

## SOLAR POWER

Gearing Up for One-yuan Solar-Energy

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Published: 2008-09-01

*From IT, page 33 issue no. 382, Aug 25, 2008*

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*Original article: [Chinese]*

"If we could reduce the cost of polysilicon procurement, we could reduce the cost of producing solar-energy.

"And if coupled with economies of scale, the cost of generating solar-energy could go down to 1 yuan (0.14 dollars) per kilowatt hour from the current 4 yuan (0.58 dollars)," said Peng Xiaofeng, Chairman and CEO of LDK Solar, a China-based solar wafers manufacturer listed in the New York Stock Exchange.

Polysilicon was said to account for over 70% of the costs on making solar batteries. To protect their profit margins, domestic solar power giants like LDK Solar and Suntech have set their eyes on producing their own polysilicon.

### **Risk of Oversupply in the Future**

Open data showed that China at present has 33 "under construction" polysilicon projects, with investment rolling into the hundreds of billions of yuan. As enthusiasm amongst local governments and venture capitals in polysilicon development reached new heights, it was estimated that if all the planned projects met their targets, the annual production volume in China alone would be 140,000 tons.

The estimation had led some industry experts to sound the alarm, claiming that by 2010, the world would risk having an oversupply of polysilicon, as the global demand was projected to be 80,000 tons by then, lower than the projected production capacity of China. To become self-sufficient in polysilicon supply was the key motivation behind the surge in production projects. The EO learned that the cost of producing polysilicon in some advanced nations could be as low as 30 dollars (205 yuan) per kilogram, yet the growth in demand and tight supply in recent years had led to its retail price in China to shoot to 500 dollars (3,412 yuan) per kilogram. China imports about 95% of its polysilicon needs.

When the supply of polysilicon became tight in 2006, some Chinese photovoltaic companies had opted to seal long-term deals running into a decade with overseas suppliers. Though securing stable supply, these Chinese companies also faced risk of sharp drop in prices while their contracts were still in effect.

Thus some leading solar-energy industry players had instead opted for setting up their own raw material production plant, including LDK Solar, and Suntech, which invested in Asia Silicon to produce 6,000 tons of polysilicon; Sichuan Xinguang Silicon Technology was also preparing to set up a plant with 3,000 tons annual production capacity. Even cross-sector investors had taken interest in polysilicon. For instance, glass processing company CSG Holdings too had invested several billion in a polysilicon plant with 5,000 tons production capacity; Daqo Group, which has a focus on the electrical products industry, had

invested in a 10,000-ton-capacity plant; and China Sunshine Group, a Jiangsu-based apparel manufacturer, also invested in a 4,500-ton-capacity plant.

### **Economies of Scale**

Take LDK Solar for instance, it is Asia's largest silicon disc manufacturer, over 70% of its raw material were imported and it also recycled waste semiconductor material.

In August last year, LDK Solar invested 13 billion yuan (1.9 billion dollar) to initiate polysilicon production; when completed in 2009, the plant would churn out 16,000 tons of polysilicon per year. For the time being, the company estimated that its production capacity would reach 6,000 tons by year-end 2008.

The company reasoned that the huge investment would bring about economies of scale, but the highly specialized technology involved in polysilicon production prevented small capital from entering the field.

For instance, in the manufacturing process, a kind of toxic gas named silicon tetrachloride would be produced and could pollute the environment if discharged into the air. To solve that problem, LDK Solar's plant must have the technology to recycle such poison gas back into the production chain, thus being environmentally responsible and cost-efficient.

At present, it would cost domestic Chinese companies around 100 dollars (682 yuan) to produce every kilogram of polysilicon. According to Peng of LDK Solar, at least 10,000 tons of annual production capacity was needed to achieve economies of scale. He added that the company aimed to keep the cost of production between 20 and 25 dollars (136 - 170 yuan) per kilogram in the future.

"Once we could produce 16,000 tons of polysilicon per year, we have no intention in selling them, but to use them in our own silicon disc manufacturing," Peng said.

Once the raw material cost for silicon discs lowered, LDK Solar would enjoy higher profit margins. The company projected that once the polysilicon plant reached full production capacity, its gross margin for manufacturing silicon disc would increase from the current 25.4% to between 40% and 50%.

Industry specialists believed that though many polysilicon plants had gone underway in China, these projects would not yield result so soon; and with sustained strong demand, the supply of polysilicon would remain tight throughout this year.

<http://www.eeo.com.cn/ens/Industry/2008/09/01/112199.html>