

# Sunday Oregonian

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Oregon and China



Distant neighbors, common interests

## A place in the sun

With cheap labor and rapid production, China's promise of solar power at bargain-basement prices casts a shadow over Oregon's ambition of becoming a world leader in alternative energy

By **AMY HSUAN**  
THE OREGONIAN

NANTONG, China —

**I**n a hollow factory so new it smells of plaster, Lynn Sha's lone assembly line is laying the groundwork for a global solar eclipse.

Every five hours, a silicon-coated panel rolls out of QS Solar, a company just eight months in the business. Sha, a stylish twentysomething vice president, expects within months to pump out enough panels for a quarter-million households.

Never mind that until last year, QS Solar was QS Latex, a glove manufacturer with no experience making silicon anything.

"Soon, we'll be able to sell to our customers for just \$1 per watt," says Sha, crossing the floor in towering heels. Little does Sha know her sky-high ambitions threaten to cast a shadow as far as Oregon.

At a buck-a-watt, solar — the world's most expensive energy — would beat

### The series



#### TODAY:

China's solar boom could eclipse Oregon's efforts.



#### MONDAY:

An Oregon company bets on growing trees in rural China.



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**TUESDAY:**

Portland architects design the largest green building in China.



**WEDNESDAY:**

China hopes to attract high-tech companies with better-paying jobs.



**THURSDAY:**

An intimate look at China and its people.



To see an online slide show of solar factories in China and in Hillsboro, go to [oregonlive.com/special](http://oregonlive.com/special)

Amy Hsuan will accept questions and comments on her series during a live online chat from noon to 1 p.m. Thursday. To participate, go to [oregonlive.com/special](http://oregonlive.com/special)



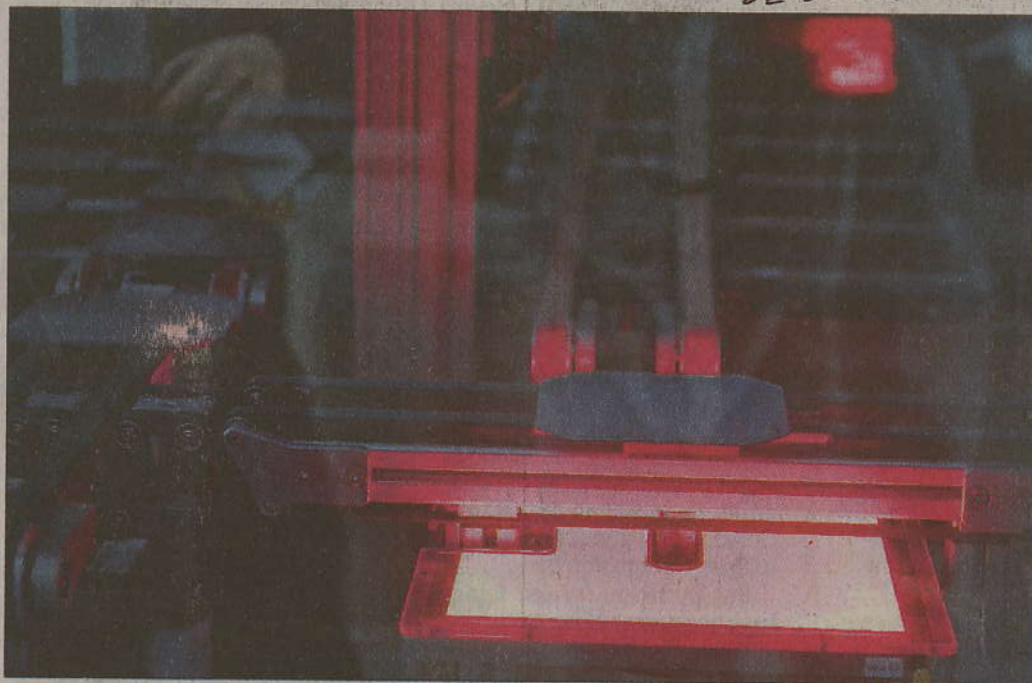
ABOVE Solarfun, the world's seventh-largest solar manufacturer, provides housing for its roughly 2,000 workers. At the company's Jiangsu headquarters, a worker gets around by bike.

AMY HSUAN/THE OREGONIAN

BELOW | A wafer goes through a diffusion process at SolarWorld's new Hillsboro factory, the largest solar manufacturing site in North America. Opened last fall, the 480,000-square-foot factory is mostly automated. Human hands rarely touch solar cells while they're being produced.

JAMIE FRANCIS/THE OREGONIAN

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**Journey across China**

Reporter Amy Hsuan visited China in November, traveling more than 4,500 miles by train, plane, automobile and motorized cart. Her mission: to tell stories of why China's rapid transformation matters to Oregonians and the state's economy.

A nation of 1.3 billion people and geographically the size of the United States, China overwhelms Oregon by nearly every



measure. But the country, with deep historical ties to Oregon and the West Coast, is increasingly linked to our state through business.

The world's fastest-developing nation often is seen as a threat to Oregon jobs and businesses, which struggle to compete with China's low costs and abundant labor. But China's huge population and rising affluence also present countless opportunities for Oregonians. Last year, China became Oregon's biggest foreign

customer, pumping hundreds of millions of dollars into the state.

Hsuan reports on both sides of the complex relationship between Oregon and its distant neighbor. Fluent in Mandarin, she met with business and government leaders as well as ordinary people, continuing her reporting after returning to Oregon.

The five-day report concludes with her observations as a Chinese American about the ever-changing nation.

— Gordon Oliver  
Assistant business editor

today's cheapest power, coal-fired electricity. That would pave the industry's way to the rooftops of the masses, giving it a surefire edge in the world's race for affordable clean energy.

And, with next-to-nothing overhead and abundant cheap labor, Chinese companies are almost sure to get there first. More than any others, China's factories hold the promise of delivering solar energy at Wal-Mart prices, spawning a glut of panels worldwide.

But their zeal could dim Oregon's own solar boom, the pillar of the state's hope for economic recovery. Oregon officials are betting big with taxpayer dollars to snag solar manufacturers and their pledge of high employment — just as global prices are expected to plunge.

"I see more overcapacity coming out of Asia than anywhere else," says Christopher Dymond, a senior energy analyst with the Oregon Department of Energy. "We will see quite a few companies go out of business."

Over the past decade, China's unprecedented rise has elicited awe from across the world while stoking fears among competitors. There's little question that the world's fastest-developing nation means new possibilities for Oregon: New wealth in the most populous nation germinates demand for Oregon fruit, trees and nursery products. The government's enormous cleanup efforts open doors for Oregon's green experts. High-tech companies reap higher profits with a Chinese work force, reinvesting in American technology.

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year to be roughly 4.2 gigawatts, according to iSuppli, a research firm that tracks solar trends. Manufacturers across the globe plan to pump out three times that, or 11.1 gigawatts.

China made up more than 40 percent of the world's production, outpacing all of Europe. Already, solar factories in China are sputtering, but the big Chinese companies are slowing.

"We aren't going to stop," says Sun Hongbin, investment relations manager with Jiangsu-based Trina Solar, the world's 14th-largest producer. "We're going to put our foot on the gas to get times coast and sometimes we can handle lower prices because we have such low overhead."

There is no domestic solar market in China, so it's surging energy needs, so it's importing everything overseas. That's the case until prices crash.

Chinese tactic has been to scale up production and sell it to the European market at prices, says Koot, the analyst. "Once the prices begin to rise, they'll use it themselves in the domestic market. It's a smart move."

Companies in China start like a startup without much expertise or money. But they know the formula for a tight-ship factory — and they can get it practically overnight. Not only that, workers are a dime a dozen and cost about that much.

Chinese companies have been able to scale their capacity very quickly, says an analyst. "European companies, they can't do that," says MacPherson, investor rector with Suntech Power, a Jiangsu-based company that is the world's second-largest solar manufacturer. "It's because they have such high manufacturing costs."

In Sun, nearly 15,000 modules are handcrafted each month. In 2004 in Jiangsu and now in Sun's seventh-largest solar module factory, the company's campus has more than 2,000 workers. In 2000, they solder cells, lay thin plastic and apply bar codes, etc.

Factories are much more disciplined than Western factories," says Har-

# Solar energy's costs *SE0232-3*

Solar, which produces less than 1 percent of the world's energy, costs up to five times that of conventional sources. It's the most expensive form of electricity, even before the cost of installation, which runs about \$22,000 for a 3,000-watt residential system in Oregon. That generates about a third of the needs of a typical single-family detached home.

That high cost helps explain why solar has never gained traction without heavy government subsidies. Lowering the price is a driving force for the industry as it ramps up production.

Solar's ability to compete with conventional energy sources — called grid parity — will open new markets and allow it to survive without subsidy. Though there are regional variations, most experts peg that cost at about \$1 a watt.

"The solar industry is like a high school basketball player," says Christopher Dymond, an energy analyst for

the Oregon Department of Energy. "If you just tossed them in the NBA now, they would get clobbered."

Starting this year, a federal tax credit covers up to 30 percent of a residential system's cost. In addition, Oregon also offers a tax credit of up to \$1,500 each year for four years. The Energy Trust of Oregon offers a \$6,000 rebate for solar installers.

Combined, those credits can reduce the cost of a \$22,000 residential solar system by nearly 85 percent, bringing the installation cost down to about \$3,400.

A solar system will save you about a third of your energy bill, which, in the long run, will pay for the system. In addition, Dymond points out, having a solar system will add value to your home. The life span of a solar system is typically more than 25 years.

But you'll have to pay several thousand dollars upfront because tax credits will be paid out over a number of years.

For more information, go to [www.oregon.gov/energy/renew/solar](http://www.oregon.gov/energy/renew/solar)

officer. "Where mechanization would outweigh the benefits of manual labor, it's a long way off, and we still have very good quality."

Worker productivity is meticulously recorded on whiteboards. A notation next to every worker's name indicates how many cells he or she has made — and broken. A perfect production record means a green smiley-face sticker next to a worker's name — and a \$10 bonus, a hefty sum for workers who average about \$150 a month. Workers who break five in a month get a red face and risk losing their job.

At the end of every month, each team produces 1.6 megawatts of energy,

enough to provide 533 Oregon households a third of their energy needs. Their record of success: 96 percent.

"That is the human potential," says sales manager Yizhong Li.

## Oregon competitors

SolarWorld's new Hillsboro factory is strikingly devoid of people. In an enormous production area, floor-to-ceiling machines hum, while robotic arms sort and move wafers. Computers control almost every step.

Mechanization, says Vice President Bob Beisner, is better because computers are more precise than people.

"You can set up a robot to handle the wafers gently and repeat it at high volumes," Beisner says. "To teach that to a human and have them repeat it is very, very difficult."

Still, the German company expects to eventually employ more than 1,000 people, in maintenance, administration or engineering. By early 2011, SolarWorld will pump out 500 megawatts of electricity-generating cells. And, despite the economic gloom, Chief Operating Officer Boris Klebensberger doesn't see downshifting expansion.

Still, he can't ignore China's meteoric ascent.

"We would be foolish if we didn't

But Chinese companies are competing high as their American and European competitors, Bradford says.

"So far," he says, "I have not heard of any substantiated quality issues from the top five companies in China."

## Tough decisions

The world's largest trade show, in Munich last April, featured just one U.S. state with its own booth: Oregon.

That's where Nikolaus Meyer, CEO of Sulfurcell, a German solar manufacturer, first heard about Oregon's generous tax credits.

"I heard that if you build a factory in Oregon," Meyer says, "the government will pay for it."

He isn't entirely off. Oregon offers companies tax credits, job training and cheap loans. That's not including the tax rebates individual communities can throw in.

Sulfurcell plans to build a new factory within the next two years. The question for Meyer is where: Oregon or Asia?

Oregon could be a winner if the U.S. solar market takes off, says Meyer, who plans to visit the state this year. But China is cheaper.

"The Chinese are going to be my competition for a long time," says Meyer, on a tour of Chinese factories in November. "I need to know who my competition is."

It may all end the same: If Meyer can't beat the Chinese, he may have to join them.

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## Demographic comparisons: Oregon, U.S. and China

