

# Technology lifts quality of Shanxi's industries

Cleaner and more efficient coal production, boosted agricultural yields and massive growth in service sector the results of upgrading campaign



By YUAN SHENGGAO

From energy development to manufacturing, from agriculture to services, almost all the industries in the North China province of Shanxi are being upgraded with the application of high technologies and new sciences.

The moves are in accordance with Shanxi's campaign of economic transformation, which reduces reliance on coal mining, pushes manufacturing sectors to an advanced level and cultivates emerging industries as new drivers for economic growth.

Gengyang New Energy Corp, a coking company based in the county of Qingxu in the provincial capital of Taiyuan, is one example of such a transformation.

In March, it pulled down a 55-meter-tall coke wet-quenching tower to replace it with a more efficient and environmentally friendly facility. It was an important moment in the upgrading of the coking industry in Taiyuan as well as the entire province, according to local officials.

Gengyang New Energy, founded in 2018, is a company which boasts multiple operations including the manufacturing of coke, new materials and coal-based chemicals.

Wet quenching is the traditional cooling technique in coke production, which features a higher level of carbon dioxide emissions as well as emissions of other pollutants like

hydrogen sulfide and dust, according to Mi Jingxuan, president of Gengyang.

The executive said the company will soon build a facility with a more advanced dry-quenching technique. It is scheduled to be operational by April 2023.

"With such a facility, which has a capacity of processing 190 metric tons of coal per hour, 100 percent of the coke of our company will be produced with the wet-quenching technique," Mi said.

Compared with wet quenching, Mi said the new technique has economic and environmental benefits.

"We estimated that the new facility can save 120,000 tons of water and 21,000 tons of coal a year compared with conventional facilities with a similar capacity," Mi said. "In addition, it can also lead to the reduction of 18 tons of hydrogen sulfide and 116 tons of dust a year."

The coking unit of Jinnan Steel Group, based in the city of Linfen, is another example of upgrading the coking industry with new technologies.

With the application of digital technologies, the group's production is now controlled by an integrated control center.

Zhang Tianfu, president of Jinnan Steel Group, said the coking process — including such procedures as coal loading, coking, coke quenching and coke unloading — is now automatic thanks to the use of digital technologies and a 5G network.

"The process can be actually controlled by one person, who works remotely at the control center, far away from the coking furnace," Zhang said.



A huge wind power generation component is produced at a plant in the county of Dingxiang. Dingxiang has developed into one of the advanced manufacturing bases in Shanxi thanks to the application of new technologies. SUN RONGXIANG / FOR CHINA DAILY

In addition to manufacturing, agriculture is another sector in Shanxi that has been upgraded through modernization and new techniques.

Yao Jianmin, a researcher at Shanxi Agricultural University, recently posted the pictures of a millet harvest on his WeChat account. He said that "these are the best crops that I have ever seen in Shanxi's dryland farming fields".

In recent decades, Yao said he has spent much more time in fields than in the labs and classrooms of his university. He has been offering

technological services to farmers in more than 50 counties in Shanxi.

One of the solutions he promotes is the use of water-permeable film.

"Unlike the regions in the south and east of China, dryland farming is the characteristic of Shanxi's agriculture," Yao said. "Water-conserving irrigation, developing suitable crop varieties, and improving soil quality are the key elements for better dryland farming."

Effective and water-saving irrigation is especially important in dryland farming and that is why he focuses his energy on the water-per-

meable film technique.

"Water permeable film can effectively prevent evaporation and erosion of the soil and thus help to retain water and nutrition," Yao said.

Gao Zhiqiang, another researcher from Shanxi Agricultural University, said the use of digital technologies can boost agricultural production, be it dryland or water-dependent farming.

He is now leading a team of agronomists from his university to offer technological services to farmers in the county of Yicheng.

During the recent wheat harvest season, a farm in Yicheng's Dongguan village, which his team took care of, reported a per-hectare yield of 12.83 tons, breaking the record for water-dependent wheat farming in Shanxi province.

Gao said the team's proposal to improve output is a data-analysis-based solution. The scientist said the most effective way to increase output and improve quality is the proper use of water and fertilizers. This can be calculated according to the conditions of the farm, such as soil moisture, the level of nutrition in soil, as well as light and heat exposure.

Dongguan village's record was made after the sowing of seeds was delayed for about a month for weather-related reasons. "This shows that a scientific approach to farming can help to offset the negative influence of natural uncertainties by working out remedies for farming delays caused by such natural disasters as flood, drought and cold weather," Gao said.

The service industry in Shanxi was also promoted to a higher level of development with the use of digital technologies.

According to the Shanxi Department of Commerce, the service industry in the province saw an increase of more than 300 billion yuan (\$44.35 billion) in revenue during the 13th Five-Year Plan (2016-20), thanks to the use of e-commerce powered by digital technologies. The industry has accounted for more than 50 percent of the local economy for several years, becoming a new engine of local growth.

Leng Xue contributed to this story.



Enterprises from the hydrogen industry sign up to begin operations in the Shanxi city of Lyuliang on July 21. LI SHU / FOR CHINA DAILY

## Hydrogen fuels leading way in energy revolution

By YUAN SHENGGAO

Pengfei Group, a company based in the Shanxi city of Lyuliang, broke ground for a plant producing hydrogen-fueled vehicles and components on July 21.

This is regarded by industry insiders as a milestone event in Shanxi as it is the first purely hydrogen-fueled vehicle production facility funded by an indigenous automaker.

On the same day, Lyuliang's first hydrogen-filling station became operational. A staff member of the station said a 30-metric-ton truck can travel about 260 kilometers after being filled with 35 kilograms of hydrogen.

The filling station is part of the industrial chain in the Pengwan Hydrogen Port, a development zone funded by Pengfei in Lyuliang for the hydrogen industry.

One of the zone's major projects, a

hydrogen production facility with an annual output of 20,000 tons, was operational earlier this month.

The development of hydrogen is an important part of Shanxi's energy revolution campaign.

In addition to Lyuliang, hydrogen production and other related industries have been developed in other cities like Datong and Taiyuan.

Wu Hongwen, chief of the Shanxi Department of Industry and Information Technology, said Shanxi has its unique advantages in developing the hydrogen industry.

"Hydrogen can be made through water electrolysis and extracting from coal-bed methane," Wu said. "But conversion from coking gas is among the most economical ways."

The official said Shanxi is now the largest coke producer in China and in the world.

"Shanxi can produce 100 million tons of coke a year, the largest in the

world," Wu said. "And the coking gas, a side product of coke making, with a hydrogen content of 60 percent, can be used to develop the largest hydrogen production industry in the world."

He estimated that Shanxi's coking plants can produce 14 billion cubic meters of hydrogen a year. If other coke-consuming enterprises are included, the volume can reach 24 billion cubic meters.

Wu noted that, when used as fuel for vehicles, hydrogen can be much cheaper than such conventional fuels as gasoline and diesel.

Pengfei Group, the investor and operator of the Pengwan Hydrogen Port in Lyuliang, is one of the leading hydrogen producers in Shanxi. Its current hydrogen-production plant is said to be the largest such facility in the world.

Another leader in the industry is Meijin Energy based in Taiyuan. It owns a number of cutting-edge technologies in producing hydrogen from coking gas, developing hydrogen fuel cells and manufacturing hydrogen vehicles.

According to Wu, Shanxi province can now produce 27,000 tons of hydrogen a year. And the capacity is expected to increase at an exponential rate with the completion of a number of hydrogen plants.

After the completion of its 20,000-ton hydrogen facility in July, Pengfei plans to invest another 78 billion yuan in the Pengwan Hydrogen Port, according to Zheng Peng, chairman of Pengfei.

"With this investment, Pengwan is expected to produce more than 200,000 tons of hydrogen a year," Zheng said.

Yan Zhongxing contributed to this story.

## All in the mix: Famous white liquor embraced by international tasters

By YUAN SHENGGAO

Xinghuacun Fenjiu, a renowned producer of white liquor, or *baijiu*, made its latest attempt to please the taste buds of French people, by hosting a Chinese-style cocktail party on June 21 in the province of Seine Saint-Denis, in cooperation with local dealers and local industrial associations.

Nearly 300 guests, including local officials, business representatives and residents, attended the event.

Playing a leading role at the party was the *baijiu* variety labeled 30 percent proof, contained in a blue-and-white porcelain bottle, whose elegant design with Oriental characteristics immediately attracted the attention of guests.

Francois Asselin, chairman of the association for small and medium-sized enterprises in Seine Saint-Denis, was present at the event. He said he was greatly impressed with the character of fen on the bottle — *fen* is short for the brand name of Fenjiu, which was written in elegant flowing strokes.

"The bottle and the character remind me that this special occasion should be observed with Chinese etiquette," Asselin said. So he took a bamboo cup to taste the *baijiu*.

The official added that the low alcohol content of the liquor is very friendly to first-time drinkers in the West.

"Westerners may not be accus-



Jean Lou Blanchier, an official of a business association in France, is introduced to Chinese liquor by a Xinghuacun Fenjiu executive. WEN ZHAOYAN / FOR CHINA DAILY

tomed to the taste of Chinese *baijiu*, which is made of sorghum through the techniques of fermenting and distilling," Asselin said. "But the low alcohol content makes the white liquor more acceptable."

There are other successful attempts to suit the taste of Westerners. Mixologists prepared three cocktails for attendees, a mixture with violet syrup and honey; a mixture with coconut milk and passion fruit juice, as well as a mixture with lemon and cranberry juices.

Drinkers of cocktails said they were delighted with the experience, as the drinks, unlike the pungent Chinese liquor, featured a mellow taste and lingering fragrance.

There has been a long history for Xinghuacun and Fenjiu-branded liquors sold in France.

Historical documents show that *baijiu* made in the Shanxi city of Fenyang, where today's Xinghuacun Fenjiu is located, began to be exported to France and other European countries during the Yuan Dynasty (1271-1368). The exported liquor was usually contained in a bottle that featured a label of the three Chinese characters of Xinghuacun and pictures themed on Chinese legends.

Some of these antique bottles are now collected by and exhibited in the British Museum in London.

Liu Jiarui contributed to this story.

## Banks step up for environmentally friendly projects

By YUAN SHENGGAO

With sustained growth in recent years, Shanxi's financial industry is now in a position to support the development of the real economy by offering better finance and other services to local businesses.

According to the Shanxi Banking and Insurance Regulatory Commission, Shanxi's financial industry reported an added value of 128.4 billion yuan (\$19 billion) in 2021. The value accounted for 12.73 percent of the added value of the service industry and 5.7 percent of the local GDP.

It means that financial institutions in Shanxi can substantially improve their services for local businesses, by offering larger loans and broadening

their portfolio of services and products.

Jinkun Mineral Products, a company based in the city of Shuozhou, is one of the beneficiaries of financial players' improved services.

The high-tech company is engaged in the recycling and reuse of coal mine refuse.

When it was in a stage of rapid expansion, insufficient capital input bottlenecked its development, according to Li Yajun, general manager of the company.

The company recently applied to the Shuozhou branch of Agricultural Bank of China for a loan. Li said a loan of 9.9 million yuan was granted three days after the application was submitted.

An executive of the ABC Shuozhou



Two staff members of Shanxi Bank (right) visit an enterprise in the city of Xinzhou to learn about its requirements. LI SHU / FOR CHINA DAILY

branch said that the loan was approved quickly because they have a long-term partnership relation with the company and are confident about its development potential as a local leading player in a promising, environmentally friendly industry.

Emerging industries relating to Shanxi's sustainable development, especially in the areas of new energy, recycling and the reduction of pollution, are given priority by financial institutions' services.

A wind power project in the county of Gujiao, which was established by Guangdong-based China General Nuclear Power, is another entity that has won support from a local financial institution.

The CGN Gujiao Wind Farm, with a total planned investment of 380 million yuan, has been supported by the Shanxi branch of the Bank of China, who offered a loan package totaling 200 million yuan.

Hou Junyi, deputy chief of the BOC Shanxi branch, said financing to projects relating to the goals of carbon peaking and neutrality, also known as "green financing", is a highlight of the bank's lending services.

The executive said borrowers of the bank's green financing loans can enjoy a number of incentives like easier approvals and preferential interest rates.

This is also the case with other financial institutions in Shanxi. According to the Shanxi Banking and Insurance Regulatory Commission, the total amount of green financing provided by Shanxi's various institutions reached 273.57 billion yuan in 2021, growing 25.4 percent year-on-year. In contrast, the growth rate of the industry's total lending amount was 13.4 percent.

Wu Jia contributed to this story.