists and engineers are intrigued. And so are some major financial players-- including Neil Moskowitz, CFO of Credit Suisse, and Michael Jordan, chairman of Electronic Data Systems--who have invested nearly $50 million in BlackLight. The payoff could be a ways off. Mills has been working on this for 15 years and estimates that it will be at least another two years before anything hits the market. It's about as big a long shot as there is. But if Mills is right, the upside is limitless.