



The Shanxi Transition and Comprehensive Reform Demonstration Zone is the first pilot zone in the country serving in the transition of a resource-reliant economy. WANG JIAN / FOR CHINA DAILY

Shanxi takes scientific route to help diversify its economy

Province once reliant on coal industry has embraced technology to create new areas of growth



By YUAN SHENGGAO

Computers and servers at internationally advanced levels, wafers used for disinfection, biobased polyamide clothing, recombined human-originated collagen III protein ... Hundreds of high-tech products were displayed at a recent show in the exhibition center of the Shanxi Transition and Comprehensive Reform Demonstration Zone.

The exhibits were only a small part of the products demonstrating the latest achievements in transforming Shanxi from a resource-reliant economy to one with diversified growth.

The provincial authorities proposed a plan to diversify its economy 10 years ago to solve problems such as mounting pressure on the environment due to its reliance on coal mining, low-quality growth and lower-than-national-average growth rate because of the lack of new growth sectors.

The plan was approved by the State Council at the end of 2010, and Shanxi became a pilot region for the nation's reform of resource-reliant economies.

Over the past decade, the province has fostered 14 emerging industrial clusters that can drive local economic growth, including information technology, biomedicine, advanced manufacturing, new materials, environmental protection and logistics.

The Shanxi Transition and Comprehensive Reform Demonstration Zone, which was established in 2017 and covers more than 600 square kilometers, is a major destination for hosting new industries, according to the province's economic transition plan.

The demonstration zone combines eight development zones in the provincial capital of Taiyuan and its neighboring city of Jinzhong. It is the first pilot zone in the country serving in the transition of a resource-reliant economy.

Over the past three years, the zone established 118 new projects related to emerging industries, with a combined annual revenue projected at 428.6 billion yuan (\$60 billion) when they are fully operational.

Many of the industries feature cutting-edge technologies that can spur high-quality growth and help upgrade traditional industries, according to local officials and entrepreneurs.

For instance, some products in the fields of IT, semiconductors and bio-based materials, which were displayed at the recent show, represent

advanced levels in both domestic and international markets.

During the show, Jiang Jian, general manager of BW38 IC Manufacturing based in Xinzhou city, introduced wafers developed by his company.

"A small piece of integrated circuit equipped with several such tiny wafers can sell for dozens of dollars on the international market," Jiang said.

The executive said his company had just completed the main structure of its manufacturing plant and its opening is scheduled for the middle of 2021.

"Once our plant becomes operational, we can put our laboratory-developed wafers into mass production immediately. Our designed capacity is to produce wafers for more than 300 million mobile phones a year," Jiang said.

The locally made wafers' applications are not limited to electronics and IT sectors.

Zhongke Lu'an Advanced Ultraviolet Optoelectronic, based in Changzhi city, displayed its grain-sized light-emitting diode wafer, which can be used for disinfection.

Duan Fei, deputy general manager of the company, explained that its disinfection property comes from the ultraviolet rays the wafer emits.

Since the outbreak of the COVID-19 pandemic earlier this year, the company has received a great num-

ber of orders for products equipped with the ultraviolet wafers.

"The existing orders exceed our production capacity for an entire year and market demands have far surpassed our expectations," Duan said.

Another cutting-edge product on display was the recombined human-originated collagen III protein developed by Jinbo Biomedicine based in Taiyuan.

Zhang Xingdong, an academic of the Chinese Academy of Engineering and chief developer of the product, said the genetically recombined protein has great market potential as it is a crucial product for post-surgery recovery.

According to Zhang, Jinbo Biomedicine is one of the few manufacturers in the world able to mass produce the human-originated collagen III protein.

In addition to IT and biomedicine industries, Shanxi has also made breakthroughs in such sectors as advanced manufacturing, new energy vehicles, new materials, aerospace and environmental protection.

The provincial government of Shanxi predicts that its economic transition can be achieved by 2035 and the province will then be able to embark on a path of high-quality and diversified development.

Guo Yanjie contributed to this story.

Company tests its mettle by producing thinnest foil

By YUAN SHENGGAO

Few people believe that a steel sheet can be torn apart like paper. But this is the case for a product produced by Taiyuan Iron and Steel, a State-owned enterprise in Shanxi.

With a thickness of 0.02 millimeters, or one-third of the diameter of a human hair, the product can be easily torn apart by hand. As a result, it is called "hand-torn steel" by the company's workers.

"The formal name of the product is broad-sheet super-thin stainless steel foil. It is a high-end product in the industry," said Liao Xi, an engineer responsible for its development.

When introducing the product, the engineer shows how the steel sheet can be torn apart in his hands in seconds.

"Being Strong and hard is always our impression of steel products. However, the idea can be replaced if there are the technology and demand in the market," Liao said.

He added that "a steel foil sheet made this thin and soft is not for the purpose of satisfying people's imaginations or to find a place in the Guinness Book of World Records. It is produced for applications in specific industries."

"Generally speaking, the product is meant to take the place of aluminum foil in similar industrial applications, like the fields of aerospace, electronics, petrochemicals and automobiles.

"Compared with aluminum foil, the hand-torn steel performs better in erosion, moisture and heat resistance," Liao said.

According to the engineer, only steel sheet thinner than 0.05 mm can be called steel foil.

"Most of the steel foil products made in China are more than 0.038 mm in thickness. We are among the few companies in the world capable of producing soft steel foil of 0.02 mm," Liao said.

The company's executives said the technological breakthrough was made thanks to the painstaking efforts of researchers, engi-

neers and workers.

According to Liu Yudong, an executive responsible for production, the company's research and development team began working on the product in 2016.

"After more than 700 experiments and trials over two years, our R&D team successfully developed the product in 2018," Liu said.

"In manufacturing, 24 pressings are required for the 0.02-mm-deep and 600-mm-wide steel sheet," Liu added.

Qu Zhanyou, sales director at Taiyuan Iron and Steel, said the special product has brought a high added value to his company.

"Our hand-torn steel foil is sold at about 6 yuan (\$0.84) a gram," Qu said.

"Despite the novel coronavirus pandemic, the company's export value increased about 70 percent in the first four months of this year, compared with the same period of last year," Qu said. He added that the growth was mostly driven by hand-torn steel.

Wang Tianxiang, general manager of the stainless-steel foil division of Taiyuan Iron and Steel, revealed that the company is now producing an even thinner steel foil. It also recently secured an order of 12 metric tons of the product.

"The client required us to deliver the product in 12 days after the agreement was signed and we fulfilled the task in three days," Wang said.

"The toughest job is to maintain the quality of the ordered product, which has a total area equal to 75 soccer fields. And we made it," Wang said proudly.

The executive noted that the company's capability in developing high-quality products comes from improving its innovative strengths over the past dozen years.

"Based on our growing competence in innovation, we are confident that we can sustain our development by creating more cutting-edge products," Wang said.

Guo Yanjie contributed to this story.



With a thickness of 0.02 millimeters, the stainless steel foil produced by Taiyuan Iron and Steel is considered a high-end product in the industry. WANG XUHONG / FOR CHINA DAILY



Top: Originating from the Guancen Mountain in Ningwu county, the 716-kilometer Fenhe River is the mother river of Shanxi. CAO JIANGUO / FOR CHINA DAILY **Above:** After decades of environmental protection efforts, the Fenhe River is now a major attraction in Taiyuan city. SHI ZHIYONG / FOR CHINA DAILY

Crystal-clear transformation as river given new lease of life after cleanup

By YUAN SHENGGAO

The 716-kilometer-long Fenhe River in Shanxi has been a symbol of the province for thousands of years.

Running through 29 counties and districts of six cities, the river is the second-largest tributary of the Yellow River.

Since residents began using the Fenhe to irrigate farmlands on both banks more than two millennia ago, the river has played an important role in nurturing the local economy and culture.

However, with the development of an economy reliant on coal mining and heavy industries, the river has suffered severe pollution over recent decades.

Local authorities' recent efforts in shifting its economy toward high-quality and environmentally friendly growth have given new vitality to the river, once again making it an attraction in the province.

In Taiyuan, the provincial capital of Shanxi, the river runs through the city from the north to the east and acts as a greenbelt.

With shaded paths, long cycleways and parks, riverside areas have become an attractive destination for sightseeing, relaxing and recreation.

Wang Fang, a local resident, is a frequent visitor to the river's banks. She likes to walk slowly along the river and take pictures of the landscape.

"As a huge sightseeing belt is developed along the river, I visit here almost twice a day — doing exercise in the morning and taking a walk in the evening," Wang said.

Yang Wei, a cycling enthusiast, described the changes he had seen at the river over the decades.

"The Fenhe River area was an unpleasant place some 20 years ago. It smelled badly as garbage was littered and wastewater was discharged into the almost-dry river. As there were no trees and grass along the river, the area was often covered in dust in springtime.

"Nobody would like to cycle or walk along the river," Yang said.

But then it began to improve at the end of the 1990s. The most radical changes took place three years ago.

"Now, there is more water in the river. The water is clean, the sky is blue and the air is fresh," Yang said.

According to local officials, the government began its river-cleaning program in 1998.

Chen Erdong, board chairman of Taiyuan Water Utilities Group, said: "As polluting enterprises were shut

down and more projects were built for solid waste and wastewater treatment, the pollution of the river was effectively curbed in 2017."

In that same year, the city government began a greening and landscaping project for the river.

"At present, the average width of water in the river is about 300 meters. And there are two 150-m-wide greenbelts on both banks," Chen said.

He noted that the greenbelts are composed of trees, grasses and aquatic plants, which offer a habitat for more than 150 species of bird.

Now that the main waterway of the Fenhe has improved substantially, Chen said Taiyuan's new initiative is to improve the environment of its nine tributaries in the city.

Zhang Pengcheng, a cleaner working on the greenbelts, said what impressed him most is the growing awareness of environmental protection among visitors and residents.

"As more and more people stop littering, my job now becomes much easier.

"Having worked here for more than 10 years, I feel I am falling in love with the river," Zhang said.

Guo Yanjie contributed to this story.