

19th CPC NATIONAL CONGRESS | International perspective

Powering a clean energy future

By ZHANG ZHIHAO

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In the field of photovoltaics (PV) — the study of converting sunlight into electricity — Pierre J Verlinden's name shines like the sun.

Born in 1957, the Belgian-Australian engineer has published about 200 scientific papers, generated more than a dozen patents and held senior research and development positions in labs and PV companies across Europe, the United States and Australia.

In 2012, to help China build a clean energy future, Verlinden brought more than 35 years of expertise to his fifth continent, becoming the chief scientist at Trina Solar — one of the world's largest solar product manufacturers, located in Changzhou, East China's Jiangsu province.

Since his arrival, Verlinden has helped the company break 15 world records in the solar energy industry, ranging from solar-cell-conversion efficiency to power output for solar panels.

In his office, Verlinden has five different types of full-size solar panels leaning against the wall. Above the panels, he has hung a photo of NASA's solar airplane, which he helped design, and his William R Cherry Award — one of the most prestigious in photovoltaics.

His most prized creations, however, are kept in his bookcase. They are an advanced type of solar cell called Interdigitated Back Contact cells, or

IBC, which set a world record in May with an energy conversion rate of 24.13 percent, the most efficient silicon solar cell ever produced in China.

Unlike conventional solar cells, which have lines of silver electrical conductors running across the panel's surface to carry electricity to the batteries, "IBCs essentially have these conductors integrated in the back of the panel, meaning more surface area to absorb sunlight and thus higher efficiency," he said.

IBC is just one of the leading innovations coming out of China's PV industry. For decades, China has been eyeing alternative energies like solar and wind to meet its economic needs, as well as to cut its coal dependence and pollution.

By 2040, China's electricity production by coal-fired power plants will drop from today's 73 percent to 43 percent, while wind will rise from 3 percent to 12 percent, and solar from 1 percent to 6 percent, according to a report by the International Energy Agency.

"We hope the proportion of solar energy can be even higher," Verlinden said.

"China has changed from being a follower into a PV industry leader in the past 10 years, leading the world in PV innovation, solar energy pro-



Pierre J Verlinden, a Belgian-Australian engineer and a leading researcher in photovoltaics.

duction and market size."

He added that today the Yangtze Delta region, which consists of East China's Jiangsu and Zhejiang provinces, produces about 60 percent of the world's silicon solar panels.

"There is no doubt that the center of gravity for the PV industry is in China. If you were a PV scientist in the 1970s, you would go to Silicon Valley, but now, you would come to China," Verlinden said.

Starting with a few small rural projects in the 1990s, China bounded onto the global PV scene just before the 2008 global financial crisis as local manufacturers boomed and eclipsed companies from traditional PV powerhouses like the US and Germany, according to a report by ENF Solar, a PV information company.

However, China's surge was hit by an oversupply issue in 2012 after too many new manufacturers flooded the industry in 2011, leading the number of producers to soar to more than 900.

This resulted in a serious price crash as companies fought a cut-throat price war to keep market share, the report said.

At the same time, the global recession chilled demand from European markets — the primary destination

for Chinese PV products, resulting in even smaller profits for Chinese companies.

As a result, more than 400 Chinese PV companies closed their doors within a year, leading analysts to dub 2012 as China's "great PV winter".

"The PV industry is a game of managing cost," Verlinden said.

"Since the technology has been around for decades, the bar of entry is low and anyone with sufficient money can set up a factory line and become the number one producer in no time.

"Yet, being number one in the industry typically does not last long, sometimes only two to three years, hence sustainability is much more important."

Although China's PV manufacturing has grown at a breakneck pace since 2007, Chinese products are still uncompetitive compared with other PV powerhouses.

As a result, China has increased efforts to attract foreign capital and experts to help the country innovate, and allow big banks to give massive loans to support the PV industry, Dan Reicher, one of the report's co-authors said in a seminar in March.

Verlinden was one of the first foreign experts brought in under the recruitment program created by the State Administration of Foreign Experts Affairs. The recruitment program began in August 2011, and aims to attract about 1,000 foreign experts in the following decade.

After 2012, China's solar industry rebounded due to surging domestic

demand and from Japan, increased government support and quotas for solar energy, and more non-traditional energy investors, such as real estate developers, entering the industry, the report said.

Coupled with rising innovation and the global competitiveness of Chinese PV products, Verlinden said the rebound momentum has been the biggest development in China's PV industry in the past five years.

In recent years, however, as companies flocked to install massive, utility-scale, solar farms in China's vast northern regions, this created enormous inefficiency and waste because the infrastructure could not keep up, Verlinden said.

While these solar farms can produce large amounts of energy, "it has far surpassed the consumption capacity of the surrounding villages", and might not reach the most energy-hungry areas, such as coastal cities.

This excess energy will be wasted if not stored properly in batteries or transmitted efficiently to the national grid, Verlinden said.

Hence, it is essential for China to integrate solar-energy transmission into the national grid, and develop new and more efficient storing methods in the following years.

At the same time, China should also advocate for more residential use of solar panels. "In the future, households might be able to reduce their energy bills to zero, and even sell their excess energy to their neighbors or the national grid and make a profit," he said.

Space expert lauds CPC leadership

By ZHAO LEI

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A leading Russian space scientist has attributed China's success to the leadership of the Communist Party of China (CPC) and the country's socialist system.

Yuriy Zabolotnov, an expert in space tether systems at Samara State Aerospace University in Samara Oblast, Russia, has been working in Xi'an, Northwest China's Shaanxi province, with his Chinese counterparts from Northwestern Polytechnical University for about two months a year since 2012.

He said he is deeply impressed by China's progress and achievements.

"Each time I come to Xi'an to work for the joint research program, I see

tremendous changes in the city and elsewhere in China — there are new skyscrapers, extended transit networks, especially the subways and advanced technology research facilities," he said.

Zabolotnov said that the young Chinese scientists working around him are passionate and dedicated.

"At the China-Russia International Space Tether System Research Center, I work with many young Chinese researchers on space tether technology, one of the most promising fields in the space exploration sphere.



Yuriy Zabolotnov, expert in space tether systems at Samara State Aerospace University in Samara Oblast, Russia.

"These youngsters are China's future, and I can see that they are wholeheartedly striving for the future of their motherland and they have never had any complaints about their work," he noted.

The Russian scientist said that in addition to diligence and education, the socialist system contributed to China's success.

"As the ruling party, the Communist Party upholds the socialist system and ensures

that the fruits of the country's economic development benefit people from all walks of life instead of only

the wealthy as in some Western capitalist nations," Zabolotnov said.

"I am positive that the coming 19th CPC National Congress will make decisions that will lead the country to better and faster development."

However, China, like all countries with market economies and rapid growth, is facing challenges such as a wealth distribution gap and urban-rural imbalances, he said.

But he said that he is confident in China's ability to overcome obstacles because "the fact that China is a socialist country lays a solid foundation for solving the problems".

Zabolotnov believes China will continue to move steadily forward in the years ahead because it has all the prerequisites for continual development.

"China has unique experience of

integrating a market economy with a socialist system, which will be useful to many developing countries," he said.

"China has global influence in terms of international trade and politics, and is using its power to safeguard world peace and to help nations in war resolve their disputes in a peaceful manner. It is important that Russia and China are joining hands in this regard."

Zabolotnov said he regards President Xi Jinping as a wise and seasoned statesman who is guiding China to long-term friendship with other nations.

"Relations between Russia and China and their leaders are quite good, which has contributed a lot to the two economies and the peoples," he said.