



Transcript for the Piece Audio version of QUEST The New Clean Tech

Here at Nanosolar in San Jose, employees are still unpacking in their new offices. Two weeks ago, the company sent its first shipment of panels from this brand new factory. And a stampede of customers has followed.

SAGER: We're sold out for 2008 and we could easily be sold out for next five years if we allowed ourselves to do that.

Brain Sager is a co-founder of Nanosolar. The company is now one of only a handful that have brought the next generation of solar to market - a technology called thin film solar. Sager holds up a solar panel, shiny and metallic.

SAGER: That's maybe 7 millimeters, so yeah, pretty thin.

These solar cells use no silicon, the material found in most solar panels today. Instead, they use a specially developed ink containing copper and other metals. Sager says it absorbs sunlight 100 times better than silicon.

SAGER: And therefore to absorb the same amount of light you need one 100th of the amount of thickness of the absorber layer, hence the name thin film. Thin is relative to silicon.

Sager says his company's process substantially cuts the manufacturing cost of solar energy. Here on the factory floor, long spools of metal foil roll through machines which will print the foil with solar ink.

SOMMER: I almost want to compare it to a newspaper press.

SAGER: It is similar to a newspaper press. The ink itself looks not so dissimilar from India ink as you might see in a fountain pen.

Thin film solar panels could make it easier to create roof tiles or siding with built-in solar. (Fade Factory sound). Nanosolar is one of dozens of clean tech companies in Silicon Valley that have received millions in start-up funding. In the first three quarters of 2007, US venture capital firms invested a record-breaking 2.6 billion dollars in clean-tech companies. Joel Makower is a co-founder of Clean Edge, an energy research firm.

MAKOWER: This is not a fad, this is not a fleeting trend. These are huge markets. There will be Googles and Yahoos and eBays of clean technology. So this is not simply some far-away future. This is what we're going to be seeing starting in the next few years and starting now really.

California wants to see it now too. State law requires PG&E and other big utilities to produce 20% of their electricity with renewable energy by 2010. As of the most recent data one year ago, they were at 11%. John Woolard is president of one company now negotiating for California power contracts, Bright Source Energy in Oakland.

WOOLARD: Right now there's just an unbelievable momentum particularly in California in terms of interest in large scale solar thermal plants and getting them online sooner rather than later.

You've played with solar thermal energy if you've ever used a mirror to reflect sunlight and burn a hole in a piece of paper. Bright Source is planning power plants in the Southern California desert that would use hundreds of mirrors to focus sunlight and super heat water to 1000 degrees. The resulting steam turns large turbines, which generate power.

WOOLARD: The scale here is really massive and even just the work we're doing with PG&E right now with 500 megawatts would dwarf everything that's been done so far on the million solar roofs program.

This coming year, consumers will also see green technology breakthroughs in transportation. Automakers like GM and Toyota are developing plug-in hybrids. Those run on gas and batteries, potentially getting 100 miles per gallon. Tesla is expected to put an all-electric sports car on the road. (Bring up garage ambi) It may sound surprising, but PG&E wants in on the action.

TANG: We are standing in the garage under the PG&E headquarters and we're standing in front of what we call Sparky, which is a plug-in hybrid electric vehicle.

Andrew Tang is the Senior Director of the Smart Energy Web at PG&E. He takes a cord coming out of Sparky's bumper and plugs it into the wall. But Tang says PG&E's hybrid can do another trick. It involves flipping a switch.

TANG: And what I mean by flipping the switch is: Instead of just having the one-way power flow be from the grid into the car and have the car use the battery, we enabled this car to take the power from the battery and through the cord put it back onto the grid.

AMBI: Sound of trunk opening

To demonstrate, Tang opens the car's trunk and hits a red button. We watch an electrical meter that the car is plugged into start to spin.

TANG: You'll see it's spinning, pretty quickly. Power is moving in the opposite direction.

Tang says PG&E would buy back the electricity stored in cars just like this on the hottest summer days, when demand for energy is highest. The technology is called V2G, for "vehicle to grid."

TANG: If we can trim off some megawatts with batteries stored and we can then turn around and put it back onto the grid in times where it's really really expensive or it's really dirty to generate because we're firing up some plants that aren't very efficient then we feel that's a win win for our customers and for the environment.

As California tackles its global warming policy, the state will continue to fuel the clean tech boom. And that means solar, wind and transportation will be front and center in Wall Street's mind in the year ahead.

For Quest, I'm Lauren Sommer, KQED Radio News.